

Data Base for Marine HNS Spill Disaster Response (English)

Mar. 2004

The Japan Association of Marine Safety(JAMS)

Marine Disaster Prevention Center(MDPC)

Introduction

As many kinds, types and characteristics of the substances are transported by sea, no

contingency measures against the spill of HNS (Hazardous and Noxious Substances)

at sea do not exist in a fixed form in the current circumstances of the world.

Therefore, our association, supported by the Nippon Foundation and in cooperation

with the Marine Disaster Prevention Center, has made a survey of related information

necessary for making contingency measures.

This document is compiled the results of our survey in the form of database on each

item of HNS carried by sea domestically in Japan (in the order of volumes of the items

carried).

We expect that this document may contribute so much toward preparation for the

spill accidents of HNS at sea and toward development of the faculties to cope with the

situation.

March 2004

The Japan Association of Marine Safety

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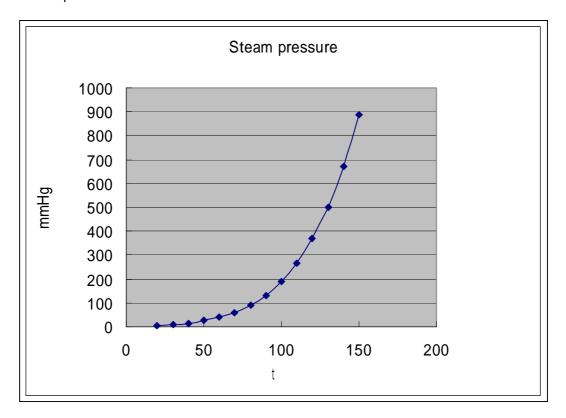
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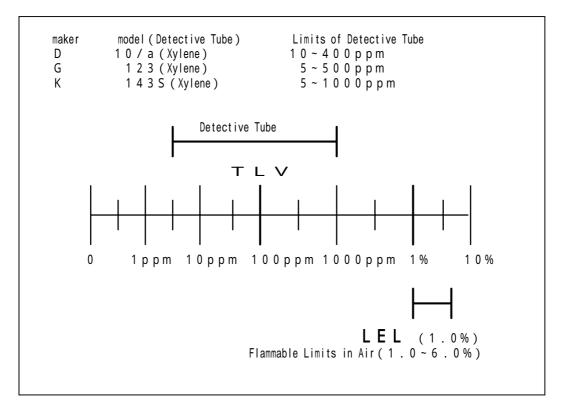
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Material name	Xylene				
Common synonyms	Dimethyl benze	Dimethyl benzeze, Xylol (o,m,p)			
UN Number	1307	C A S Number	1330-20-7	IMDG CODE	Class3.3/P3394
IMO Pollution Category	С				
Formula	C6H4(CH3)2	Molecular Weight	106.17	Flammable Limits in Air (%)	1.0 ~ 6.0
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.88	Vapor Specific Gravity	3.66	Boiling Point at 1 ATM ()	144.41
Freezing Point	-25.18	Flash Point ()	17	Ignition Point()	463
Steam Pressure	0.64Kpa/4.83mi	mHg (20)			
Corrosion	human:no m	etal:no	Oxidation	no	
TLV,Toxicity by Ingestion		ng/kg(oral rat)	ACGIH: 1 0 0	ppmT W A 150p	pmSTEL A4
Hazard and Noxiousness First Aid	Noxiousness: Irritating to skir There is a cent There are worr Environmental There is biodeg The accumulati Danger: It mixes with ai If inhaled Move victim to Keep victim wal It respires artifi has stopped, an When breathing oxygen inhalatio In case of conta Remove and isc Immediately flus Wash skin with sell When it goes in Immediately hol If swallowed Don't make the	ies about the cancer influence: aradation nature. It is on nature to an aquator, vapor becomes expired and guiet. Cially, after loosening downen breathing is when breathing is difficult, although it is effective. The sact plate contaminated clocks skin with running when and water. The sact plate contaminated clocks are to an eye down and fluit inside of a mouth was akes place automatical.	ction. Poisoning corpossibility to people detrimental to an atic life living thing is losive gas, and vapoclothes and securine eak. It is conscious or worthing and shoes. The attention at least 15 sh with plenty of weak with plenty of weak with water,	aquatic life living thing. s low. or is heavier than air. Inf ng a respiratory tract, when breathing, although	lammability is high. nen breathing it is unconscious, stes.

The measure in case Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. of a fire The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body The measure at the A protection implement is worn in the case of work, it takes care that splash does not time of leak adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage Personal Protective Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask, Self-contained breathing Equipment and apparats. Detector Gloves: Solvent-proof nature protection glove, Rubber gloves. Eye: Goggles, Face shields, Eye protectors. Body: Rubber boots. Protective clothing Detector **Detective Tube** Flammable Gas Detector Leak on board The measure at the As the source of ignition is managed and gas does not enter a closing zone, it washes away time of leak on the overboard with a lot of water. sea In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

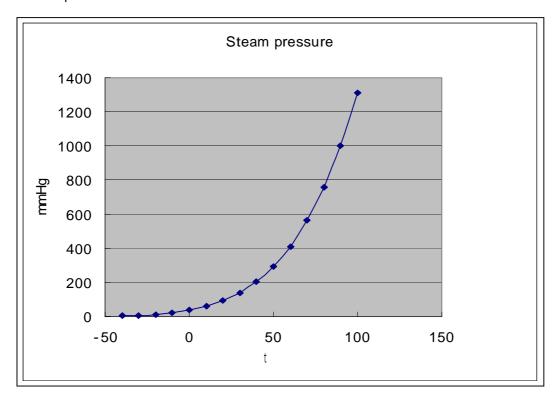
The cautions on abandonment

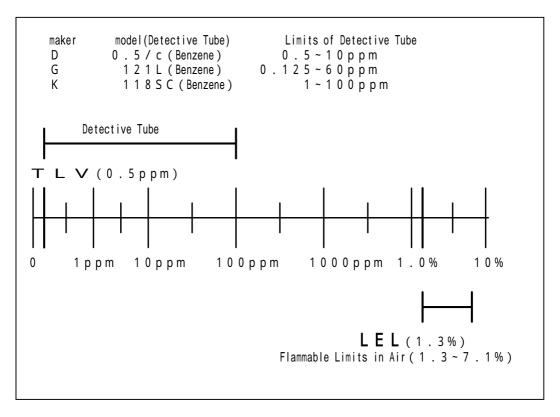
The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Benzene					
Common synonyms	Benzol, Cyclohexatriene, Phenyl hydride					
UN Number	1114 C A S Number 71-43-2 IMDG CODE Class3.2/P3185					
IMO Pollution Category	С					
Formula	C6H6	Molecurar Weight	78.12	Flammable Limits in Air(%)	1.3 ~ 7.1	
Appearance	colorless			Solubility in Water	insoluble	
Specific Gravity	0.88	Vapor Specific Gravity	2.73	Boiling Point at 1 ATM()	80.1	
Freezing Point	5.53	Flash Point()	-11	Ignition Point()	498	
Steam Pressure	12.69Kpa/95.18	mmHg (25)				
Corrosion	human:no m	etal:no	Oxidation	no		
TLV,Toxicity by Ingestion		mTWA 2.5pp ng/kg(oral rat)	mSTEL A1	skin		
	Noxiousness: Irritating to skin, eyes and throat There is a central-nerves control action. A carcinogenic substance. Poisoning condition may appear behind time. There is danger of skin absorption. Carcinogenic [to people] is checked. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

The measure in case Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. of a fire The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body The measure at the A protection implement is worn in the case of work, it takes care that splash does not time of leak adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage Personal Protective Equipment Personal Protective Breathing appliance: Organic Gas respirators, Air line mask, Self-contained breathing Equipment and apparats. Detector Gloves: Solvent-proof nature protection glove, Rubber gloves. Eye: Goggles, Face shields, Eye protectors. Body Rubber boots Protective clothing Detector **Detective Tube** Flammable Gas Detector The measure at the Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away time of leak on the overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

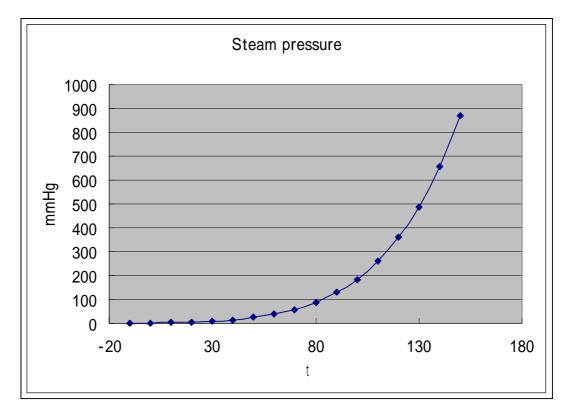


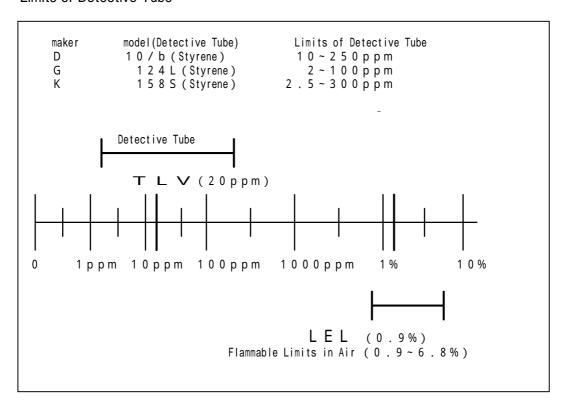


	Benzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Styrene					
Common synonyms	Styrol, Vinylben	Styrol, Vinylbenzene, Phenylethylene, Cinnamene,				
UN Number	2055	CAS Number	100-42-5	IMDG CODE	Class3.3/P3381	
IMO Pollution Category	В					
Formula	C6H5CH=CH2	Molecurar Weight	104.15	Flammable Limits in Air(%)	0.9 ~ 6.8	
Appearance	colorless			Solubility in Water	insoluble	
Specific Gravity	0.9	Vapor Specific Gravity	3.6	Boiling Point at 1 ATM()	145.2	
Freezing Point	-30.69	Flash Point()	32	Ignition Point()	490	
Steam Pressure	0.60Kpa/4.5mm	Hg (20)				
Corrosion	human:no me	etal∶no	Oxidation	no		
TLV,Toxicity by Ingestion Hazard and Noxiousness First Aid	Japan: 2 0 p p m ACGIH: 2 0 p p mTWA 4 0 p p m STEL A 4 LD50 5 0 0 0 mg / kg (oral rat) Classification: Flammable, Acute toxicity substance Noxiousness: There is lachrymal and irritating to skin, eyes and throat. An eye is made to produce intense an itch. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. Intense polymerization may be caused by heating or contamination by other substances. Heating etc. decomposes and poisonous oxidization styrene gas is produced. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force.					

	Styrene monomer - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed
	and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

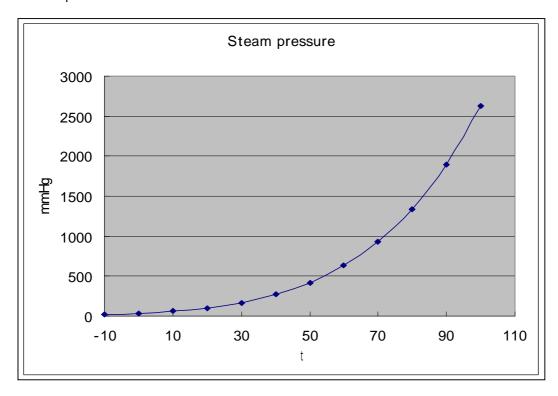


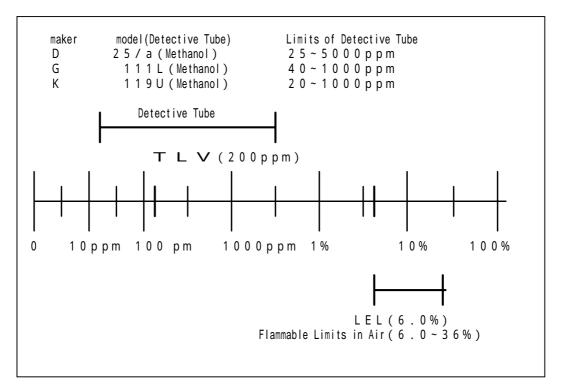


	Styrene monomer - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Methanol					
Common synonyms	Methyl alcohol,	Methyl alcohol, Carbinol, Wood spirit				
UN Number	1230	1230 CAS Number 67-56-1 IMDG CODE Class 3 . 2 / P3				
IMO Pollution Category	D					
Formula	СН₃ОН	Molecular Weight	32.04	Flammable Limits in Air (%)	6.0~36	
Appearance	colorless			Solubility in Water	easily soluble	
Specific Gravity	0.79	Vapor Specific Gravity	1.1	Boiling Point at 1 ATM ()	64.7	
Freezing Point	-93.9	Flash Point()	11	Ignition Point()	385	
Steam Pressure	100mmHg (2	0)	•			
Corrosion	human:no m	etal:no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: 200pp LD50 5628m	m ng/kg(oral rat)	ACGIH: 2 0 0 p p	o m T W A 2 5 0 p p	mSTEL skin	
Noxiousness	Flammable, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. It may become blind when poisoned. Poisoning condition may appear behind time. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air.					
First Aid						

	Methanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
or a me	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

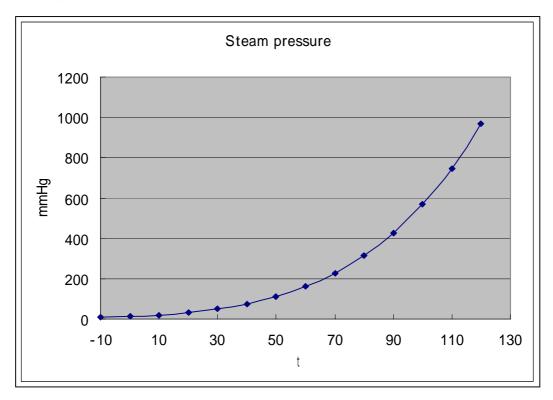
The cautions on abandonment

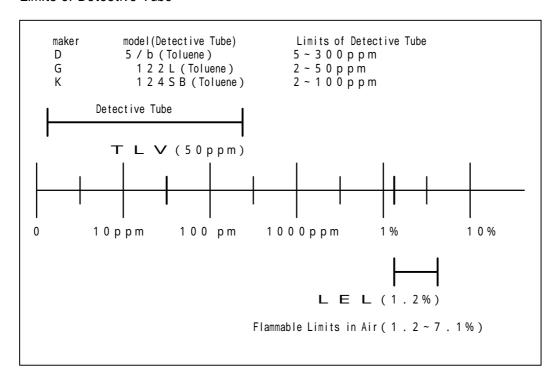
The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Toluene				
Common synonyms	Toluol, Methylbenzene, Phenylmethane, Methylbenzol, Methacide				
UN Number	1294	CAS Number	108-88-3	IMDG CODE	Class 3 . 2 / P3285
IMO Pollution Category	С				
Formula	C6H5CH3	Molecular Weight	92.14	Flammable limits in Air (%)	1 . 2 ~ 7 . 1
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.87	Vapor Specific Gravity	3.1	Boiling Point at 1 ATM ()	110.6
Freezing Point	-94.9	Flash Point()	4	Ignition Point()	480
Steam Pressure	24.3mmHg (20)			
Corrosion	human:no m	etal∶no	Oxidation	no	
TLV,Toxicity by Ingestion		ng/kg(oral rat)	ACGIH: 5 0 pp	pmTWA A4	skin
First Aid	Irritating to skin, eyes and throat. There is a central-nerves control action. Poisoning condition may appear behind time. There are worries about the cancer possibility to people. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low or middle. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes.				
	Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Toluene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



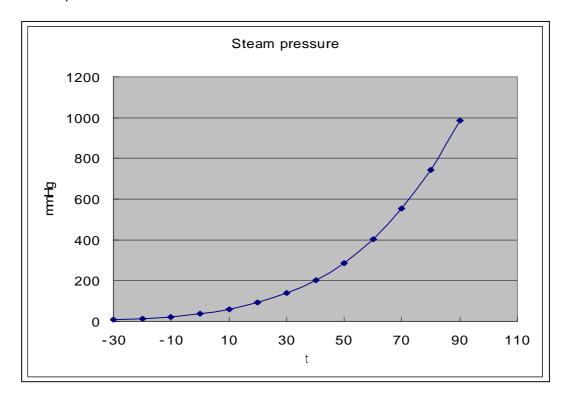


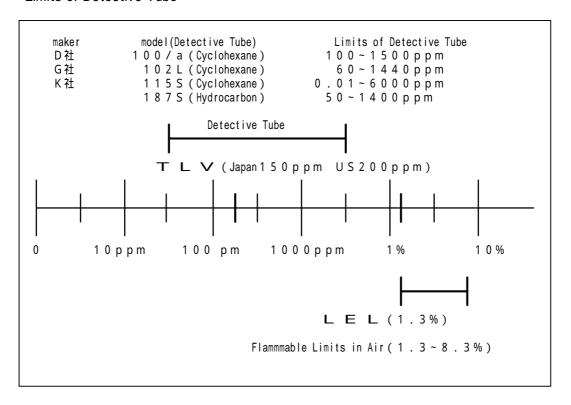
	I oluene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processe
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Cyclohexane	Cyclohexane			
Common synonyms	Hexamethylene, Hexahydrobenzene, Hexanaphthene				
UN Number	1145	CAS Number	110-82-7	IMDG CODE	Class 3 . 1 / P3114
IMO Pollution Category	С				
Formula	C6H12	Molecular Weight	84.18	Flammable limits in Air (%)	1.3~8.3
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.77	Vapor Specific Gravity	2.9	Boiling Point at 1 ATM ()	80.74
Freezing Point ()	6.47	Flash Point()	-18	Ignition Point()	245
Steam Pressure	16.2kpa/1	21.6mmHg (30)		
Corrosion	human:no m	etal:no	Oxidation		
TLV,Toxicity by Ingestion Hazard and Noxiousness First Aid	human: no metal: no Oxidation Japan: 150ppm ACGIH: 200ppmTWA 400ppmSTEL LD50 2982mg / kg (oral rat) Classification: Flammable, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. The accumulation nature to an aquatic life living thing is middle. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Cyclohexane - 3

	Cyclohexane - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea
	When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

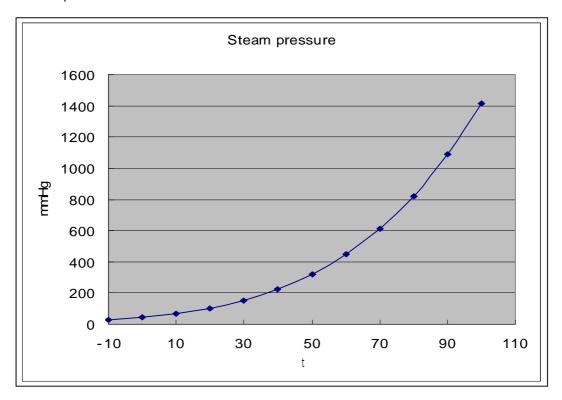


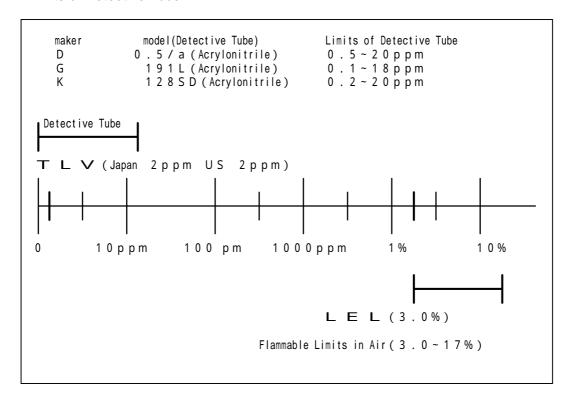


	Cyclonexane - 4
The cautions on handling, and transportation / storage	Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Acrylonitrile				
Common synonyms	Propenenitrile, Vinyl cyanide, Cyanoethylene, Acrylon				
UN Number	1093	CAS Number	107-13-1	IMDG CODE	Class 3 . 2 / P3173
IMO Pollution Category	В				
Formula	CH2=CHCN	Molecurar Weight	53.06	Flammable Limits in Air (%)	3.0 ~ 17 . 0
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	0.8	Vapor Specific Gravity	1.8	Boiling Point at 1 ATM(77.3
Freezing Point	-83.55	Flash Point()	-6	Ignition Point()	480
Steam Pressure	18.3kpa/13	37mmHg (30)			
Corrosion	human∶no me	tal∶no	Oxidation		
TLV,Toxicity by Ingestion	Japan:2ppm LD50 82mg/		ACGIH: 2 p p m ⁻	TWA skin A	3
Noxiousness	Flammable, Acute toxicity substance Noxiousness: There is lachrymal and irritating to skin, eyes and throat. Poisoning condition may appear behind time. There are worries about the cancer possibility to people. There is danger of skin absorption. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. Intense polymerization may be caused by heating or contamination by other substances. Heating etc. decomposes and poisonous hydrogen cyanide gas etc. is produced. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acrylonitrile - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

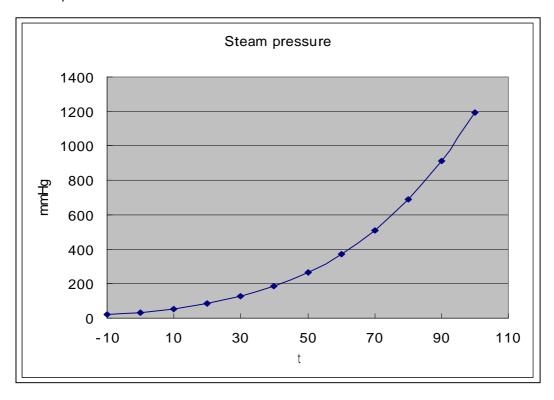


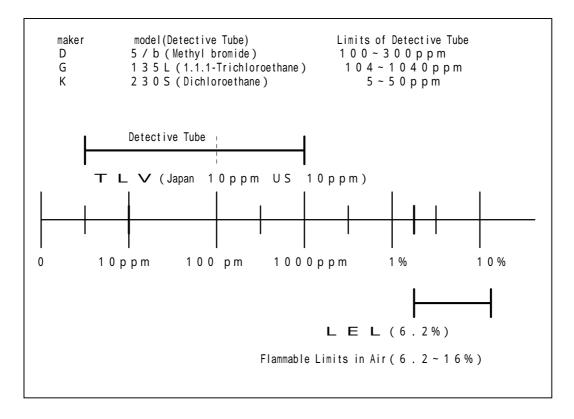


The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Dichloroethane				
Common synonyms	Ethylene dichloride, Glycol dichloride, EDC				
UN Number	1184	CAS Number	107-06-2	IMDG CODE	Class 3 . 2 / P 3 2 2 4
IMO Pollution Category	В				
Formula	C 2 H 4 C l 2	Molecurar Weight	98.96	Flammable Limits in Air (%)	6.2~16.0
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	1.26	Vapor Specific Gravity	3.4	Boiling Point at 1 ATM ()	83.5
Freezing Point ()	-35.3	Flash Point()	13	Ignition Point()	440
Steam Pressure	8.13kpa/6	1 mmHg (20)			
Corrosion	human∶no m	etal∶no	Oxidation	no	
TLV,Toxicity by Ingestion			ACGIH:10ppr	mTWA A4	
First Aid	Noxiousness: Irritating to skir Poisoning cond There are worr Environmental There is biodeg Danger: It mixes with ai Heating and con A plastic is cor If inhaled Move victim to Keep victim wan It respires artifinhas stopped, and When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with story When it goes int Immediately hold If swallowed Don't make the When vomiting t	Classification: Flammable, Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. There are worries about the cancer possibility to people. Environmental influence: There is biodegradation nature. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. Heating and combustion decompose and poisonous phosgen is produced. A plastic is corroded. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes.			

	Ethylene dichloride - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



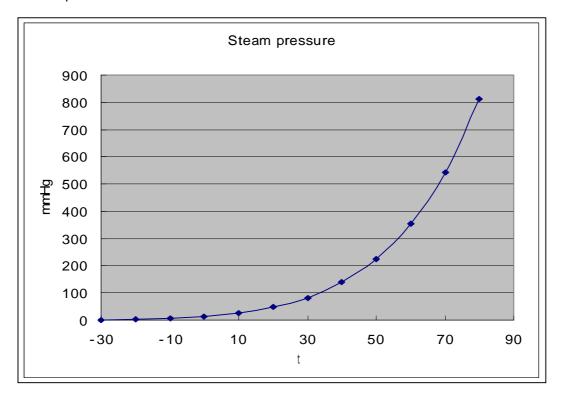


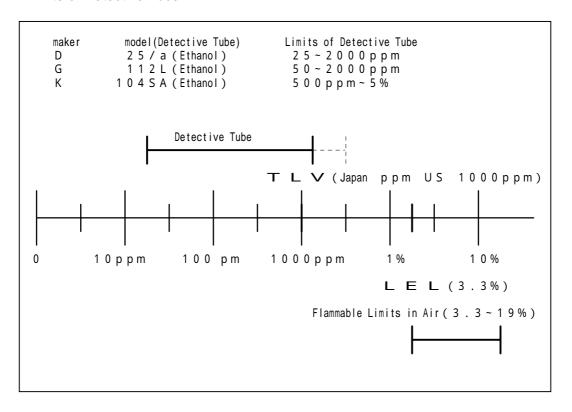
Ethylene dichloride - 4

	Ethylene dichloride - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
The cautions on abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Ethanol				
Common synonyms	Ethyl alcohol, Alcohol denatured, Alcohol industrial				
UN Number	1170 CAS Number 64-17-5 IMDG CODE Class 3 . 2 / P 3 2 1				Class 3 . 2 / P 3 2 1 9
IMO Pollution Category					
Formula	C 2 H 5 O H	Molecurar Weight	46.07	Flammable Limits in Air (%)	3 . 3 ~ 1 9 . 0
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	0.79	Vapor Specific Gravity	1.6	Boiling Point at 1 ATM ()	78.3
Freezing Point	-114.2	Flash Point ()	13	Ignition Point()	363
Steam Pressure	5.87kpa/4	4 mmHg (20)			
Corrosion	human:no m	etal:no	Oxidation	no	
TLV,Toxicity by Ingestion Hazard and Noxiousness	nd Classification:				
	Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. There are worries about the cancer possibility to people. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Ethanol - 2
The measure in case	
of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method
	In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray.
	Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
	apparatio(0027)
The measure at the	Notes to a human body
time of leak	A protection implement is worn in the case of work, it takes care that splash does not
time of leak	adhere to the skin or does not inhale gas, and is made to work from the windward.
	A lee man is evacuated.
	Notes to environment
	Eliminate all ignition sources.
	Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger
	of a fire and explosion.
	A model of a model in
	A method of removing When little, it collects in dryness sand and the container which the quality of another
	ground and inactive absorber is made to absorb, and can be sealed.
	It collects, after enclosing with landfill, preventing an outflow and leading to a safe place,
	when extensive. Prevent entry into waterways or sewers.
	When it flows out at sea, a lee vessel is kept away from the circumference of the leakage
	spot.
Personal Protective	Personal Protective Equipment
Equipment and	Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats.
Detector	Gloves: Solvent-proof nature protection glove, Rubber gloves.
	Eye: Goggles,Face shields,Eye protectors.
	Body:Rubber boots,Protective clothing
	Detector
	Detective Tube
	Flammable Gas Detector
The measure at the	Leak on board
time of leak on the	As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water.
sea	In a lot of outflow, if possible, a bow is turned on the lee.
	When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

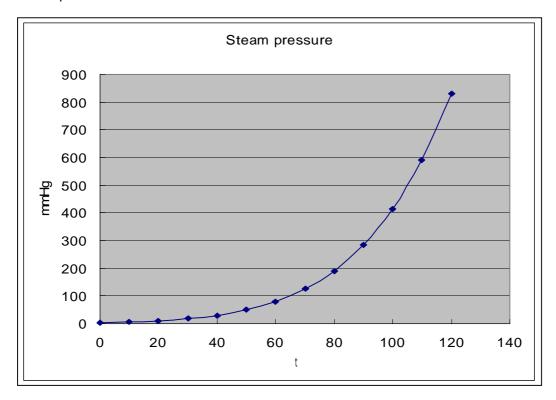
The cautions on abandonment

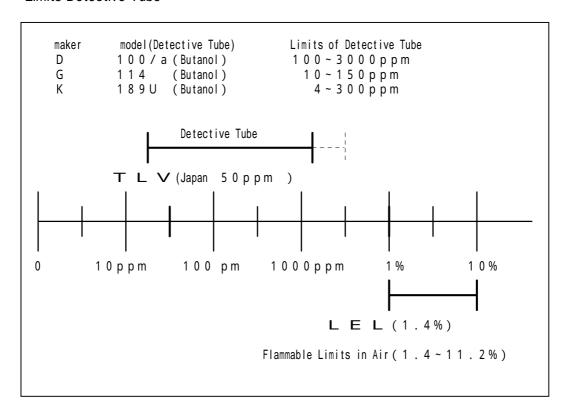
The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material name	Butanol				
Common synonyms	Butyl alcohol, Propyl carbinol				
UN Number	1120 CAS Number 71-36-3 IMDG CODE Class 3 . 3 / P 3 3 1 3				Class 3 . 3 / P 3 3 1 3
IMO Pollution Category					
Formula	С4Н9ОН	Molecurar Weight	74.12	Flammable Limits in Air (%)	1 . 4 ~ 1 1 . 2
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	0.81	Vapor Specific Gravity	2.6	Boiling Point at 1 ATM ()	117.3
Freezing Point	-89.5	Flash Point()	29	Ignition Point()	343
Steam Pressure	0.73 k p a / 5.5m	mHg (20)			
Corrosion	human:no me	etal∶no	Oxidation	no	
TLV,Toxicity by Ingestion			ACGIH: 2 5 p p	mTLV-C skin	
First Aid	Noxiousness: Irritating to skir Poisoning cond Environmental There is biodeg The accumulati Danger: It is inflammabil Vapor is heavie A plastic and ru If inhaled Move victim to Keep victim war It respires artifichas stopped, and When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with s When it goes inflamediately hold If swallowed Don't make the When vomiting t	Classification: Flammable, Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Inflammability is high. A plastic and rubber are corroded. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes.			

	Butanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

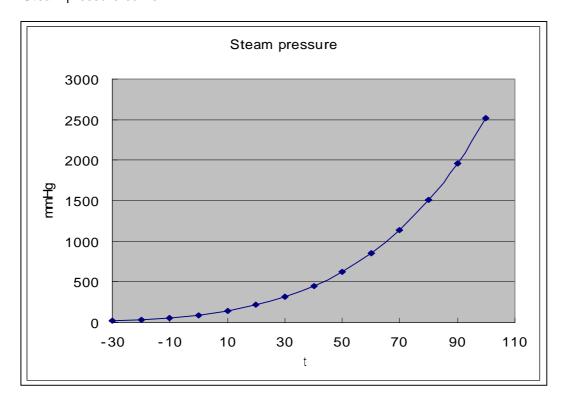


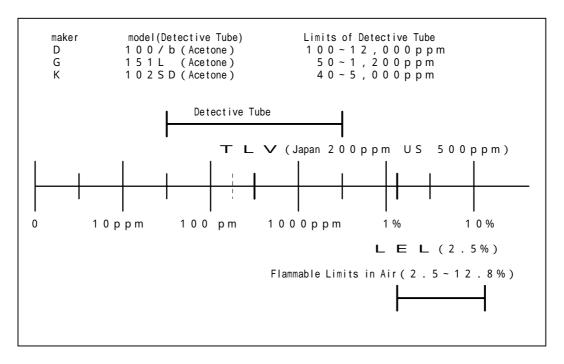


	Butanoi - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the
	desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Acetone				
Common synonyms	2-Propanone, Dimethyl ketone				
UN Number	1090 CAS Number 6 7 - 6 4 - 1 IMDG CODE Class 3 . 1 / P				Class 3 . 1/P 3 1 0 2
IMO Pollution Category	С				
Formula	СНЗСОСНЗ	Molecurar Weight	58.08	Flammable Limits in Air (%)	2.5 ~ 12.8
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	0.79	Vapor Specific Gravity	2	Boiling Point at 1 ATM ()	56.3
Freezing Point	-94.8	Flash Point()	-20	Ignition Point()	558
Steam Pressure	24.2 k p a / 181.7	7mmHg (20)			
Corrosion	human:no me	etal∶no	Oxidation	no	
TLV,Toxicity by Ingestion		m g/kg(oral rat)	ACGIH: 5 0 0 p	p m T W A 7 5	0 p p m S T E L A4
	Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. There are worries about the cancer possibility to people. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. A plastic is corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acetone - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



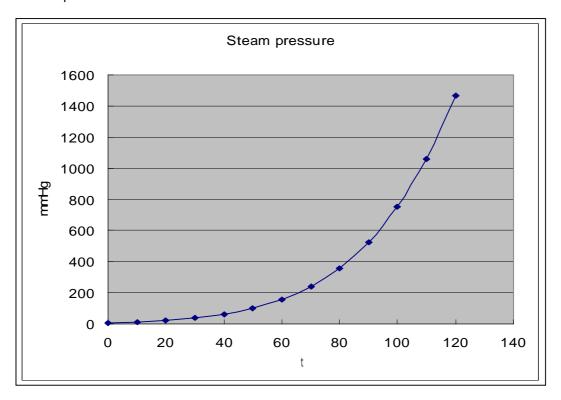


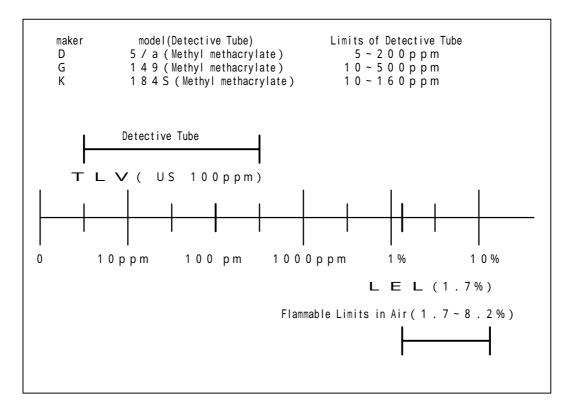
	Acetone - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.lt confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Methyl methacrylate				
Common synonyms	M M A, Methacrylic acid methyl ester				
UN Number	1247 CAS Number 80-62-6 IMDG CODE Class 3 . 2 / P325				Class 3 . 2 / P3259
IMO Pollution Category	D				
Formula	CH2=C(CH3)COOCH3	Molecurar Weight	100.1	Flammable Limits in Air (%)	1 . 7 ~ 8 . 2
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.94	Vapor Specific Gravity	3.5	Boiling Point at 1 ATM ()	100.3
Freezing Point	-48.2	Flash Point()	10	Ignition Point()	421
Steam Pressure	4.13 k p a / 31mmHg	(20)			
Corrosion	human:no metal:	no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D 50 8000 m g /		3IH: 100ppr	m T W A A 4	
Noxiousness	Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. There are worries about the cancer possibility to people. Sensitization is in the skin. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. Intense polymerization may be caused by heating or contamination by other substances.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Methyl methacrylate - 2

Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray.
In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
Detector Detective Tube Flammable Gas Detector
Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

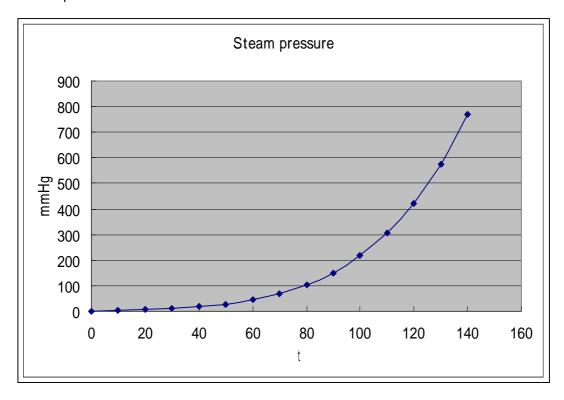


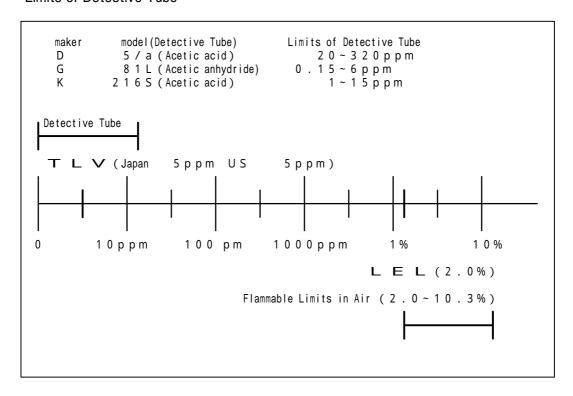


	Methyl methacrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. Confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the tim
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Acetic anhydride				
Common	Acetic oxide, Ethanoic anhydride, Acetyl oxide				
synonyms UN Number				Class 8 / P 8 1 0 1	
IMO Pollution Category	D				
Formula	(CH3CO)2O	Molecurar Weight	102.1	Flammable Limits in Air (%)	2.0~10.3
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	1.08	Vapor Specific Gravity	3.5	Boiling Point at 1 ATM ()	139.5
Freezing Point	-73	Flash Point()	49	Ignition Point()	316
Steam Pressure	0.5 k p a / 10mm	Hg (20)			
Corrosion	human:no me	etal:yes	Oxidation	no	
TLV,Toxicity by Ingestion		ng/kg(oral rat)	ACGIH: 5 ppm	TWA	
Noxiousness	Corrosion substance, Flammable liquids Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. It is weak acidity and much metal is invaded. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acetic anhydride - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

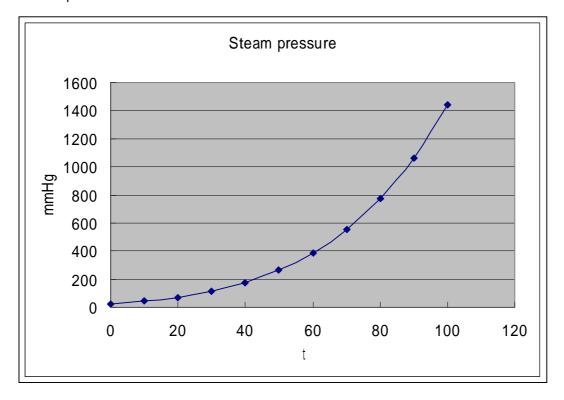


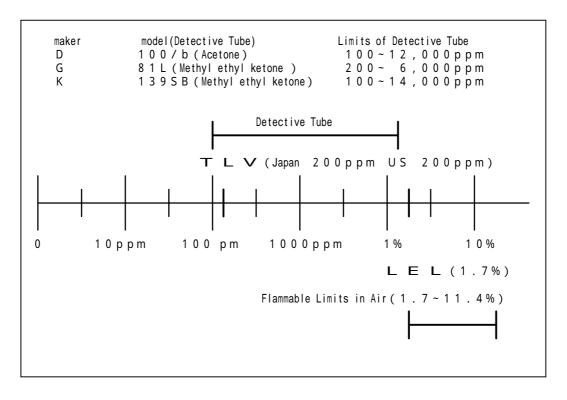


	Acetic anhydride - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

	Methyl ethyl ke	Methyl ethyl ketone			
Common synonyms	M E K, Ethyl methyl ketone, Methyl acetone				
UN Number	1193 CAS Number 7 8 - 9 3 - 3 IMDG CODE Class 3 . 2 /			Class 3 . 2 / P 3 2 2 6	
IMO Pollution Category	D				
Formula	CH3COC2H5	Molecurar Weight	72.11	Flammable limits in Air (%)	1.7~11.4
Appearance	light yellow			Solubility in Water	easily soluble
Specific Gravity	0.8	Vapor Specific Gravity	2.5	Boiling Point at 1 ATM ()	79.5
Freezing Point ()	-87	Flash Point()	-9	Ignition Point()	404
Steam Pressure	9.5 k p a / 71.2m	mHg (20)			
Corrosion	human∶no me	tal:no	Oxidation	no	
TLV,Toxicity by Ingestion		m ng/kg(oral rat)	ACGIH: 2 0 0 p	p m T W A 3 0	0 p p m S T E L
	Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. A plastic is corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Methyl ethyl ketone - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. After checking that generating of gas has been lost, it collects in a recovery net etc.

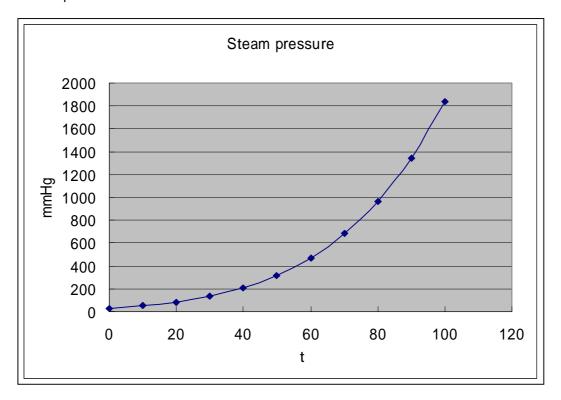


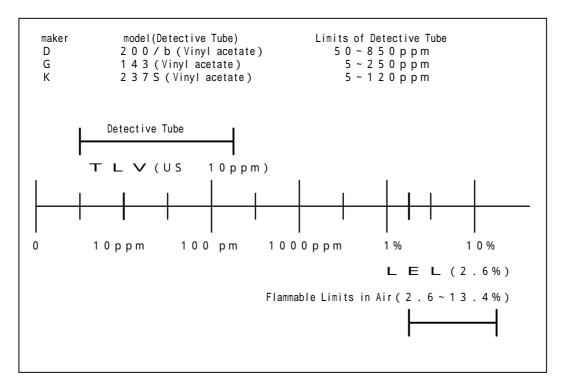


	Methyl ethyl ketone - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Vinyl acetate				
Common synonyms	1-Acetoxyethylene, Ethenyl acetate, Vinyl acetate monomer				
UN Number	1301	CAS Number	108-05-4	IMDG CODE	Class 3 . 2/P 3 2 8 9
IMO Pollution Category	С				
Formula	CH3COOCH=CH2	Molecurar Weight	86.09	Flammable limits in Air (%)	2 . 6 ~ 1 3 . 4
Appearance	colorless			Solubility in Water	easily soluble
Specific Gravity	0.93	Vapor Specific Gravity	3	Boiling Point at 1 ATM ()	73.1
Freezing Point	-93	Flash Point()	-8	Ignition Point()	402
Steam Pressure	11 k p a / 83mmHg	(20)			
Corrosion	human∶no me	tal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 1 0 p p m ⁻ L D 50 2 9 2 0 m g	TWA 15ppmS /kg(oral rat)	TEL A3		
First Aid	Environmental inf There is biodegra It is detrimental to Danger: It mixes with air, Inflammability is holden and to the Intense polymeriz If inhaled Move victim to free Keep victim warm It respires artificial has stopped, and to when breathing is oxygen inhalation In case of contact Remove and isolated Immediately flush Wash skin with soon when it goes into Immediately hold of the Intense Inte	eyes and throat. on may appear behind fluence: dation nature. o an aquatic life living vapor becomes explosingh. ation may be caused be explosed to the explosion to	thing. ive gas, and value by heating or continuous or conscious or an angand shoes. In for at least 1 with plenty of well with water	por is heavier than air. ontamination by other su ring a respiratory tract, v when breathing, although 5 minutes. water for at least 15 min r, and don't make it vomit hade to incline so that th	when breathing h it is unconscious, nutes. t by force.

	Vinyl acetate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea
	When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. After checking that generating of gas has been lost, it collects in a recovery net etc.

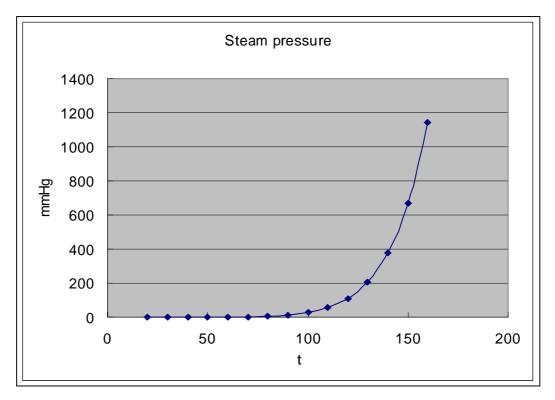


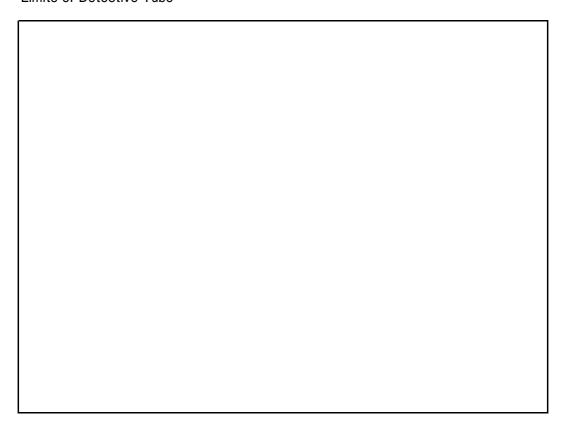


	Vinyl acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Propylbenzene				
Common synonyms	Cumene, Cumol, 2-Phenyl propane				
UN Number	1918	CAS Number	98-82-8	IMDG CODE	Class3.3/P3357
IMO Pollution Category	A				
Formula	C9H12	Molecurar Weight	120.19	Flammable limits in Air (%)	0.9 ~ 6.5
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.862	Vapor Specific Gravity	4.1	Boiling Point at 1 ATM ()	152.39
Freezing Point	-96	Flash Point()	36	Ignition Point()	424
Steam Pressure	3.2pa/0.02mmH	lg (20)			
Corrosion	human:no m	etal:no	Oxidation	no	
TLV,Toxicity by Ingestion		mTWA ng/kg(oral rat)			
	Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.			produce	
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Propylbenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

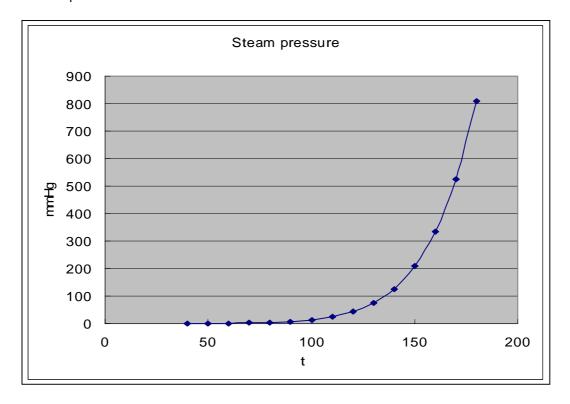


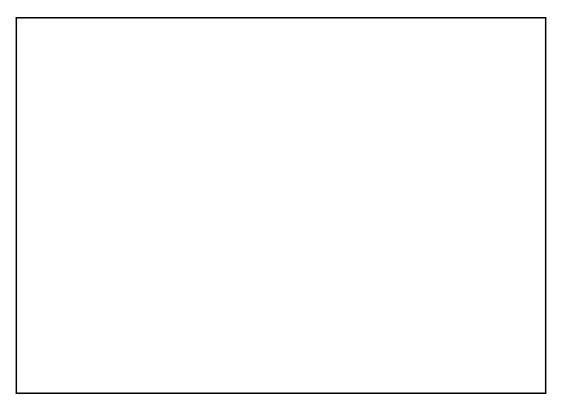


	Propylbenzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling
	A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Octanol				
Common synonyms	Octyl alcohol, Alcohol C9, Heptyl carbinol				
UN Number	3082	CAS Number	111-87-5	IMDG CODE	Class 9 / P 9 0 2 8
IMO Pollution Category	С				
Formula	CH3(CH2)7OH	Molecurar Weight	130.23	Flammable limits in Air (%)	
Appearance	colorless			Solubility in Water	insoluble
Specific Gravity	0.82	Vapor Specific Gravity	4.5	Boiling Point at 1 ATM ()	178.5
Freezing Point	-38.6	Flash Point()	60	Ignition Point()	
Steam Pressure	0.2mmHg(20)			
Corrosion	human:no metal:no Oxidation no				
TLV,Toxicity by Ingestion					
Noxiousness	Noxiousness: Stimulative of skin, eyes and throat is weak. High concentration vapor has an anesthesia action. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Octanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.





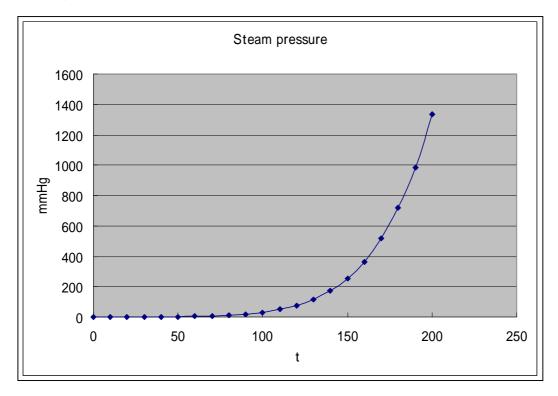
	Octanol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

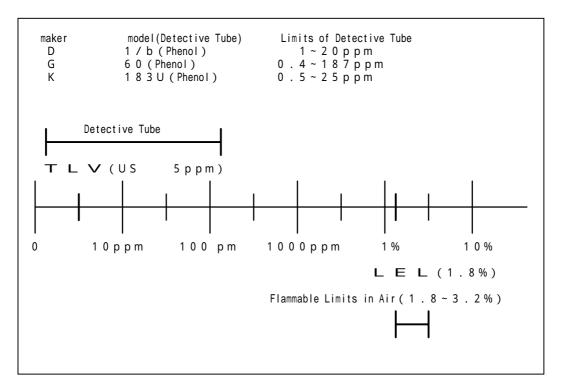
The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

The cautions on abandonment

Material Name	Phenol				
Common synonyms	Carbolic acid, Hydroxybenzene, Monohydroxybenzene,				
UN Number	2821 CAS Number 108-95-2 IMDG CODE Class6.1 / P62				Class6.1 / P6225
IMO Pollution Category	С				
Formula	С6Н5ОН	Molecurar Weight	94.11	Flammable limits in Air (%)	1 . 8 ~ 3 . 2
Appearance	light pink			Sollubility in Water	easily soluble
Specific Gravity	1.049	Vapor Specific Gravity	3.3	Boiling Point at 1 ATM ()	181.75
Freezing Point ()	40.9	Flash Point()	79	Ignition Point()	715
Steam Pressure	0.05 k P a / 0.35	mmHg (25)			
Corrosion	human:yes me	etal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 5 p p m ⁻ L D 50 414 m g <i>2</i>		A 4		
Noxiousness	Acute toxicity substance Noxiousness: There is corrosive strong to a living body. Poisoning condition may appear behind time. There is danger of skin absorption. There are worries about the cancer possibility to people. Environmental influence: Speed is slow although there is biodegradation nature. Accumulation nature is in a living thing. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air It is weak acidity				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Phenol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

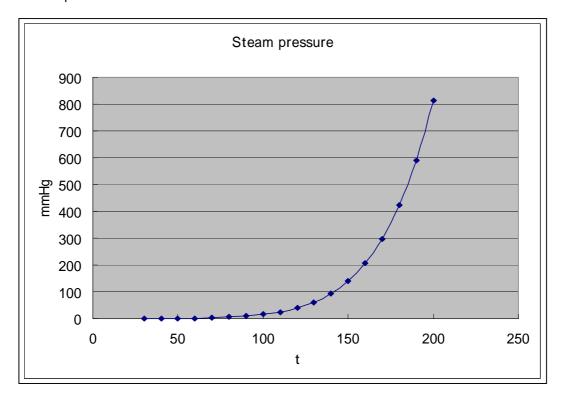
The cautions on abandonment

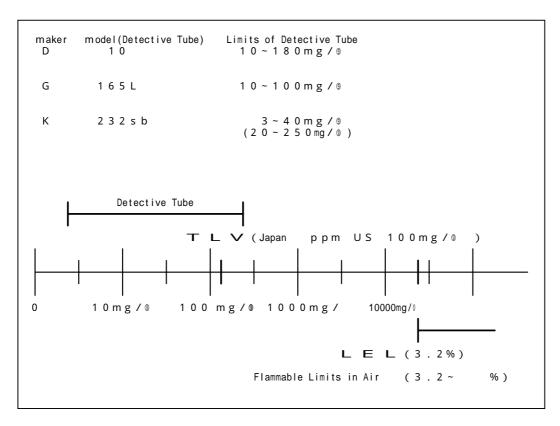
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethyleneglycol				
Common synonyms	Ethylene alcohol, Glycol alcohol, 1,2-Ethanediol				
UN Number		CAS Number 107-21-1 IMDG CODE			
IMO Pollution Category	D				
Formula	НОСН2СН2ОН	Molecurar Weight	62.07	Flammable limits in Air (%)	3 . 2 ~
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.11	Vapor Specific Gravity	2.1	Boiling Point at 1 ATM ()	197.85
Freezing Point	-12.6	Flash Point()	111.1	Ignition Point()	398
Steam Pressure	1 m m H g (53)			
Corrosion	human:no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion		/m3TLV - C /	A 4		
Noxiousness	Noxiousness: Irritating to skin, eyes and throat. In normal temperature, there are few cases which are hard to evaporate and are exposed to steam. There are worries about the cancer possibility to people. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethylene glycol - 2

	Ethylene glycol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



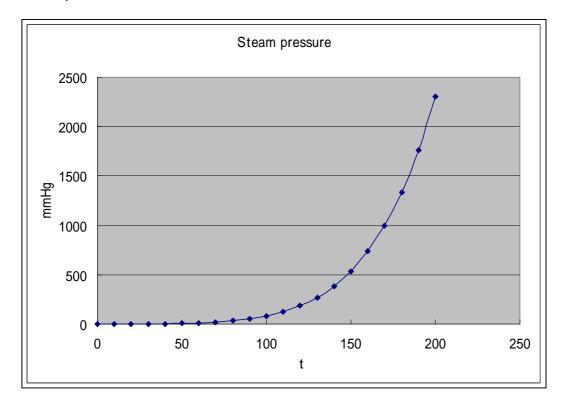


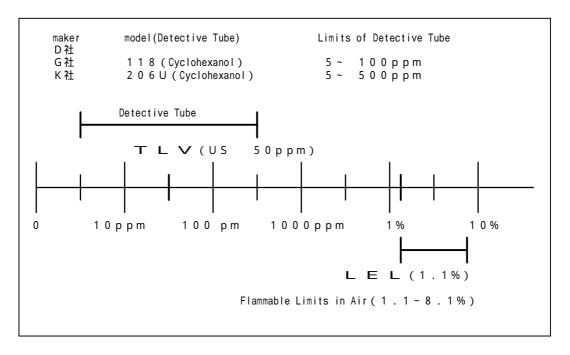
	Etnylene glycol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
The cautions on abandonment	A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Cyclohexanol				
Common					
synonyms	Cyclohexyl alcohol, Hexahydrophenol, Hydroxycyclohexane				
UN Number		CAS Number	108-93-0	IMDG CODE	
IMO Pollution Category	D				
Formula	C6H11OH	Molecurar Weight	100.16	Flammable limits in Air (%)	1 . 1 ~ 8 . 1
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.96	Vapor Specific Gravity	3.5	Boiling Point at 1 ATM ()	161.1
Freezing Point	25.15	Flash Point()	68	Ignition Point()	300
Steam Pressure	10mmHg (56)			
Corrosion	human∶no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 5 0 p p n L D 50 2 0 6 0 m	nTWA skin ng/kg(oral rat)			
Noxiousness	Flammable liquids, Acute toxicity substance Noxiousness: In normal temperature, it is hard to reach detrimental concentration. Irritating to skin, eyes and throat. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. A plastic is corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Cyclohexanol - 2

	Cyclohexanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.



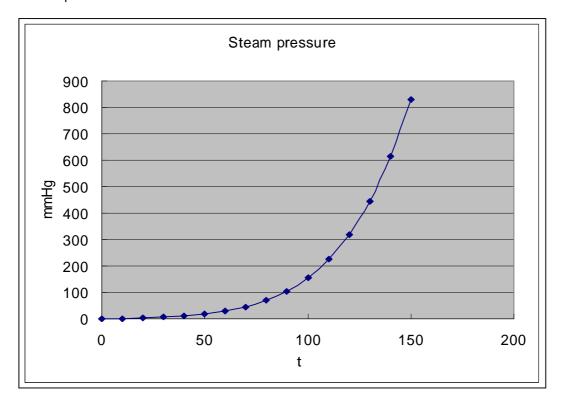


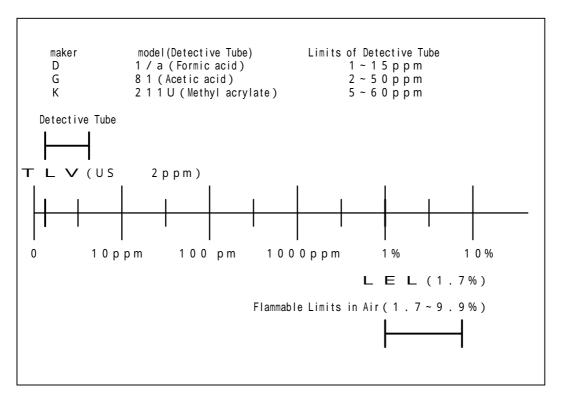
	Cyclonexanol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank
	it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Butyl acrylate				
Common synonyms	Acrylic acid butyl ester, Butyl-2-propenoate				
UN Number	2348 CAS Number 141-32-2 IMDG CODE Class 3 . 3 / P 3 3				Class 3 . 3 / P 3 3 1 5
IMO Pollution Category	В				
Formula	CH2=CHCOOC4C5	Molecurar Weight	128.17	Flammable limits in Air (%)	1.7~9.9
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.89	Vapor Specific Gravity	4.4	Boiling Point at 1 ATM ()	147
Freezing Point	-64.4	Flash Point()	48.9	Ignition Point()	292
Steam Pressure	0.44kPa/3.2mmHo	j (20)			
Corrosion	human:no meta	al:no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:2ppmTW LD50 3730mg/			1	
Noxiousness	Flammable liquids Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Sensitization is in the skin. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Intense polymerization may be caused by heating or contamination by other substances.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Butyl acrylate - 2

	Butyl acrylate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

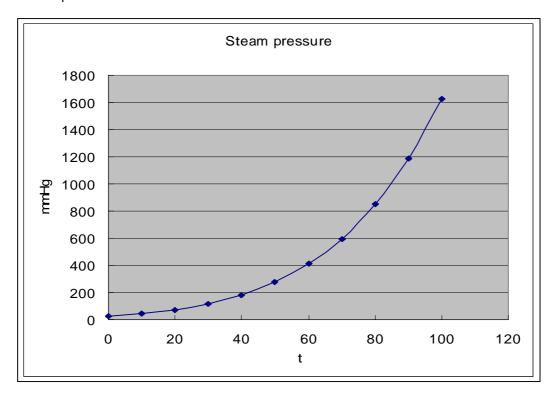


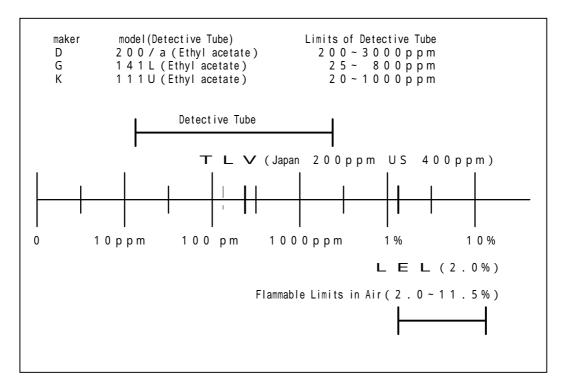


	Butyl acrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that
	The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

	Ethyl acetate				
Common synonyms	Acetic ether, Ethyl ethanoate, Acetic ethyl ether				
UN Number	1173	CAS Number	141-78-6	IMDG CODE	Class 3 . 2 / P 3 2 2 0
IMO Pollution Category	D				
Formula	CH3COOC2H5	Molecurar Weight	88.11	Flammable limits in Air (%)	2.0~11.5
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9	Vapor Specific Gravity	3.1	Boiling Point at 1 ATM ()	76.82
Freezing Point	-83.6	Flash Point()	-4	Ignition Point()	426
Steam Pressure	13.3kPa/100mm	nHg (27)			
Corrosion	human:no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:200ppm L D50 11000m	g / k g (oral rat)	ACGIH: 400	p p m T W A	
Noxiousness	Flammable liquids, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. A plastic and aluminium are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Ethyl acetate - 2
The measure in case	
of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method
	In case of small fire, use dry chemical, CO2, water spray.
	In case of large fire, use alcohl- resistantfoam, water spray.
	Cool containers with flooding quantities of water.
	Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not
time of leak	adhere to the skin or does not inhale gas, and is made to work from the windward.
	A lee man is evacuated.
	Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk.
	While evacuating people from the circumference of the revealed place, it warns of the danger
	of a fire and explosion.
	A mosth and of removing
	A method of removing When little, it collects in dryness sand and the container which the quality of another
	ground and inactive absorber is made to absorb, and can be sealed.
	It collects, after enclosing with landfill, preventing an outflow and leading to a safe place,
	when extensive.
	Prevent entry into waterways or sewers.
	When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing
Equipment and	apparats.
Detector	Gloves: Solvent-proof nature protection glove, Rubber gloves.
	Eye: Goggles, Face shields, Eye protectors.
	Body:Rubber boots,Protective clothing
	Detector
	Detective Tube
	Flammable Gas Detector
The messure of the	Leak on board
The measure at the time of leak on the	As the source of ignition is managed and gas does not enter a closing zone, it washes away
sea	overboard with a lot of water.
Sea	In a lot of outflow, if possible, a bow is turned on the lee.
	When it cannot turn on the lee, gas is protected using a spray nozzle.
	It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	and tarpettering generating of gas, miles it cannot have any ordination
	Leak on the sea
	When there is no possibility that gas may affect the circumference, monitoring is performed
	and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam
	from the windward.
	Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies.
	After checking that generating of gas has been lost, it collects in a recovery net etc.

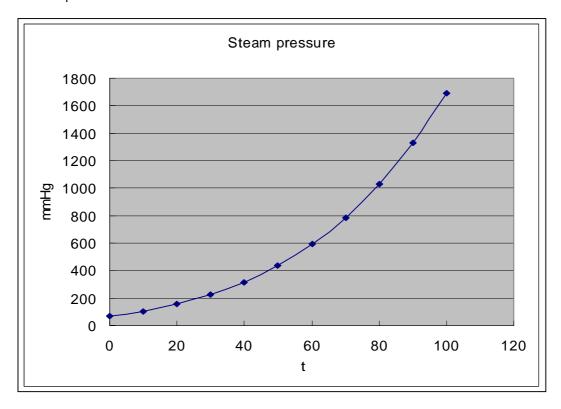


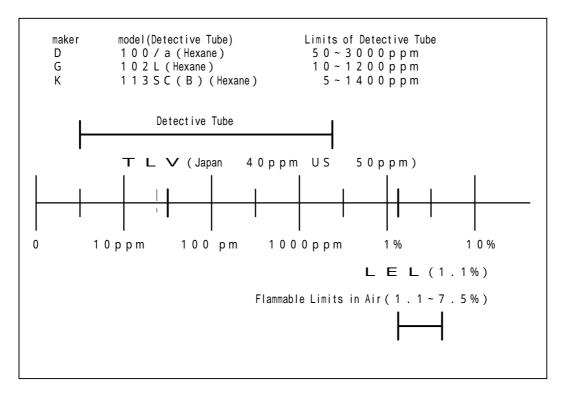


	Ethyl acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Hexane				
Common synonyms	Methylpentane				
UN Number	1208 CAS Number 110-54-3 IMDG CODE Class 3 . 1 / P 3 1 2 9				Class 3 . 1 / P 3 1 2 9
IMO Pollution Category	С				
Formula	CH3(CH2)4CH3	Molecurar weight	86.18	flammable limits in Air (%)	1 . 1 ~ 7 . 5
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.65	Vapor Specific Gravity	3	Boiling Point at 1 ATM ()	68.74
Freezing Point	-95.3	Flash Point()	-22	Ignition Point()	223
Steam Pressure	20.7kPa/155mm	nHg (20)			
Corrosion	human:no me	etal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: 4 0 ppm L D 50 28.7 m g	/kg(oral rat)	ACGIH: 5 0 p	pmTWA skin	
Noxiousness First Aid	Flammable liquids, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. A plastic and rubber are corroded.				
	Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Fire extinguisher The measure in case Dry chemical, alcohl-resistant foam, CO2, water spray. of a fire The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body The measure at the A protection implement is worn in the case of work, it takes care that splash does not time of leak adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage Personal Protective Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask, Self-contained breathing Equipment and apparats. Detector Gloves: Solvent-proof nature protection glove, Rubber gloves. Eye: Goggles, Face shields, Eye protectors. Body: Rubber boots, Protective clothing Detector **Detective Tube** Flammable Gas Detector Leak on board The measure at the As the source of ignition is managed and gas does not enter a closing zone, it washes away time of leak on the overboard with a lot of water. sea In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

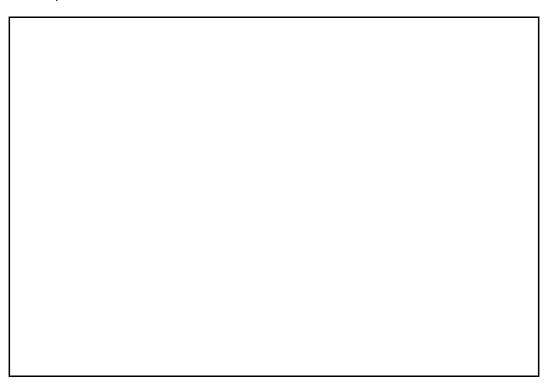


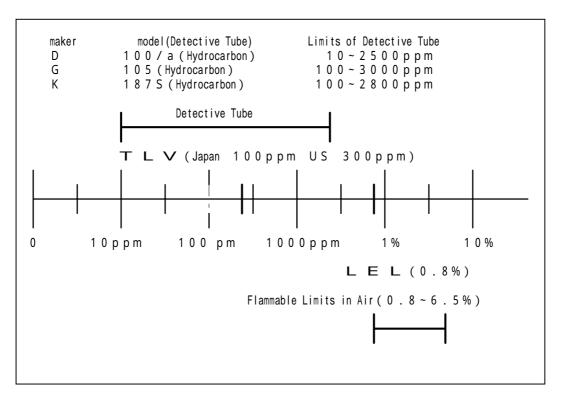


The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Octene				
Common	Octylene, Isooctene				
UN Number	1993	CAS Number	111-66-0	IMDG CODE	Class 3 . 2 / P 3 2 3 0
IMO Pollution Category	В				
Formula	C6H16	Molecurar Weight	112	Flammable limits in Air (%)	0.8 ~ 6.5
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.71	Vapor Specific Gravity	3.9	Boiling Point at 1 ATM ()	101.44
Freezing Point	-106.4	Flash Point()	-5	Ignition Point()	391
Steam Pressure					
Corrosion	human:no met	:al:no	Oxidation	no	
TLV,Toxicity by Ingestion					
Noxiousness First Aid	Environmental There is biodeg The accumulati Danger: It mixes with ai Inflammability is If inhaled Move victim to Keep victim wan It respires artifi has stopped, an When breathing oxygen inhalatic In case of contal Remove and isc	Noxiousness: The central nerves may be affected. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. Inflammability is high. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact			
	Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes.				
	If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Octene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector
	Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

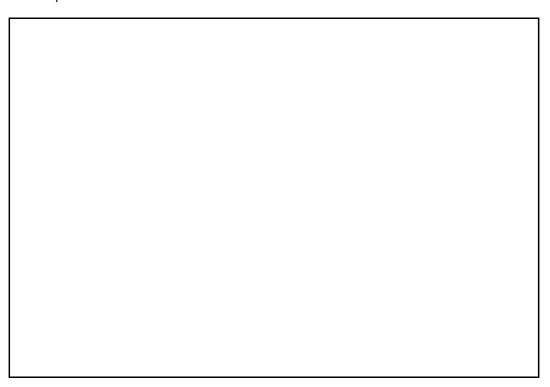


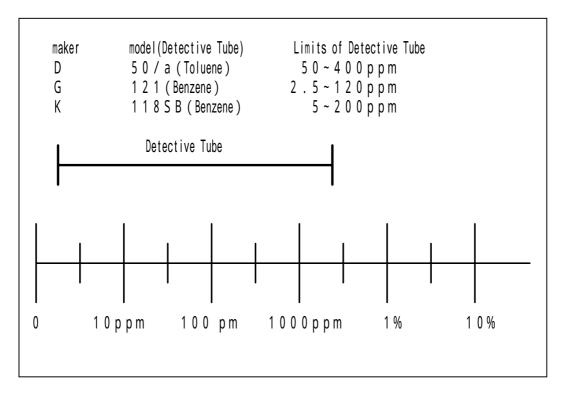


The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on abandonment The cautions on A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Alkyl benzene				
Common synonyms	Mesitylene, Do	Mesitylene, Dodecylbenzene			
UN Number	2325	CAS Number	108-67-8	IMDG CODE	Class3.3/P3389-1
IMO Pollution Category	A				
Formula	C9H12	Molecurar Weight	120.19	Flammable limits in Air (%)	0.9 ~ 6.1
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.86	Vapor Specific Gravity	4.2	Boiling Point at 1 ATM ()	164.72
Freezing Point ()	-44.7	Flash Point()	46	Ignition Point()	531
Steam Pressure					
Corrosion	human∶no me	etal∶no	Oxidation	no	
TLV,Toxicity by Ingestion Hazard and Noxiousness First Aid	Classification: Flammable liqu Noxiousness: Irritating to ski Poisoning cond Environmental There is bioded The accumulat Danger: It mixes with a If inhaled Move victim to Keep victim wa It respires artif has stopped, ar When breathing oxygen inhalatio In case of cont Remove and is Immediately flu Wash skin with When it goes in Immediately ho If swallowed	Classification: Flammable liquids Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It mixes with air, vapor becomes explosive gas, and vapor is heavier than air. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes.			it is unconscious, utes.

	Alkylbenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

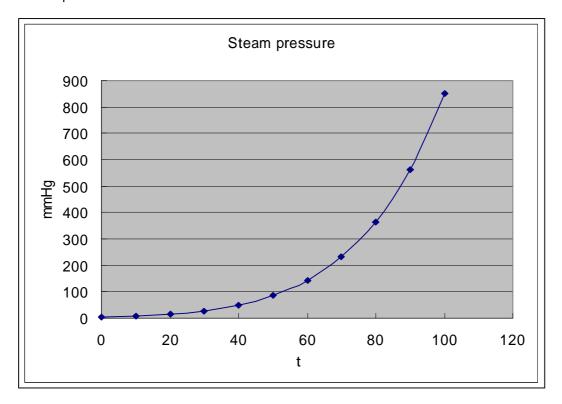


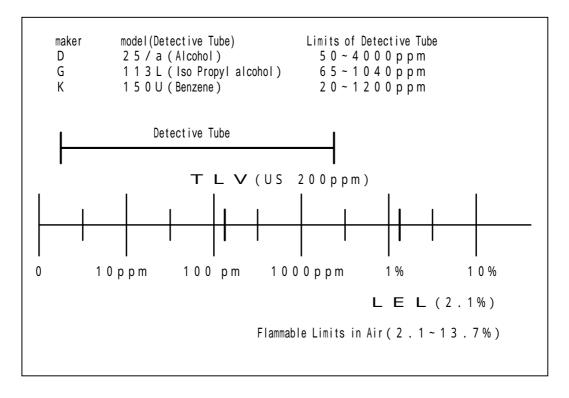


	Alkylbenzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

	Propanol	Propanol			
Common synonyms	Propyl alcohol				
UN Number	1274	CAS Number	71-23-8	IMDG CODE	Class3.2/P3272-1
IMO Pollution Category	С				
Formula	СЗН7ОН	Molecurar Weight	60.1	Flammable limits in Air (%)	2 . 1 ~ 1 3 . 7
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.8	Vapor Specific Gravity	2.1	Boiling Point at 1 ATM ()	97.2
Freezing Point	-126.5	Flash Point()	23	Ignition Point()	412
Steam Pressure	20mmHg(25)				
Corrosion	human:no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 200pp LD50 5400m	mTWA 250p g/kg(oral rat)	pmSTEL skiı	n	
Noxiousness First Aid	Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Inflammability is high. A plastic and rubber are corroded.				
i iiot Alu	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Propanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





Propanol - 4

The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on abandonment The cautions on A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Sodium hydroxide					
Common synonyms	Caustic soda, Sodium hydrate, Soda lye, White caustic					
UN Number	1824 CAS Number 1310-73-2 IMDG CODE Class8/P8226					
IMO Pollution Category	D					
Formula	NaOH	Molecurar Weight	40	Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	2.1	Vapor Specific Gravity		Boiling Point at 1 ATM ()	1390	
Freezing Point	318.4	Flash Point()		Ignition Point()		
Steam Pressure	1mmHg(767)				
Corrosion	human:yes me	etal:yes	Oxidation	no		
TLV,Toxicity by Ingestion		n3 kg(the abdominal	ACGIH: 2 m g / cavity mouse)	/ m3TLV-C		
Hazard and Noxiousness	Classification: Acute toxicity substance, Anesthetic substance Noxiousness: Irritating to skin, eyes and throat. There is corrosive strong to a living body. Poisoning condition may appear behind time. Environmental influence: It is detrimental to an aquatic life living thing. Danger: It is nonflammability. If moisture and water are contacted, sufficient heat for ignition of an inflammable substance will be generated. Strong alkalinity is shown. Zinc and aluminum are corroded and hydrogen gas is generated.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Sodium hydroxide - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method In case of a surrounding fire, use of all fire-extinguishing agents is possible. Cool containers with flooding quantities of water. Move containers from fire area if you can do it without risk. It is cautious of generating of the hydrogen gas by contact with zinc, aluminum, etc. in especially a closing place. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector pH examination paper. It is based on a flame reaction.
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

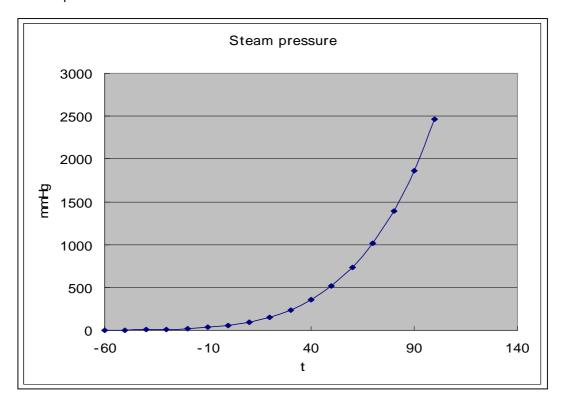
Sodium hydroxide - 3

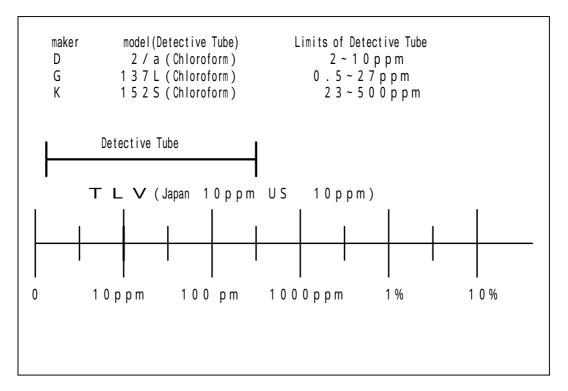
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	tiva Tuba		
Limits of Detect	live Tube		
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Limits of Detect	Tive Tube		

	Sodium nydroxide - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Chloroform					
Common synonyms	Trichloromethane, Formyl trichloride, Methenyl trichloride					
UN Number	1888 CAS Number 67-66-3 IMDG CODE Class6.1/P6103					
IMO Pollution Category	В					
Formula	CHCI3	Molecurar Weight	119.4	Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	1.5	Vapor Specific Gravity	4.1	Boiling Point at 1 ATM ()	61.2	
Freezing Point ()	-63.5	Flash Point()		Ignition Point()		
Steam Pressure	200mmHg (25.9)				
Corrosion	human:no met	al∶no	Oxidation	no		
TLV,Toxicity by Ingestion Hazard and Noxiousness	Poisoning cond There is a stror There is danger If it is not unus Environmental Speed is slow a It is bad to an a It is detrimenta Danger: It is nonflamma Heating and cor A plastic and ru If inhaled Move victim war Do not use mou When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with s When it goes int Immediately hole If swallowed Don't make the	well kg (oral rat) substance n, eyes and throat. ition may appear behind a granesthesia action. of skin absorption. ual exposure, there will influence: although there is biodegrauatic life living thing. I to an aquatic life living thing. I to an aquatic life living bility. Vapor is heavier mbustion decompose and beher are corroded. fresh air. Im and quiet. th-to-mouth method if is difficult, although it is difficult, although it is difficult, although it is difficult. In is effective. Inct late contaminated clottlesh skin with running was soap and water. It co an eye deyelids open and flustinside of a mouth washakes place automatical	be no danger of caradation nature. g thing. than air. nd poisonous phose victim ingested or is conscious or when ningand shoes. ter for at least 15 r h with plenty of war well with water, and	arcinogenic. gen is produced. inhaled the substance. nen breathing, although i	es. y force.	

	Chloroform - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method In case of a surrounding fire, use of all fire-extinguishing agents is possible. Cool containers with flooding quantities of water. Move containers from fire area if you can do it without risk. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Tube
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

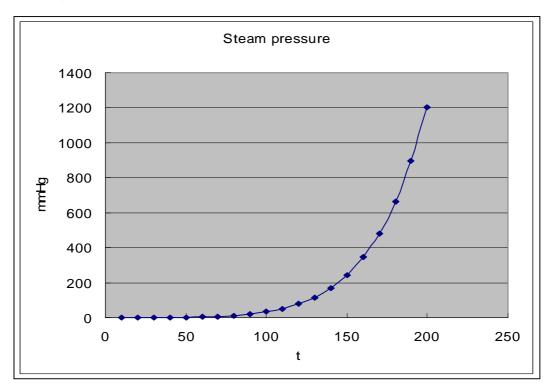


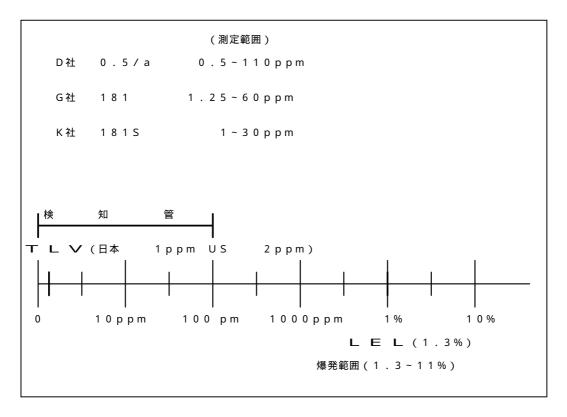


The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Aniline	Aniline				
Common synonyms	Aminobenzene, Phenylamine, Aniline oil, Benzenamine					
UN Number	1547 CAS Number 62-53-3 IMDG CODE Class6.1/P6068					
IMO Pollution Category	С					
Formula	C6H5NH2	Molecurar Weight	93.13	Flammable limits in Air (%)	1.3 ~ 11.0	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.02	Vaper Specific Gravity	3.2	Boiling Point()	184.5	
Freezing Point	-5.98	Flash Point()	70	Ignition Point()	615	
Steam Pressure	0.3mmHg(20					
Corrosion	human:no met	al∶no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: 1 p p m L D 50 2 5 0 mg		CGIH: 2 p p m T	W A skin	A 3	
Noxiousness	Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. There is danger of skin absorption. If it is not unusual exposure, there will be no danger of carcinogenic. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. It is very detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Weak alkalinity is shown.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Aniline - 2
The measure in case of a fire	
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

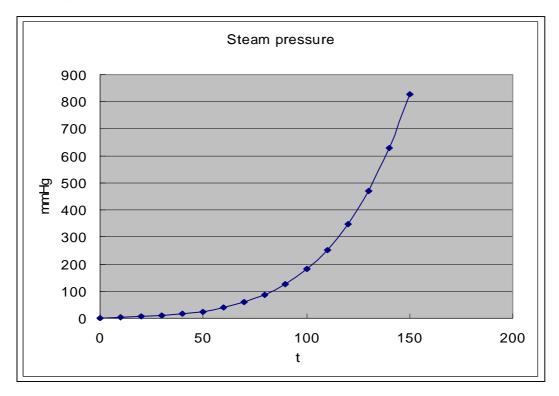


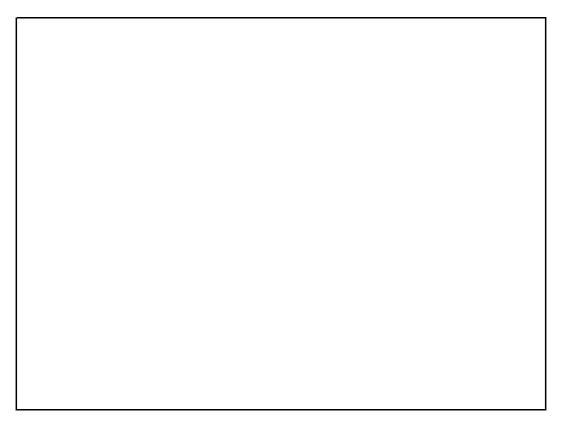


	Aniline - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Matarial Nara	I.,						
	Nonene	Nonene					
Common synonyms	Tripropylene, Propylene trimer, Nonylene						
UN Number	3295 CAS Number 124-11-8 IMDG CODE Class3.3/P3352						
IMO Pollution Category	В						
Formula	CH3(CH)6CH=	Molecurar Weight	126.23	Flammable limits in Air (%)	0.7~3.9		
Appearance	colorless			Sollubility in Water	insoluble		
Specific Gravity	0.74	Vapor Specific Gravity	4.4	Boiling Point()	146.9		
Freezing Point	-81	Flash Point()	25.6	Ignition Point ()			
Steam Pressure	5.34mmHg(20)					
Corrosion	human∶no met	al∶no	Oxidation	no			
TLV,Toxicity by Ingestion							
	Noxiousness: Irritating to skin, eyes and throat. The central nerves may be affected. Environmental influence: There is biodegradation nature. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.						
First Aid	Keep victim war It respires artific has stopped, and When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with s When it goes int Immediately hold If swallowed Don't make the When vomiting t	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes.					

	Nonene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

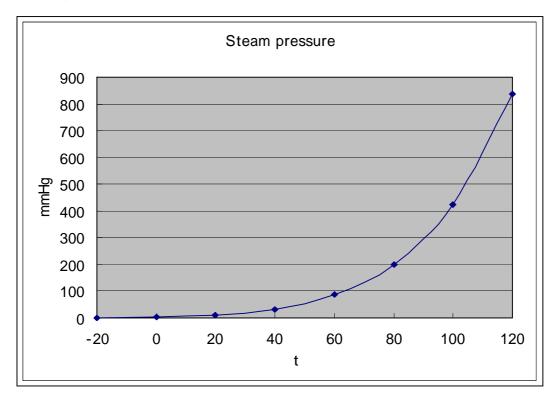
The cautions on abandonment

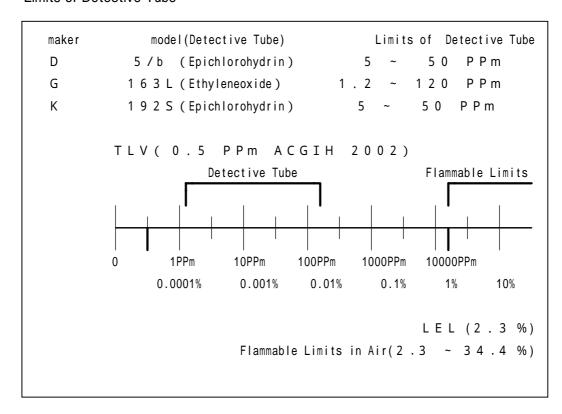
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Epichlorohydrin				
Common	<u> </u>				
synonyms	1-Chloro-2,3-epoxypropane, 3-Chloropropylene oxide epi				
UN Number	2023	CAS Number	106-89-8	IMDG CODE	Class6.1/P6143
IMO Pollution Category	A				
Formula	OCH2CHCH2CI	Molecurar Weight	92.5	Flammable limits in Air (%)	2.3 ~ 34.4
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.1801	Vapor Specific Gravity	3.2	Boiling Point()	115
Freezing Point	-48	Flash Point()	32	Ignition Point()	411
Steam Pressure	13mmHg(20)				
Corrosion	human:no meta	al : no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:0.5ppm7 LD50 90mg/kg(
First Aid	Noxiousness: Irritating to skin There is a centi Poisoming cond Carcinogenic is Environmental i There is biodegi The accumulatio Danger: It is inflammabili explosive gas. When it heats w Combustion gen If inhaled Move victim to f Keep victim warn Do not use mout When breathing oxygen inhalation In case of conta Remove and isol Immediately flus Wash skin with s When it goes into Immediately hold If swallowed Don't make the i	radation nature. radation nature to an aquati ty, and above the flas rith strong acid and a rerates poisonous gas resh air. m and quiet. th-to-mouth method i ris difficult, although it rais effective. rate contaminated clot h skin with running wa oap and water. rate oan eye h eyelids open and flus raside of a mouth was rakes place automatica	ion. c life living thing is h point, it may mix base, polymerizatic, such as hydrogen f victim ingested o is conscious or w thingand shoes. ater for at least 15	on may be carried out virtical chloride and phosgen. or inhaled the substance then breathing, although	it is unconscious, utes. by force.

Epichlorohydrin - 2

	Epichlorohydrin - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.

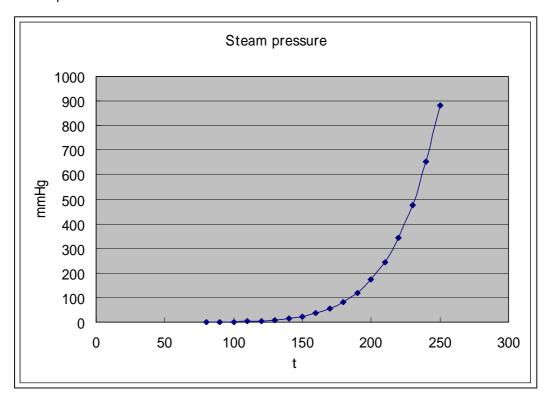


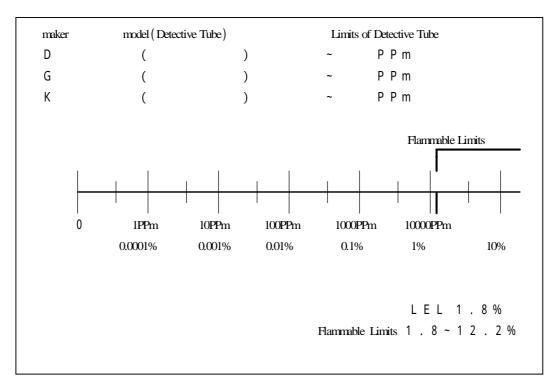


	Epichlorohydrin - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predetermined di
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diethylene glycol				
Common synonyms	Bis ether, Glycol ethyl ether, Diglycol				
UN Number	CAS Number 111-46-6 IMDG CODE				
IMO Pollution Category	D				
Formula	C4H10O3	Molecurar Weight	106.14	Flammable limits in Air (%)	1.6~10.8
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.1122	Vapor Specific Gravity	3.7	Boiling Point()	245
Freezing Point	-11.5	Flash Point()	124	Ignition Point()	229
Steam Pressure					
Corrosion	human∶no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	L D 50 12565mg	/kg (oral rat)			
First Aid	Noxiousness: Since volatility is low, detrimental concentration is not reached in normal temperature. Stimulative of skin, eyes and throat is weak There is a central-nerves control action. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing				
	has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Diethylene glycol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



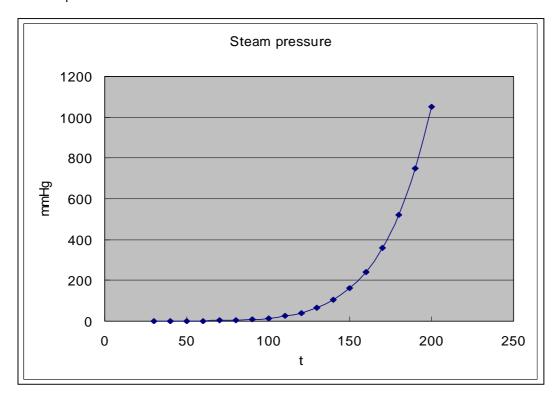


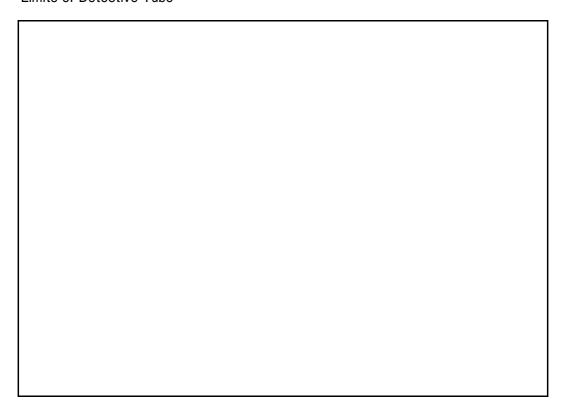
	Diethylene glycol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignitie, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predete
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Butylene glycol					
Common synonyms	Butanediol, Dihydroxybutane					
UN Number	CAS Number 107-88-0 IMDG CODE					
IMO Pollution Category	D					
Formula	C4H10O2	Molecurar Weight	90.12	Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.0024	Vapor Specific Gravity	3.2	Boiling Point()	190.5	
Freezing Point ()		Flash Point()	90	Ignition Point()	394	
Steam Pressure						
Corrosion	human∶no met	al:no	Oxidation	no		
TLV,Toxicity by Ingestion	L D 50 3730mg/	kg (oral rat)				
	Noxiousness: Since volatility is low, detrimental concentration is not reached in normal temperature. Stimulative of skin, eyes and throat is weak There is a central-nerves control action. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Butylene glycol - 2

	Butylene glycol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



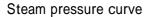


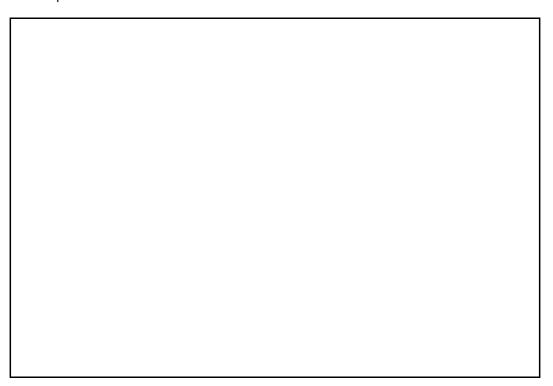
	Butylene glycol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

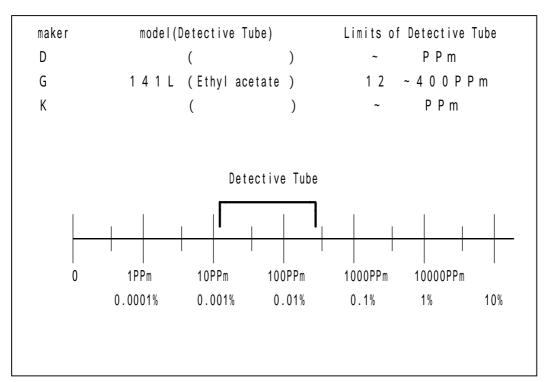
Material Name	Diisopropylbenzene					
Common	,					
synonyms	Bis benzene, DIPB					
UN Number	3082	CAS Number		IMDG CODE	Class9/P9028	
IMO Pollution Category	A					
Formula	C12H18	Molecurar Weight		Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.8701	Vapor Specific Gravity	5.6	Boiling Point()	204	
Freezing Point	-57	Flash Point()	77	Ignition Point()	449	
Steam Pressure						
Corrosion	human∶no met	al∶no	Oxidation	no		
TLV,Toxicity by Ingestion	L D 50 5000mg/	kg (oral rat)				
Noxiousness	Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is little data about biodegradation nature to carry out. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Diisopropylbenzene - 2

	Diisopropylbenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





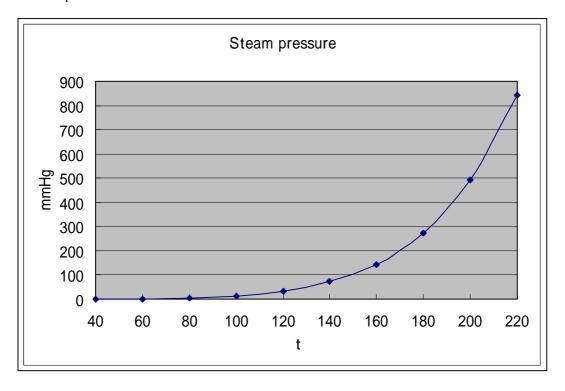


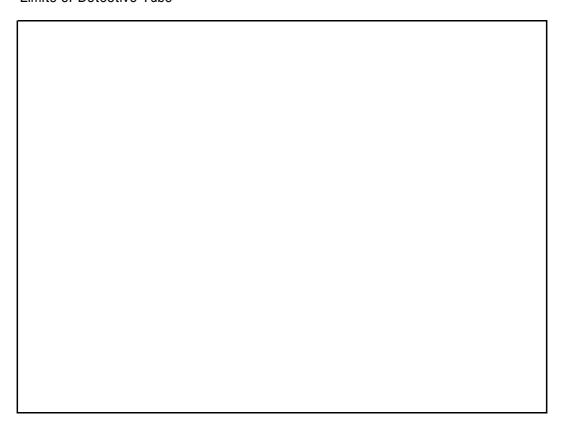
	Diisopropylbenzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Motorial Name						
	2-Ethyl hexyl acrylate					
Common synonyms						
UN Number		CAS Number	103-11-7	IMDG CODE		
IMO Pollution Category	В					
Formula	C11H20O2	Molecurar Weight	184.27	Flammable limits in Air (%)	0.8 ~ 6.4	
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.8869	Vapor Specific Gravity	6.4	Boiling Point()	216	
Freezing Point	-90	Flash Point()	82	Ignition Point()	252	
Steam Pressure						
Corrosion	human:no met	al∶no	Oxidation	no		
TLV,Toxicity by Ingestion	L D 50 5660mg/	kg (oral rat)		•		
Noxiousness	Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

2-Ethyl hexyl acrylate - 3

	2-Ethyl hexyl acrylate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	2-Ethyl hexyl acrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predetermined di
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	1,3-Cyclopentadiene				
Common synonyms					
UN Number	2048	CAS Number		IMDG CODE	Class3.3/P3330
IMO Pollution Category	В				
Formula	C10H12	Molecurar Weight		Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.012	Vapor Specific Gravity	4.6	Boiling Point()	170
Freezing Point	33.6	Flash Point()	32.2	Ignition Point()	503
Steam Pressure					
Corrosion	human∶no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	L D 50 353mg/k	g (oral rat)			
Noxiousness	Flammable substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is little data about biodegradation nature to carry out. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

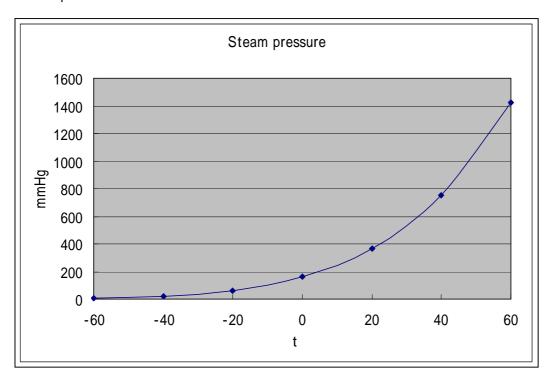
	1,3-Cyclopentadiene dimer - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

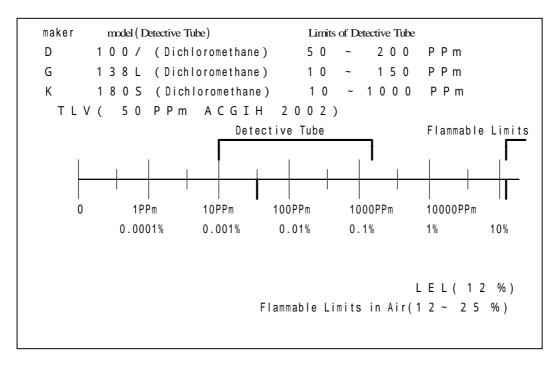
1,3-Cyclopentadiene dimer - 3 Steam pressure curve Limits of detective Tube

	1,3-Cyclopentadiene dimer - 4
The cautions on handling, and transportation / storage The cautions on	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predeter
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Dichloromethane				
Common synonyms	Methylene dichloride, Methylene chloride				
UN Number	1593 CAS Number 7 5 - 9 - 2 IMDG CODE Class6.1/P6127			Class6.1/P6127	
IMO Pollution Category	D				
Formula	CH2Cl2	Molecurar Weight	84.94	Flammable limits in Air (%)	1 2 ~ 2 5
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.3266	Vapor Specific Gravity	2.9	Boiling Point()	40.21
Freezing Point	-96.8	Flash Point()		Ignition Point()	556
Steam Pressure					
Corrosion	human:no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:50ppm L D50 1600mg/		CGIH:50ppmTV	VA A3	
Noxiousness	Noxiousness: Irritating to skin, eyes and throat. Carcinogenic is checked. Environmental influence: Speed is slow although there is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is nonflammability. Vapor is heavier than air. Heating and combustion decompose and poisonous phosgen is produced. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Dichloromethane - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

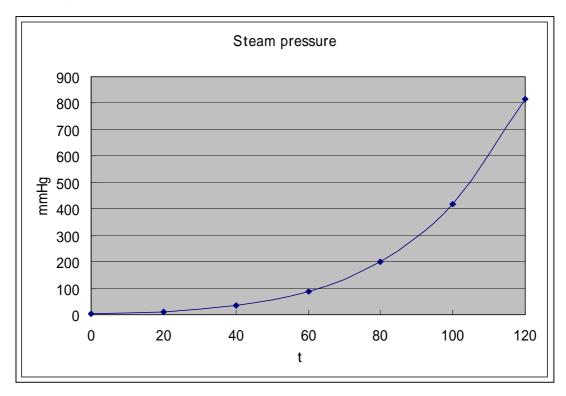


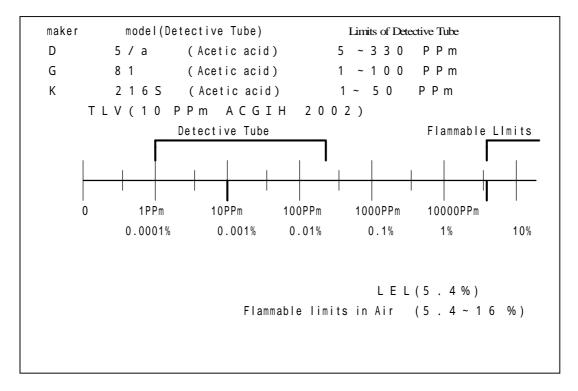


	Dichloromethane -	4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at	r
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.	

Material Name	Acetic acid				
Common synonyms	Glacial acetic acid, Ethanoic acid, Vinegar acid				
UN Number	2789 2790 CAS Number 64-19-7 IMDG CODE Class8/P8100		Class8/P8100		
IMO Pollution Category	D	l			
Formula	СН3СООН	Molecurar Weight	60.05	Flammable limits in Air (%)	5 . 4 ~ 16
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.0492	Vapor Specific Gravity	2.1	Boiling Point()	117.8
Freezing Point	16.6	Flash Point()	39	Ignition Point()	463
Steam Pressure					
Corrosion	human:yes me	etal∶yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:10ppm L D50 3310mg/		CGIH:10ppmTW	/A 15ppmSTEL	
Noxiousness	Corrosion substance, Flammable substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and abobe the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. It is weak acidity and much metal is corroded. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acetic acid - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

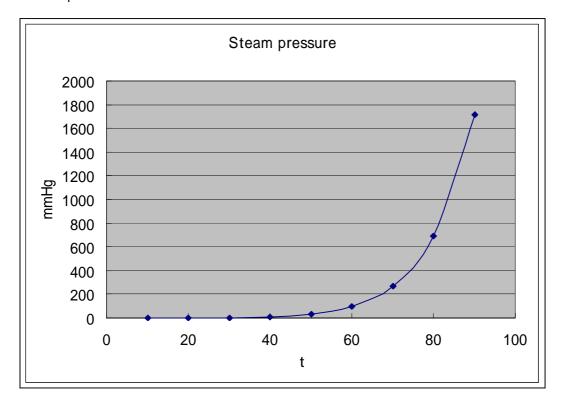
The cautions on abandonment

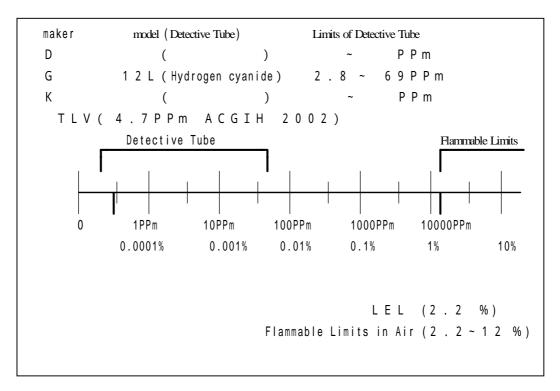
The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Acetone cyanohydrin				
Common synonyms	Isopropyl cyanohydrin, 2-Hydroxy-2-methylpropanenitrile				
UN Number	1541	CAS Number	75-86-5	IMDG CODE	Class6.1/P6051
IMO Pollution Category	A				
Formula	C4H7ON	Molecurar Weight	85.11	Flammable limits in Air (%)	2.2~12
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9267	Vapor Specific Gravity	3	Boiling Point()	81
Freezing Point ()	-19	Flash Point()	74	Ignition Point()	688
Steam Pressure					
Corrosion	human∶no met	al∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 4.7ppm L D50 17mg/kg				
Noxiousness	Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. heating or contact with water decomposes and toxic high hydrogen cyanide is produced. There is danger of skin absorption. Environmental influence: The accumulation nature to an aquatic life living thing is low. It is very detrimental to an aquatic life living thing. Danger: It is inflammability, and abobe the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acetone cyanohydrin - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

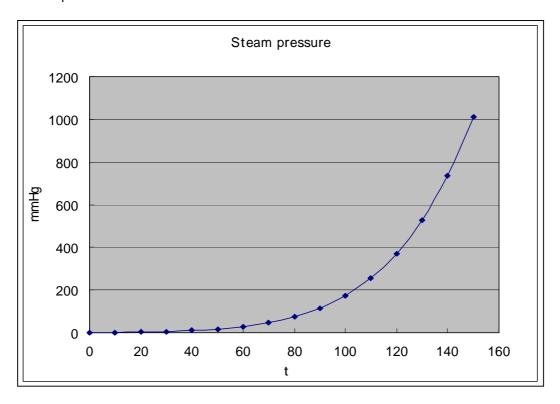


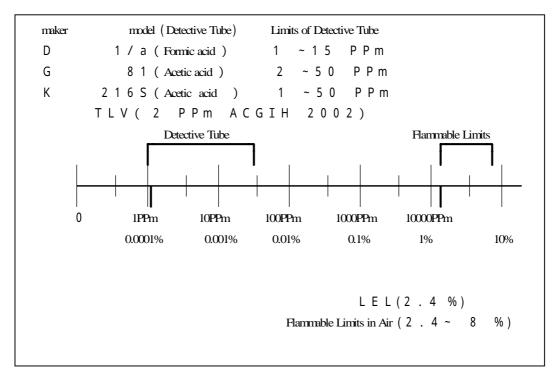


	Acetone cyanohydrin - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predeterm
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Acrylic acid				
Common synonyms	Acroleic acid, P	Acroleic acid, Propenoic acid			
UN Number	2218 CAS Number 79-10-7 IMDG CODE Class8/P8102		Class8/P8102		
IMO Pollution Category	D				
Formula	CH2=CHCOOH	Molecurar Weight	72.1	Flammable limits in Air (%)	2 . 4 ~ 8
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.062	Vapor Specific Gravity	2.5	Boiling Point()	141.9
Freezing Point	14	Flash Point()	50	Ignition Point()	438
Steam Pressure	3.1mmHg(20)			
Corrosion	human:yes me	tal∶yes	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:2ppmTV LD50 340mg/k				
Noxiousness	Corrosion substance, Acute toxicity, Flammable substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and abobe the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. It is acidity and much metal is corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Acrylic acid - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





Acrylic acid - 4 The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment

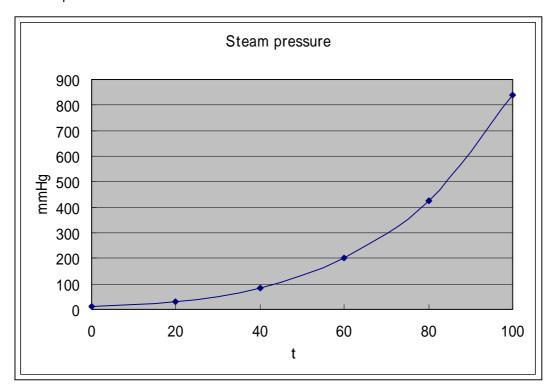
A contaminant etc. is contained to an airtight container, is sent to the permitted

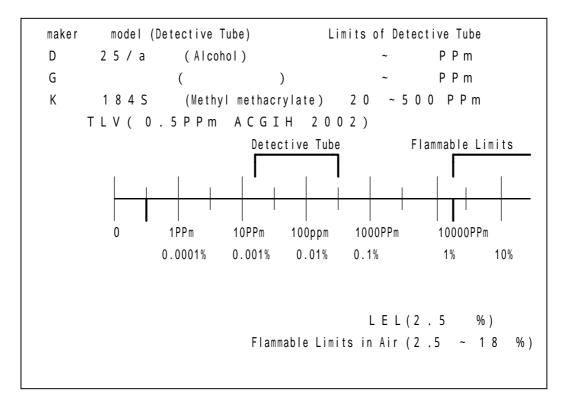
industrial-waste-treatment factory, and carries out abandonment disposal.

abandonment

Material Name	Allyl alcohol				
Common synonyms	Propenyl alcohol, AA, Propenol				
UN Number	1098 CAS Number 107-18-6 IMDG CODE Class6.1/P605				Class6.1/P6058
IMO Pollution Category	В				
Formula	CH2=CHCH2OH	Molecurar Weight	58.08	Flammable limits in Air (%)	2.5~18.0
Appearance	colorless			ì	easily soluble
Specific Gravity	0.854	Vapor Specific Gravity	2	Boiling Point()	96.9
Freezing Point	-129	Flash Point()	21	Ignition Point()	378
Steam Pressure	10mmHg(20)				
Corrosion	human:yes meta	al:no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH: 0.5ppmT\ L D50 64mg/kg (
Noxiousness	Acute toxicity substance, Flammable substance Noxiousness: There is lachrymal and irritating to skin, eyes and throat. Poisoning condition may appear behind time. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Toxicity is strong to an aquatic life living thing. Danger: It is inflammability, it mixes with air, vapor becomes explosive gas, and vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Allyl alcohol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

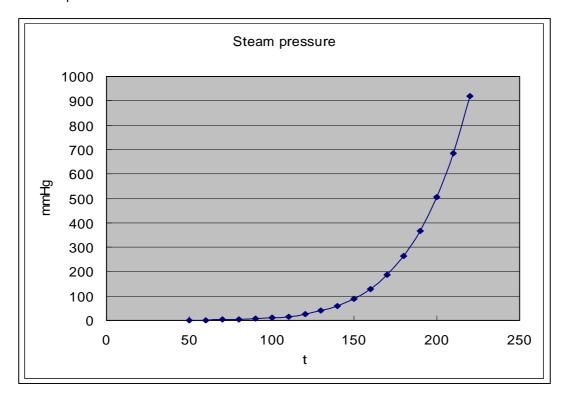


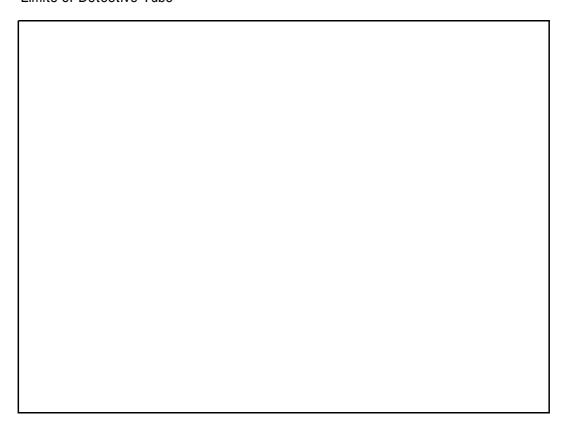


	Allyl alcohol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Nonanol					
Common synonyms	Nonyl alcohol, I	Nonyl alcohol, Nonalol, Octyl carbinol				
UN Number	3082	CAS Number	143-08-8	IMDG CODE	Class9/P9028	
IMO Pollution Category	С					
Formula	C9H19OH	Molecurar Weight	144.3	Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.8274	Vapor Specific Gravity	5	Boiling Point()	213.5	
Freezing Point	-5.5	Flash Point()	79	Ignition Point()		
Steam Pressure						
Corrosion	human:no	metal:no	Oxidation	no		
TLV,Toxicity by Ingestion	L D 50 1 4 0 0 m	g/kg (oral rat)				
	Environmental Speed is slow a It is detrimenta Danger: It is inflammabi	There is a central-nerves control action. Environmental influence: Speed is slow although there is biodegradation nature. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

The measure in case Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. of a fire The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body The measure at the A protection implement is worn in the case of work, it takes care that splash does not time of leak adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage Personal Protective Equipment Personal Protective Breathing appliance: Organic Gas respirators, Air line mask, Self-contained breathing Equipment and apparats. Detector Gloves: Solvent-proof nature protection glove, Rubber gloves. Eye: Goggles, Face shields, Eye protectors. Body: Rubber boots, Protective clothing Detector Flammable Gas Detector Leak on board The measure at the As the source of ignition is managed and gas does not enter a closing zone, it washes away time of leak on the overboard with a lot of water. sea In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.





Nonanol - 4
Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a

The cautions on abandonment

The cautions on abandonment

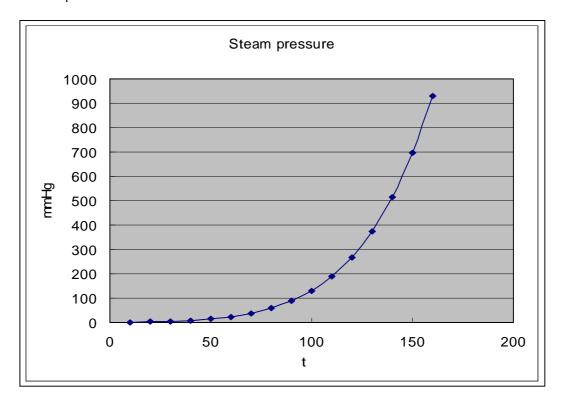
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

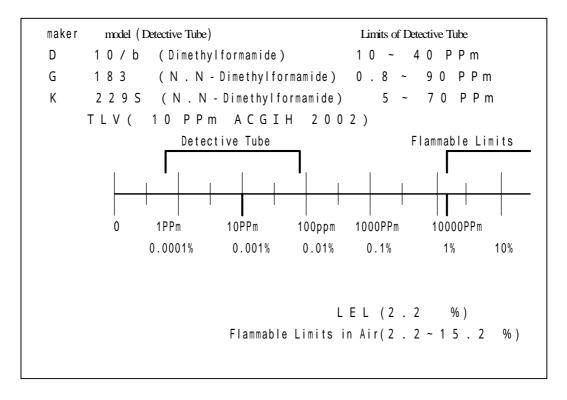
predetermined display board, fire-extinguishing equipment, and disaster prevention.

Material Name	Dimethylformamide				
Common synonyms	Formyldimethylamine, DMFA, DMF				
UN Number	2265 CAS Number 68-12-2 IMDG CODE Class3.3/P333				Class3.3/P3335
IMO Pollution Category	D				
Formula	C3H7ON	Molecurar Weight	73.1	Flammable limits in Air (%)	2 . 2 ~ 1 5 . 2
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9445	Vapor Specific Gravity	2.5	Boiling Point()	153
Freezing Point	-61	Flash Point()	58	Ignition Point()	445
Steam Pressure	2.7mmHg(20)			
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:10ppm L D 50 2800mg/		ACGIH:10ppmT	WA A4 skin	
	Irritating to eye Environmental There is biodeg The accumulati Danger: It is inflammabil A plastic and ru	Noxiousness: Irritating to eyes. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, it mixes with air, vapor becomes explosive gas, and vapor is heavier than air. A plastic and rubber are corroded. Intence polymerization may be caused by heating or contamination by other substances.			
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Dimethylformamide - 2

	Dimethylformamide - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.



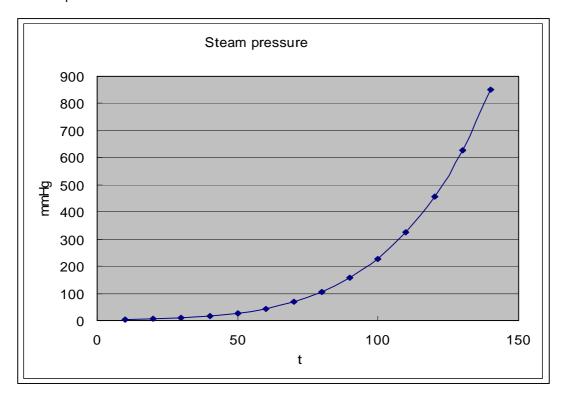


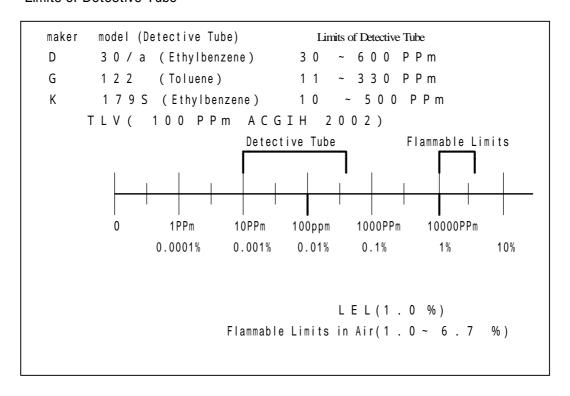
	Dimethylformamide - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethylbenzene				
Common	Ethylbenzol, Phenylethane				
synonyms					
UN Number	1175	CAS Number	100-41-4	IMDG CODE	Class3.2/P3222
IMO Pollution Category	В	_			
Formula	C8H10	Molecurar Weight	106.2	Flammable limits in Air (%)	1.0~6.7
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.8669	Vapor Specific Gravity	3.7	Boiling Point()	136.19
Freezing Point	-94.98	Flash Point()	21	Ignition Point()	432
Steam Pressure					
Corrosion	human: no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:50ppm L D50 3500mg/		.CGIH∶100ppm	nTWA 125ppmSTEL	
	Irritating to ski There is a center is determined in the second is a center is determined in the second is a center is a cente	Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. Environmental influence: Biodegradation nature is low. The accumulation nature to an aquatic life living thing is low. It is detrimental to an aquatic life living thing. Danger: It is inflammability, it mixes with air, vapor becomes explosive gas, and vapor is heavier than air. A plastic and rubber are corroded.			
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethylbenzene - 2

	Ethylbenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



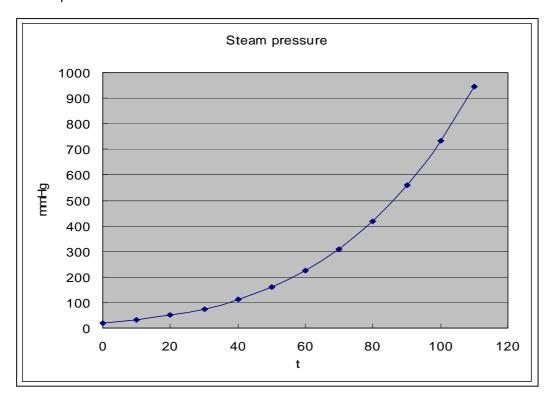


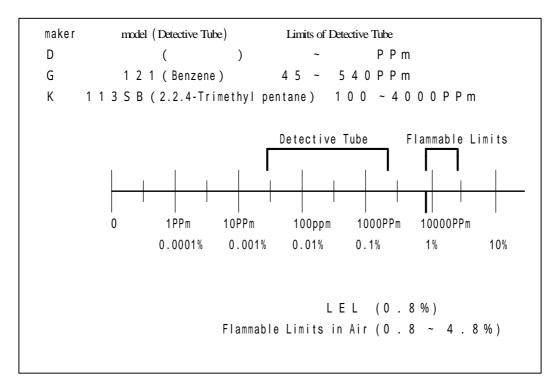
	Ethylbenzene -	4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. Confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the tim	r
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.	

	D 1				
	Diisobutylene	Diisobutylene			
Common synonyms	Isooctene, DIB				
UN Number	2050	CAS Number	11071-47-9	IMDG CODE	Class3.2/P3210
IMO Pollution Category	В				
Formula	(C4H8)2	Molecurar Weight	112.22	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.715	Vapor Specific Gravity	3.9	Boiling Point()	101.44
Freezing Point		Flash Point()	-6.6	Ignition Point()	415
Steam Pressure					
Corrosion	human: no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion					
	Noxiousness: There is a central-nerves control action. Environmental influence: Biodegradation nature is low. The accumulation nature to an aquatic life living thing is high. Danger: It is inflammability, it mixes with air, vapor becomes explosive gas, and vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Diisobutylene - 2

	Diisobutylene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





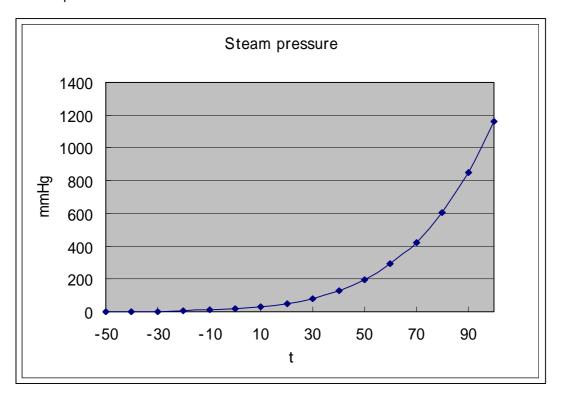
	Diisobutylene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
The cautions on	The cautions on abandonment A contaminant etc. is contained to an airtight container is sent to the permitted

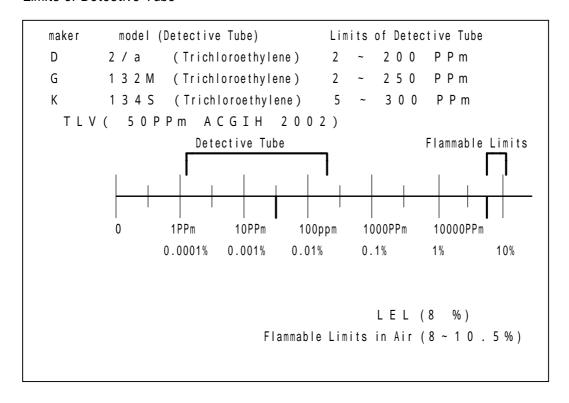
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Trichloroethylene				
Common synonyms	Ethylene trichloride, Ethinyl trichloride, Trial				
UN Number	1710	CAS Number	79-01-6	IMDG CODE	Class6.1/P6273
IMO Pollution Category	С				
Formula	CHCI=CCI2	Molecurar Weight	131.4	Flammable limits in Air (%)	8 ~ 10.5
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.4556	Vapor Specific Gravity	4.5	Boiling Point()	86.7
Freezing Point ()	-88	Flash Point()	32	Ignition Point()	420
Steam Pressure	58.6mmHg(20)			
Corrosion	human:yes	metal∶yes	Oxidation	no	
TLV,Toxicity by Ingestion		WA 100ppmSTEL /kg(oral rat)	A5		
	Noxiousness: Irritating to skin and eyes. There is a central-nerves control action. Environmental influence: There is not biodegradation nature. The accumulation nature to an aquatic life living thing is medium. It is detrimental to an aquatic life living thing. Danger: It is nonflammability. Vapor is heavier than air. Heating and combustion decompose and poisonous phosgen is produced. Aluminum is corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Trichloroethylene - 2

	Trichloroethylene - 2
The measure in case of a fire	It is nonflammability.
	The fire-extinguishing method Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



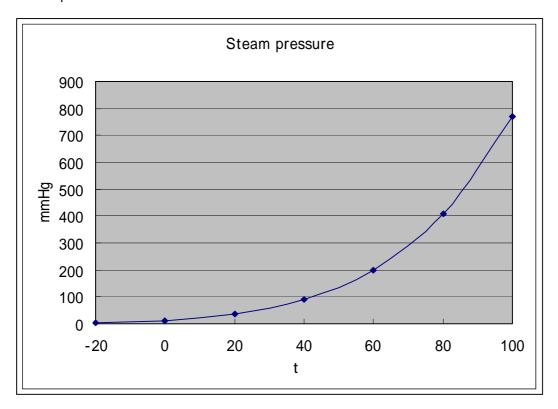


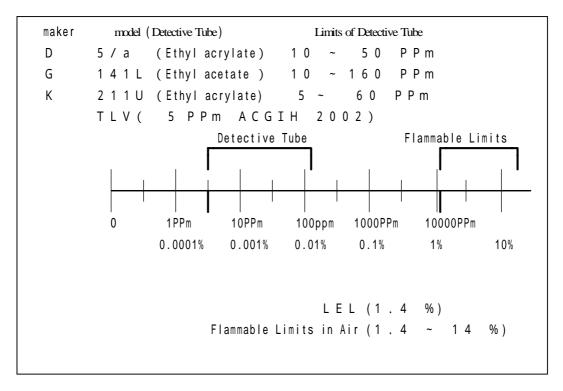
	Trichloroethylene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predeterm
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethyl acrylate				
Common synonyms	Ethyl propenoate, 2-Propenoic acid ethyl ester				
UN Number	1917	CAS Number	140-88-5	IMDG CODE	Class3.2/P3220
IMO Pollution Category	A	I			
Formula	C5H8O2	Molecurar Weight	100.1	Flammable limits in Air (%)	1 . 4 ~ 1 4
Appearance	colorless			Sollubility in Water	soluble
Specific Gravity	0.9405	Vapor Specific Gravity	3.5	Boiling Point()	99.3
Freezing Point	-71.2	Flash Point()	10	Ignition Point()	372
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:5ppmT\ LD50 1020mg/	NA 15ppmSTEL A	\4		
Noxiousness	Flammable substance Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. It is detrimental to an aquatic life living thing. Danger: Inflammability is high. It mixes with air, vapor becomes explosive gas. Vapor is heavier than air. Polymerization may be automatically carried out under the influence of heat or light.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethyl acrylate - 2

	Ethyl acrylate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



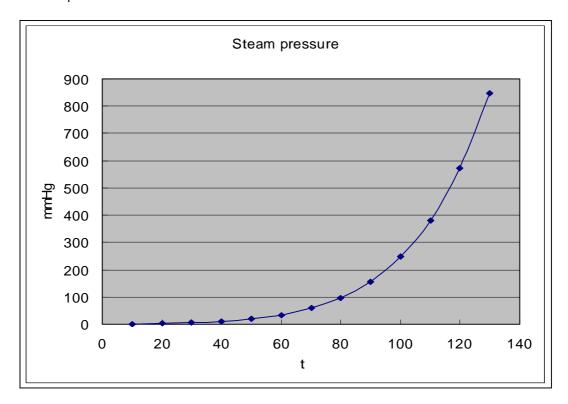


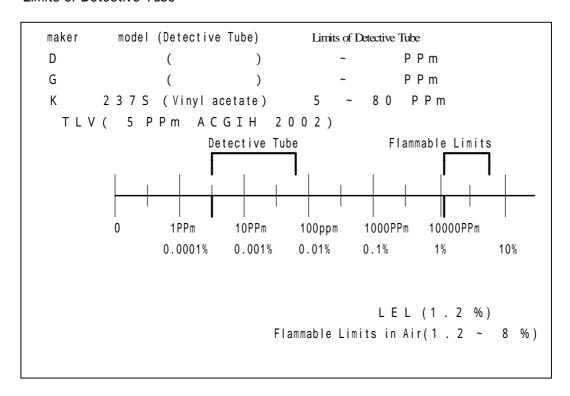
	Ethyl acrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Methyl butyl ke	Methyl butyl ketone			
Common synonyms	2-Hexanone				
UN Number	1245	CAS Number	591-78-6	IMDG CODE	Class3.2/P3257
IMO Pollution Category	D				
Formula	C5H12CO	Molecurar Weight	100.2	Flammable limits in Air (%)	1 . 2 ~ 8 . 0
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.8301	Vapor Specific Gravity	3.5	Boiling Point()	127.2
Freezing Point	-56.9	Flash Point()	35	Ignition Point()	423
Steam Pressure	2.7mmHg(20)			
Corrosion	human: no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan∶5ppm L D50 2590mg/		CGIH: 5ppmTW.	A 10ppmSTEL skin	
	Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: Inflammability is high. It mixes with air, vapor becomes explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Methyl buthyl ketone - 2

	Methyl buthyl ketone - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

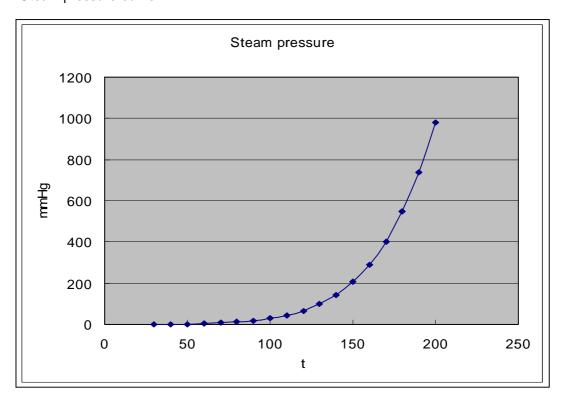


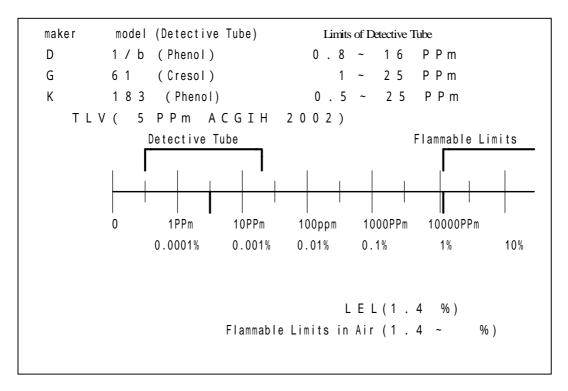


	Methyl buthyl ketone - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Cresol				
Common synonyms	Cresylic acid, Methylphenol, Hydroxytoluene				
UN Number	2076	CAS Number	1319-77-3	IMDG CODE	Class6.1/P6114
IMO Pollution Category	A				
Formula	C7H8O	Molecurar Weight	108.1	Flammable limits in Air (%)	1 . 4 ~
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.0465	Vapor Specific Gravity	3.8	Boiling Point()	191
Freezing Point ()	31	Flash Point()	81	Ignition Point()	599
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:5ppm ACGIH:5ppmTWA skin LD50 121mg/kg(oral rat)				
Noxiousness	Corrosion substance, Acute toxicity substance Noxiousness: There are stimulative and corrosive to skin, eyes and throat. There is a central-nerves control action. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. It is very detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Cresol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

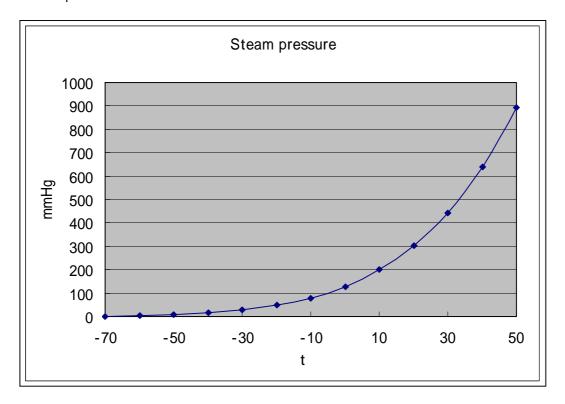
The cautions on abandonment

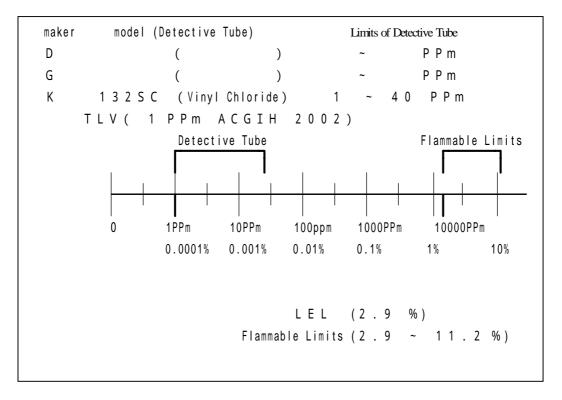
The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Allyl chloride	Allyl chloride			
Common	3-Chloropropene, -Chloropropylene, AC				
synonyms UN Number				Class3.1/P3105-1	
IMO Pollution Category	В				0.000
Formula	C3H5CI	Molecurar Weight	76.5	Flammable limits in Air (%)	2.9~11.1
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.9397	Vapor Specific Gravity	2.6	Boiling Point()	45.1
Freezing Point	-134.5	Flash Point()	-32	Ignition Point()	485
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:1ppmT\	WA 2ppmSTEL A3	3		
Noxiousness	Flammable substance, Acute toxicity substance, A stimulative substance Noxiousness: Irritating to skin, eyes and throat. Carcinogenic is checked in the animal experiment. There is danger of skin absorption. Environmental influence: It hydrolyzes gradually underwater and the life decomposition occurs. It is very detrimental to an aquatic life living thing. Danger: Inflammability is high. It mixes with air, vapor becomes explosive gas. Vapor is heavier than air. It reacts violently with metal, such as aluminum and zinc, and generates heat. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Allyl chloride - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray.
	Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube
	Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

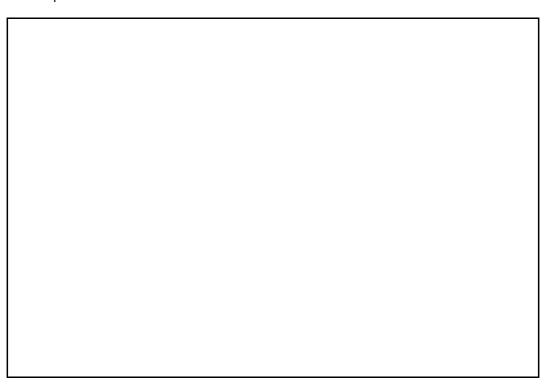


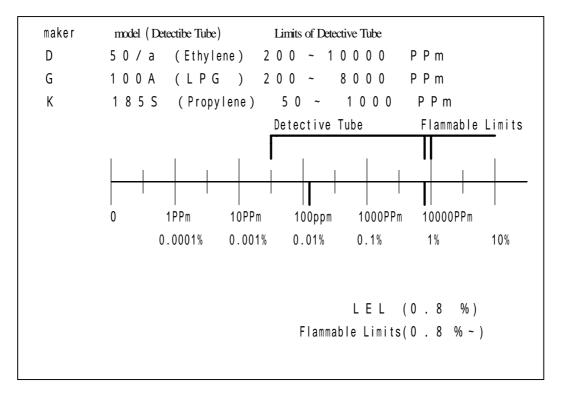


	Allyl chloride - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

					1
Material Name	Propylene tetra	Propylene tetramer			
Common synonyms	Tetrapropylene, Dodecene				
UN Number	2850	CAS Number		IMDG CODE	Class3.3/P3378
IMO Pollution Category	В				
Formula	(C3H6)4	Molecurar Weight		Flammable limits in Air (%)	0.8~
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.77	Vapor Specific Gravity	5.8	Boiling Point()	183 ~ 202
Freezing Point	-35	Flash Point()	60	Ignition Point()	255
Steam Pressure					
Corrosion	human:no	metal:no	Oxidation	no	
TLV,Toxicity by Ingestion					
	Noxiousness: In normal temperature, it is hard to reach detrimental concentration. Environmental influence: Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Propylene tetramer - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

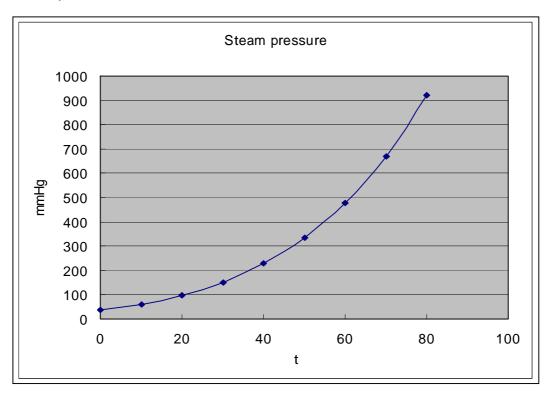


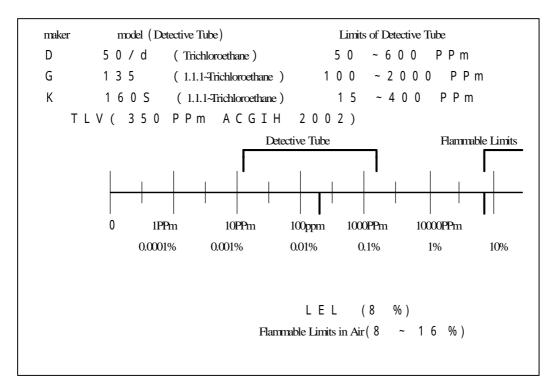


	Propylene tetramer - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	1,1,1-Trichloroe	1,1,1-Trichloroethane			
Common	Ethane trichlori				
synonyms UN Number				Class6.1/P6272-1	
IMO Pollution	C	OAO Number	71-33-0	INDO CODE	010330.171 0272-1
Category	<u> </u>			Flammable limits	
Formula	C2H3Cl3	Molecurar Weight	133.4	in Air (%)	8 ~ 1 6
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.3376	Vapor Specific Gravity	4.6	Boiling Point()	73.9
Freezing Point	-32.96	Flash Point()		Ignition Point()	500
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:200ppm L D 50 10300mg		ACGIH:350ppm	nTWA 450ppmSTEL	A4
Noxiousness	Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. High concentration vapor has an anesthesia action. There is a central-nerves control action. Environmental influence: Speed is slow although there is biodegradation nature. The accumulation nature to an aquatic life living thing is low. It is detrimental to an aquatic life living thing. Danger: It may burn under specific conditions, such as high temperature. Vapor is heavier than air. Heating etc. decompose and poisonous phosgen is produced. Aluminum and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	1,1,1-Trichloroethane - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



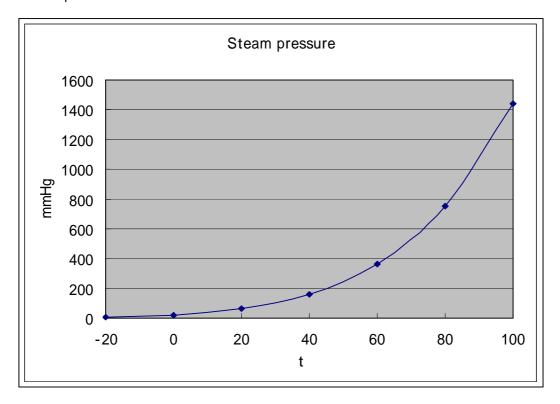


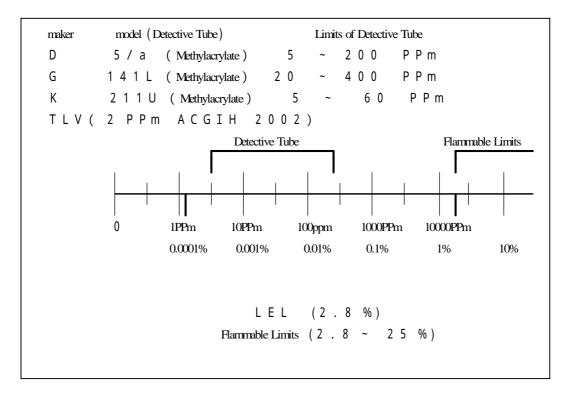
	1,1,1-Trichloroethane - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
The cautions on abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Methyl acrylate				
Common					
synonyms	Methylpropenoate, Acrylic acid methyl ester				
UN Number	1919	CAS Number	96-33-3	IMDG CODE	Class3.2/P3252
IMO Pollution Category	В				
Formula	CH2=CHCOOCH3	Molecurar Weight	86.09	Flammable limits in Air (%)	2 . 8 ~ 2 5 . 0
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9561	Vapor Specific Gravity	3	Boiling Point()	80
Freezing Point	-75	Flash Point()	-2.8	Ignition Point()	468
Steam Pressure	100mmHg(20)				
Corrosion	human:no metal:no Oxidation no				
TLV,Toxicity by Ingestion	ACGIH: 2ppmTWA A4 skin L D50 300mg/kg (oral rat)				
Noxiousness	Flammable substance Noxiousness: Irritating to skin, eyes and throat. There is lachrymal. There is danger of skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: Inflammability is high. It may mix with air and steam may produce explosive gas. Vapor is heavier than air. Intense polymerization may be caused by heating or contamination by other substances.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Methyl acrylate - 2

	Methyl acrylate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.



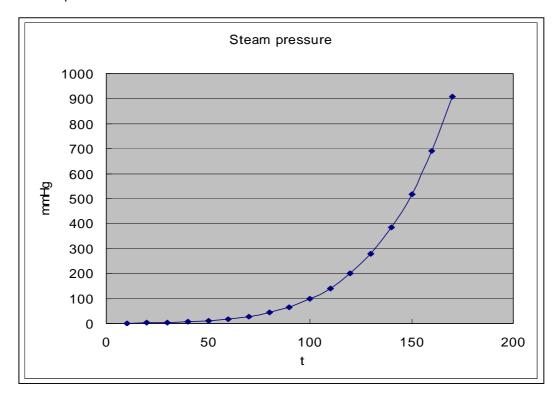


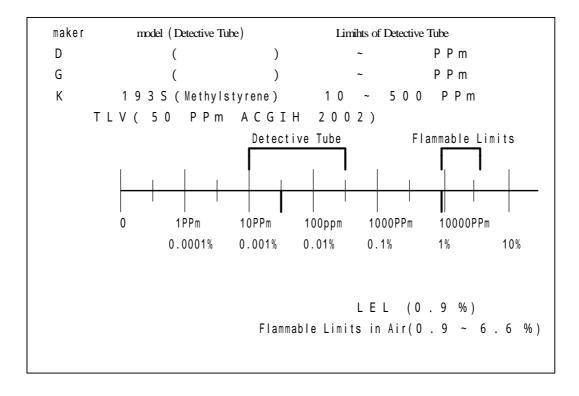
	Methyl acrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	-Methylstyre	ne			
Common synonyms	Vinyltoluene, To	olylethylene, Methy	/Ivinylbenzene		
UN Number	2303	CAS Number	98-83-9	IMDG CODE	Class3.3/P3357
IMO Pollution Category	A				
Formula	C9H10	Molecurar Weight	118.2	Flammable limits in Air (%)	0.9~6.6
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.9134	Vapor Specific Gravity	4.1	Boiling Point()	163.5
Freezing Point	-23.14	Flash Point()	53.9	Ignition Point()	574.4
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	ACGIH:50ppm7 LD50 4900mg/	TWA 100ppmSTEL/kg (oral rat)	-		
Noxiousness	There is a cent Environmental The accumulati Danger : It is inflammabil	on nature to an aquati	ic life living thing is	s medium. with air and steam may	produce
First Aid	has stopped, and When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with s When it goes int Immediately hold If swallowed Don't make the	rm and quiet. cially, after loosening of when breathing is we is difficult, although it in is effective. act elate contaminated closes skin with running was soap and water. to an eye deyelids open and flustinside of a mouth was akes place automatica	eak. is conscious or w thingand shoes. ater for at least 15 sh with plenty of wa	ng a respiratory tract, when breathing, although in minutes. ater for at least 15 minutes and don't make it vomit be to incline so that the	t is unconscious, tes.

-Methylstyrene - 2

	-Methylstyrene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



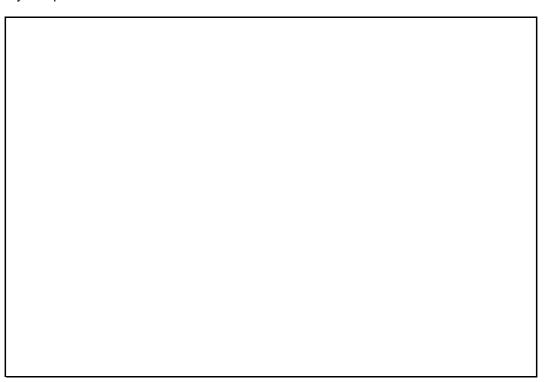


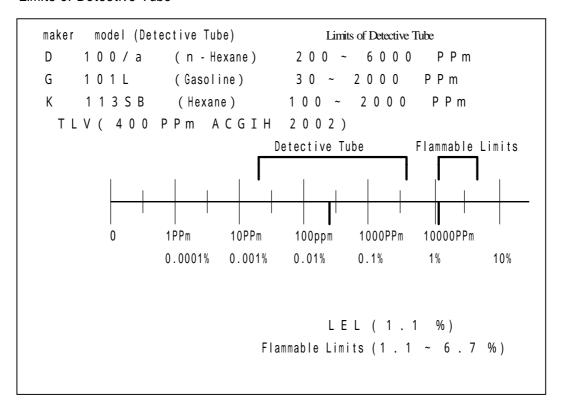
	-Methylstyrene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Heptane				
Common	Heptyl hydride				
synonyms			440.00.5		01 00/50005
UN Number IMO Pollution	1206	CAS Number	142-82-5	IMDG CODE	Class3.2/P3235
Category	С				
Formula	C7H16	Molecurar Weight	100.21	Flammable limits in Air (%)	1.1~6.7
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.68378	Vapor Specific Gravity	3.5	Boiling Point()	98.427
Freezing Point	-90.61	Flash Point()	-4	Ignition Point()	204
Steam Pressure					
Corrosion	human: no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan∶200ppm	A	CGIH:400ppmT	TWA 500ppmSTEL	
Noxiousness	There is a cent Environmental There is biodeg It is detrimenta Danger: Inflammability is		nulation nature is ing thing. vapor become exp	n an aquatic life living thir plosive gas.	ng.
First Aid	has stopped, and When breathing oxygen inhalation In case of contains Remove and ison Immediately flus Wash skin with state When it goes into Immediately hold If swallowed Don't make the	rm and quiet. cially, after loosening old when breathing is we is difficult, although it in is effective. act alate contaminated clother skin with running was soap and water. to an eye deyelids open and flust inside of a mouth washakes place automatical	eak. Is conscious or when the second of the	g a respiratory tract, when hen breathing, although it minutes. In the for at least 15 minutes and don't make it vomit by the to incline so that the incline so the source source so the source source so the source so the source source source source so the source source so the source source so the source source source source so the source source source source source source source source so the source	is unconscious, es.

Heptane - 2

	Heptane - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method
	In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





Heptane - 4 The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment

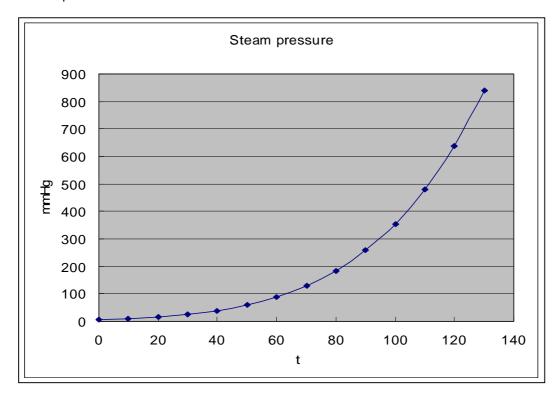
A contaminant etc. is contained to an airtight container, is sent to the permitted

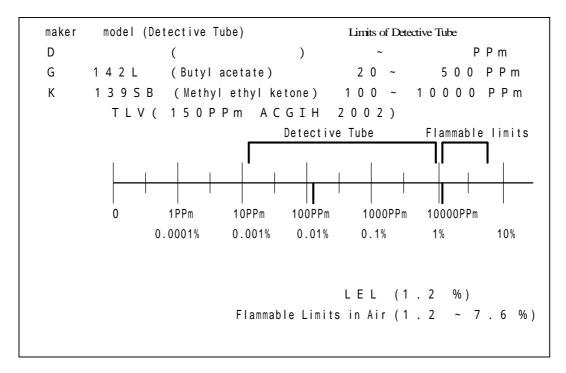
industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Butyl acetate				
Common synonyms	Butyl ethanoate	e, Acetic butyl ethe	r, Acetic acid	butyl ester	
UN Number	1123	CAS Number	123-86-4	IMDG CODE	Class3.2/P3191
IMO Pollution Category	С				
Formula	C6H12O2	Molecurar Weight	116.2	Flammable limits in Air (%)	1.2~7.6
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.8826	Vapor Specific Gravity	4	Boiling Point()	126.3
Freezing Point ()	-77	Flash Point()	22	Ignition Point()	425
Steam Pressure					
Corrosion	human: no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:100ppm L D50 13100m		CGIH:150ppm	TWA 200ppmSTEL	
	The accumulat Danger : Inflammability i		vapor become ex		
First Aid	has stopped, an When breathing oxygen inhalation oxygen oxygen oxygen inhalation oxygen inhalation oxygen oxygen inhalation oxygen inhalat	rm and quiet. cially, after loosening clid when breathing is we is difficult, although it is on is effective. act blate contaminated clother shain with running was soap and water. to an eye ld eyelids open and flustinside of a mouth washtakes place automatical	eak. is conscious or veningand shoes. ter for at least 15 th with plenty of well with water,	ng a respiratory tract, when when breathing, although it minutes. The water for at least 15 minutes and don't make it vomit by ade to incline so that the incline so the source source so the source source so the source so the source source so the source source so the source source source source so the source sour	es.

Butyl acetate - 2

	Butyl acetate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	Butyl acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the ti
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Polysiloxane				
Common synonyms	Silicone, Dime	thylhydrolizate			
UN Number	1993	CAS Number	9016-00-6	IMDG CODE	Class3.2/P3230
IMO Pollution Category					
Formula		Molecurar Weight		Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.7636	Vapor Specific Gravity	5.6	Boiling Point()	99.5
Freezing Point	-67	Flash Point()	-9	Ignition Point()	
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion					
	Environmenta Danger: Inflammability Vapor is heav	is high. It mixes with air	•	-	
First Aid	has stopped, a When breathin oxygen inhalati In case of con Remove and is Immediately flu Wash skin with When it goes in Immediately ho If swallowed Don't make the	arm and quiet. ficially, after loosening c nd when breathing is we g is difficult, although it on is effective. tact colate contaminated clot ush skin with running wa soap and water. Into an eye old eyelids open and flus e inside of a mouth wash takes place automatical	eak. is conscious or v hingand shoes. ter for at least 15 h with plenty of w n well with water,	ng a respiratory tract, when when breathing, although it minutes. Water for at least 15 minutes and don't make it vomit by the de to incline so that the incline so the incline	es.

Polysiloxane - 2

	Polysiloxane - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

Steam	1		
Limits o	f Detective	Tube	
Limits o	f Detective	Tube	
Limits o	f Detective	Tube	
Limits o	f Detective	Tube	
Limits o	f Detective	Tube	
Limits o	f Detective	Tube	
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Limits o	f Detective	Tube	

	Polysiloxane -	4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shook, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t	r
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.	

Material Name	o-Chloronitrobenzene				
Common	1-Chloro-2-nitrobenzene				
synonyms UN Number	1578 CAS Number 88-73-3 IMDG CODE Class6.1/P6106				
IMO Pollution Category	В				
Formula	C6H4CI(NO2)	Molecurar Weight	157.56	Flammable limits in Air (%)	
Appearance	yellow			Sollubility in Water	insoluble
Specific Gravity	1.368	Vapor Specific Gravity	5.5	Boiling Point()	244.5
Freezing Point	33	Flash Point()	123	Ignition Point()	
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	yes	
TLV,Toxicity by Ingestion	L D50 288mg/k	g (oral rat)			
Noxiousness	Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Blood is affected and have an attack of methemoglobinemia. There is danger of skin absorption. Environmental influence: It is hard to biodegrade. Accumulation nature is in an aquatic life living thing. It is very detrimental to an aquatic life living thing. Danger: It is an inflammability. The explosion limit is not known. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	o-Chloronitrobenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

o-Chloronitrobenzene - 3

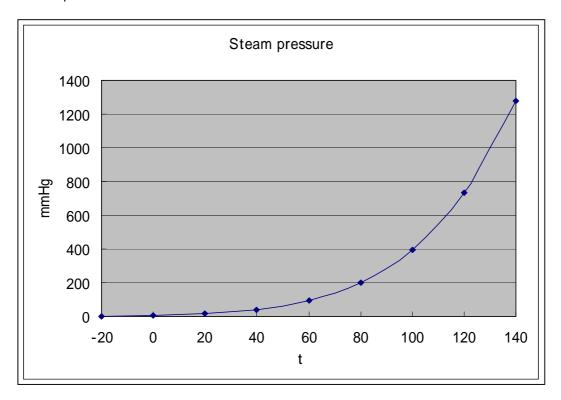
Steam pressure curve		
Limits of Detective Tube		

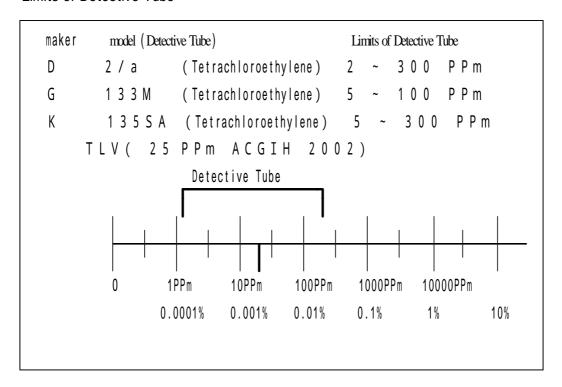
	o-Chloronitrobenzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. Confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Tetrachloroethylene					
Common synonyms	Perchloroethylene, Ethylene tetrachloride,					
UN Number	1897 CAS Number 127-18-4 IMDG CODE Class6.1/P6264					
IMO Pollution Category	В					
Formula	C2Cl4	C2Cl4 Molecurar Weight 165.8 Flammable limits in Air (%)				
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	1.60682	Vapor Specific Gravity	5.8	Boiling Point()	121.2	
Freezing Point	-22.18	Flash Point()	123	Ignition Point()		
Steam Pressure	14.3mmHg(20)				
Corrosion	human:no	metal∶no	Oxidation	no		
TLV,Toxicity by Ingestion	ACGIH: 25ppm7 L D50 8100mg/	ΓWA 100ppmSTEL kg (oral rat)	. A3			
Noxiousness	Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. Environmental influence: There is not biodegradation nature. The accumulation nature to an aquatic life living thing is medium. It is detrimental to an aquatic life living thing. Danger: It is nonflammability. Vapor is heavier than air. Heating and combustion decompose and poisonous phosgen is produced. Aluminum is corroded.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Tetrachloroethylene - 2

	Tetrachloroethylene - 2
The measure in case of a fire	It is nonflammability. The fire-extinguishing method Cool containers with flooding quantities of water. Firefighters protection
The measure at the	Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body
time of leak	A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place,
	when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.



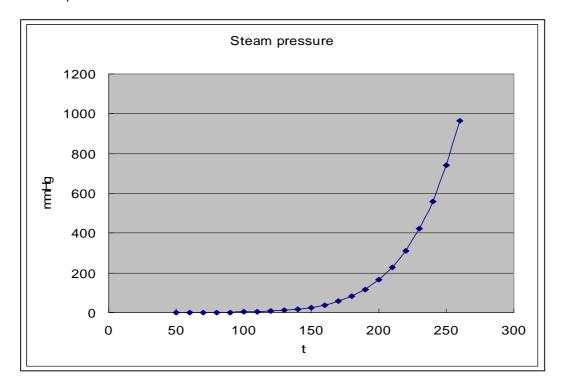


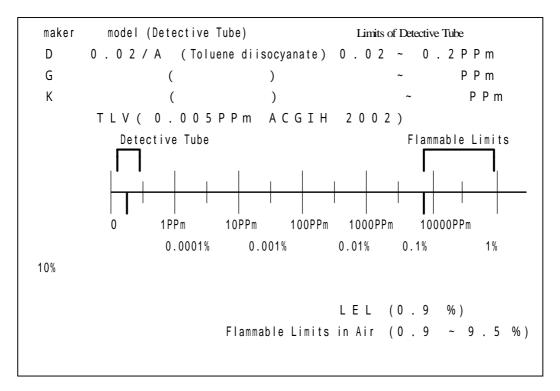
	Tetrachloroethylene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Toluene diisocy	Toluene diisocyanate				
Common	Diisocyanatotoluene, Tolylene diisocyanate, T.D.I					
synonyms UN Number	2078 CAS Number 584-84-9 IMDG CODE Class6.1/P6269					
IMO Pollution Category	С					
Formula	C9H6O2N2	C9H6O2N2 Molecurar Weight 174.2 Flammable limits in Air (%) 0 . 9 ~ 9 . 5				
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	1.2244	Vapor Specific Gravity	6	Boiling Point()	251	
Freezing Point	19.5	Flash Point()	132	Ignition Point()		
Steam Pressure	0.01mmHg(20)				
Corrosion	human:yes	metal:no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: 0.005ppr L D 50 6170mg/		.CGIH: 0.005ppr	mTWA 0.02ppmSTE	L A4	
Hazard and Noxiousness First Aid	Condition like a Even if it excee Below in permis Environmental Biodegradation The accumulati It is very detrin Danger: It is inflammabil explosive gas. \ Polymerization If inhaled Move victim to Keep victim wan Do not use mou When breathing oxygen inhalatio In case of conta Remove and iso Immediately flus Wash skin with s When it goes int Immediately hole If swallowed Don't make the	n, eyes and throat. Isthma is caused. Cond Ids permission concent Ission concentration, co Influence: Inature is low. In a aquatic life Interest in aquati	ration, it does not not notition may occur. c life living thing is living thing. n point, it may mix ir. with water etc. and victim ingested or is conscious or when the state of the s	feel as a bad smell. low with air and steam may perform the discrete di discrete discrete discrete discrete discrete discrete discrete d	t is unconscious, es.	

Toluene diisocvanate - 2

	Toluene diisocyanate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.





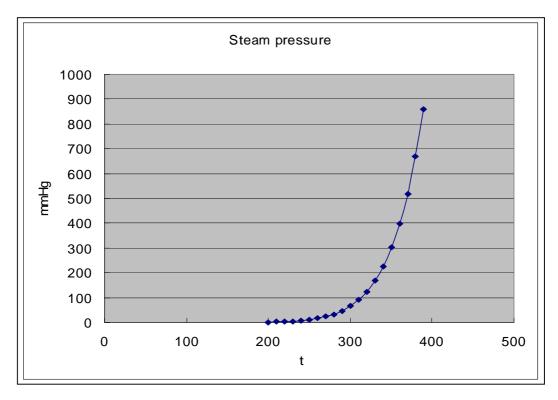
Toluene diisocvanate - 4

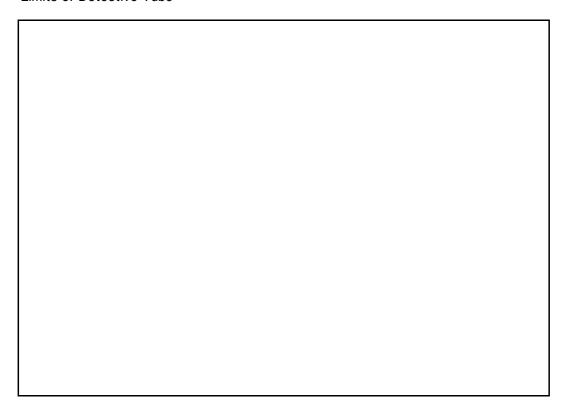
	Toluene diisocyanate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shook etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Dioctyl phthalate						
Common	Di-phthalate, Di-sec-octyl phthalate						
synonyms UN Number		CAS Number 117-81-7 IMDG CODE					
IMO Pollution Category							
Formula	C24H38O4	Molecurar Weight	390.56	Flammable limits in Air (%)			
Appearance	colorless			Sollubility in Water	insoluble		
Specific Gravity	0.9861	Vapor Specific Gravity	13.6	Boiling Point()	385		
Freezing Point	-55	Flash Point()	218	Ignition Point()	410		
Steam Pressure							
Corrosion	human:no	metal∶no	Oxidation	no			
TLV,Toxicity by Ingestion	Japan:5mg/m3 LD50 31000mg		CGIH:5mg/m3	TWA A3			
	Noxiousness: There is almost no volatility. If not exposed to high temperature, steam detrimental to people's health is not generated. Environmental influence: Biodegradation nature is low. The accumulation nature to an aquatic life living thing is high. Danger: It is an inflammability. It is a stable substance and there is usually no danger of ignition explosion. Vapor is heavier than air.						
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.						

Dioctyl phthalate - 2

	Dioctyl phthalate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. A solidyfing agent is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

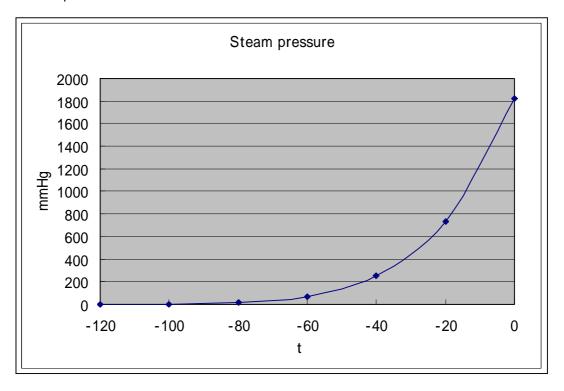




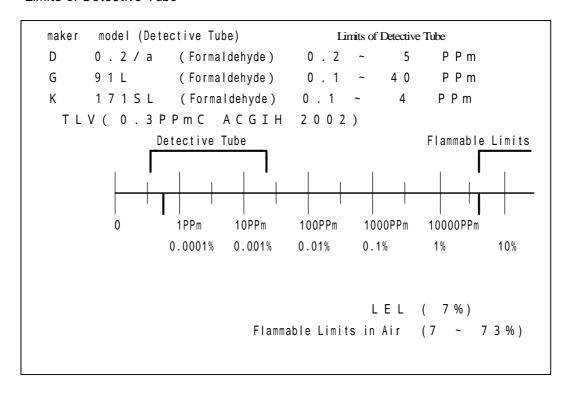
	Dioctyl phthalate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Formaldehyde s	Formaldehyde solution (45% or less)				
Common synonyms	Formalin, Formic aldehyde, Methanal					
UN Number	1198	CAS Number	50-00-0	IMDG CODE	class3.3/P3347	
IMO Pollution Category	С					
Formula	НСНО	Molecurar Weight	30	Flammable limits in Air (%)	7.0~73.0	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.085	Vapor Specific Gravity	1	Boiling Point()		
Freezing Point	-92	Flash Point()	49	Ignition Point()	420	
Steam Pressure						
Corrosion	human:yes	metal∶no	Oxidation	no		
TLV,Toxicity by Ingestion		Japan: 0.5ppm ACGIH: 0.3ppmC A2 L D50 800mg/kg (oral rat)				
Noxiousness	Corrosion substance. Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Condition may appear behind time. Carcinogenic [to a man] is suspected. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low Toxicity is strong to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Formalin - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



Limits of Detective Tube



The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Xylenol				
Common synonyms	Dimethylphenol, Hydroxydimethylbenzene				
UN Number	2261 CAS Number 1300-71-6 IMDG CODE class6.1/P6280			class6.1/P6280	
IMO Pollution Category	В				
Formula	C8H10O	Molecurar Weight	122.17	Flammable limits in Air (%)	1 . 4 ~
Appearance	white			Sollubility in Water	insoluble
Specific Gravity	0.9680 ~ 1.036	Vapor Specific Gravity	4.2	Boiling Point()	203
Freezing Point	26 ~ 76	Flash Point()	94	Ignition Point()	599
Steam Pressure					
Corrosion	human:yes	metal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 296mg/kg		CGIH:		
Noxiousness	Acute toxicity substance Noxiousness: There are stimulative and corrosive to the skin, eyes and the throat. It is easily absorbed from membrane and lungs. Condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is medium. Toxicity is strong to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Xvlenol - 2

	Xylenol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector
	Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea
	Recovery is difficult in order to dissolve in sea water for a short time.

Xylenol - 3

Limits of Detective Tube	
Limits of Detective Tube	

Xvlenol - 4

The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat

ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Alkylbenzenesulfonic acid				
Common	7 mg/s/s/lizariosarionio dola				
synonyms	0504	r	I	1	
UN Number	2584 2586	CAS Number	27176-87-0	IMDG CODE	class8/P8105
IMO Pollution Category	С				
Formula	C18H3O3S	Molecurar Weight	326.5	Flammable limits in Air (%)	
Appearance	brown			Sollubility in Water	easily soluble
Specific Gravity	1	Vapor Specific Gravity		Boiling Point()	300
Freezing Point		Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan: L D50 650mg/k		CGIH:		
Noxiousness	Noxiousness: Most detrimental nature cannot be found. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is nonflammability.				
First Aid	In case of conta Remove and iso Immediately flus Wash skin with s When it goes in Immediately hol If swallowed Don't make the	late contaminated clotish skin with running wasoap and water. to an eye deyelids open and flus inside of a mouth washakes place automatical	hingand shoes. ter for at least 15 h with plenty of v		by force.

Alkylbenzenesulfonic acid - 2

	Alkylbenzenesulfonic acid - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method
	Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Steam pressure curve	Alkylbenzenesulfonic acid - 3
Limits of Detective Tube	

	Alkylbenzenesulfonic acid - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Hexamethylenediamine				
Common synonyms	1,6-Diaminohexane, Nylon-diamine				
UN Number	1783 CAS Number 124-09-4 IMDG CODE class8/P818		class8/P8180		
IMO Pollution Category	С				
Formula	NH2(CH2)6NH2	Molecurar Weight	116.21	Flammable limits in Air (%)	0.9~7.6
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.93	Vapor Specific Gravity	4	Boiling Point()	205
Freezing Point	45	Flash Point()	85	Ignition Point()	305
Steam Pressure					
Corrosion	human:yes	metal∶yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 750mg/kį		CGIH: 0.5ppmT\	NA	
	Noxiousness: There are stimulative and corrosive to the skin, eyes and throat. Condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Hexamethylenediamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Hexamethylenediamine - 3 Steam pressure curve Limits of Detective Tube

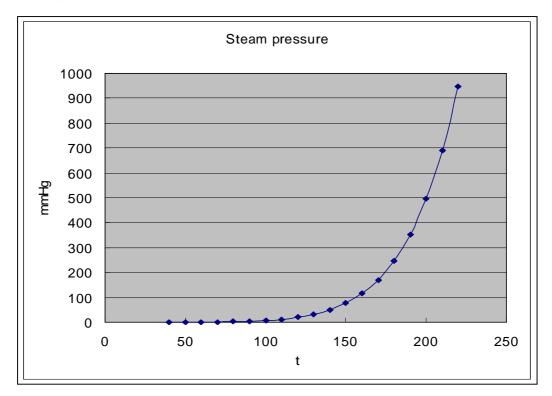
Hexamethylenediamine - 4

	Hexamethylenediamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at th
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

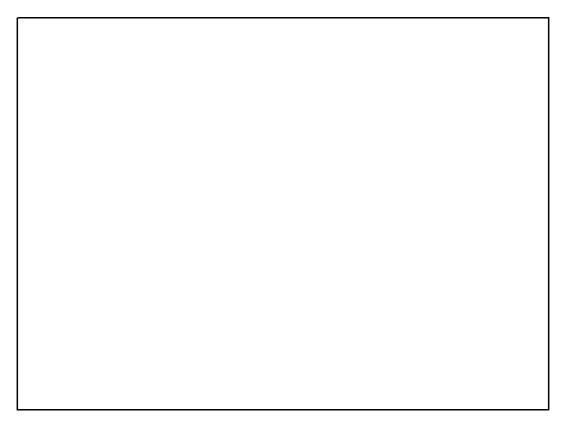
Material Name	Phosphoric acid				
Common synonyms	Orthophosphoric acid				
UN Number	1805	CAS Number	7664-38-2	IMDG CODE	class8/P8204
IMO Pollution Category	D				
Formula	H3PO4	Molecurar Weight	98	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.8741	Vapor Specific Gravity		Boiling Point()	213
Freezing Point	42.35	Flash Point()		Ignition Point()	
Steam Pressure	0.03mmHg(20)			
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:1mg/m3 L D50 1530mg/	kg (oral rat)	ACGIH:1mg/m3	BTWA 3mg/m3STEL	-
Noxiousness	Corrosion substance Noxiousness: Usually, detrimental steam is not produced. Contact corrodes the skin, eyes and the throat Condition may appear behind time. Environmental influence: It is detrimental to an aquatic life living thing. Danger: It is nonflammability. Heat will be generated if water is contacted. Metal is invaded and hydrogen gas with explosion danger is generated.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Phosphoric acid - 2

	Phosphoric acid - 2
The measure in case of a fire	Fire extinguisher It is nonflammability.
	The fire-extinguishing method Cool containers with flooding quantities of water. It is cautious of generating of the hydrogen gas by contact to metal in especially a blockade place.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources.
	Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



Limits of Detective Tube



	Phosphoric acid - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Sorbitol				
Common synonyms	Sorbit, Sorbol				
UN Number		CAS Number	50-70-4	IMDG CODE	
IMO Pollution Category					
Formula	C5H14O6	Molecurar Weight	182.17	Flammable limits in Air (%)	
Appearance	white			Sollubility in Water	easily soluble
Specific Gravity	1.47	Vapor Specific Gravity		Boiling Point()	
Freezing Point	110	Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:no	metal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 15900mg		CGIH:		
Noxiousness	Environmental There is biodeg	radation nature. on nature to an aquati		: low.	
First Aid	In case of conta Remove and iso Immediately flus Wash skin with s When it goes int Immediately hold If swallowed Don't make the	late contaminated clot sh skin with running wa soap and water. to an eye d eyelids open and flus inside of a mouth wasl akes place automatica	hingand shoes. ter for at least 15 h with plenty of wa	minutes. ater for at least 15 minut and don't make it vomit b de to incline so that the i	y force.

	Sorbitol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Sorbitol - 3

Steam pressure curve	
Limits of Detective Tube	

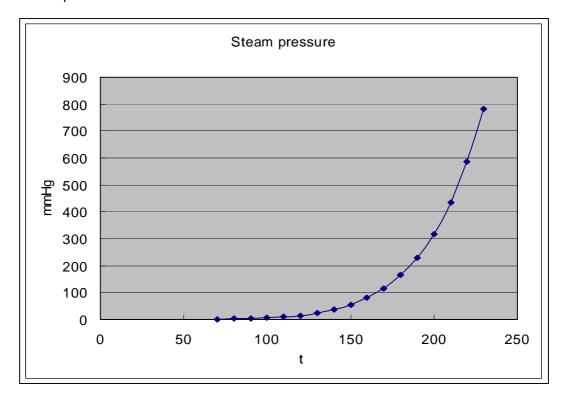
Sorbitol - 4 The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

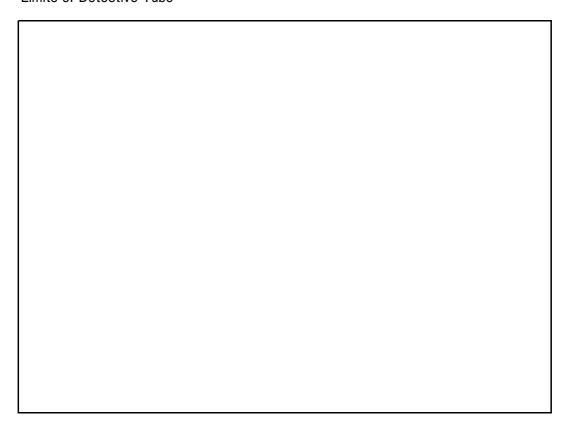
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Decanol				
Common synonyms					
UN Number	3082	CAS Number	112-30-1	IMDG CODE	Class9/P9028
IMO Pollution Category	В				
Formula		Molecurar Weight		Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity		Vapor Specific Gravity		Boiling Point()	
Freezing Point		Flash Point ()		Ignition Point()	
Steam Pressure					
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan : L D50 28000m	A0 ng/kg (oral rat)	CGIH:		
	people's heal Environment There is biod The accumul Danger : It is inflamma	ost no volatility, and if not the is not generated.	c life living thing is	s low.	
First Aid	It respires art has stopped, a When breathir oxygen inhala In case of cor Remove and i Immediately f Wash skin wit When it goes Immediately h If swallowed Don't make th	varm and quiet. ificially, after loosening cland when breathing is we are is difficult, although it is it in it is effective. Intact solate contaminated cloth lush skin with running was an soap and water. Into an eye hold eyelids open and flustive inside of a mouth washing takes place automatical	eak. is conscious or well with plenty of well with water, a	when breathing, although in minutes. ater for at least 15 minutes and don't make it vomit be	t is unconscious, tes.

	Decanol - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray.
	In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The manager at the	Notes to a human body
The measure at the time of leak	A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea
	When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.



Limits of Detective Tube



The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

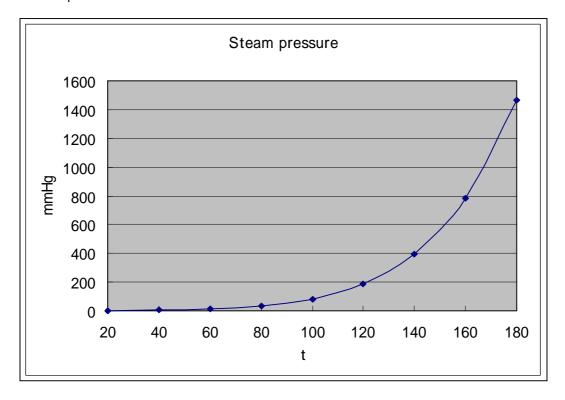
The cautions on abandonment

The cautions on abandonment

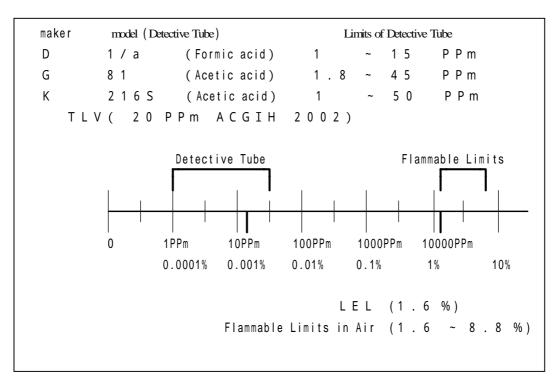
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Methacrylic aci	d			
Common synonyms	Methylacrylic a	cid			
UN Number	2531	CAS Number	79-41-4	IMDG CODE	Class8/P8192
IMO Pollution Category	D				
Formula	C4H6O2	Molecurar Weight	86	Flammable limits in Air (%)	1 . 6 ~ 8 . 8
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.0128	Vapor Specific Gravity	3	Boiling Point()	161
Freezing Point	16	Flash Point()	77.2	Ignition Point()	
Steam Pressure					
Corrosion	human:yes	metal∶yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan : L D 50 1000mg/		CGIH:20ppmT\	WA	
	Condition may Environmental There is biodeg The accumulati Danger:	gradation nature. ion nature to an aquati	c life living thing is	low. with air and steam may p	produce explosive gas.
First Aid	When breathing oxygen inhalation oxygen inhalation In case of contained Remove and iscommediately flus Wash skin with strength When it goes in Immediately hold If swallowed Don't make the	rm and quiet. ith-to-mouth method it is difficult, although it is effective. act plate contaminated clot is skin with running was soap and water. to an eye deyelids open and flustiaside of a mouth was leakes place automatical	hingand shoes. Iter for at least 15 Ith with plenty of war	r inhaled the substance. hen breathing, although it minutes. ater for at least 15 minute and don't make it vomit by de to incline so that the in	es. y force.

	Methacrylic acid - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.



Limits Detective Tube



	Methacrylic acid - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predetermi
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Potassium hydr	oxide			
Common synonyms	Caustic potash,	, Potassium hydrat	е		
UN Number	1814	CAS Number	1310-58-3	IMDG CODE	Class8/P8214
IMO Pollution Category	С				
Formula	КОН	Molecurar Weight	56.1	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	2.05	Vapor Specific Gravity		Boiling Point()	1320
Freezing Point ()	360.4	Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:2mg/m3 L D50 3015mg/		ACGIH:2mg/m	3C	
Noxiousness	There is corros Condition may Environmental It is detrimenta Danger: It is nonflamma A plastic and ru	I to an aquatic life livin	g body. g thing. eat, if moisture ar		
First Aid	When breathing oxygen inhalation oxygen inhalation In case of contain Remove and ison Immediately flus Wash skin with strength When it goes in Immediately hold If swallowed Don't make the	rm and quiet. ith-to-mouth method it is difficult, although it is effective. act plate contaminated clot is skin with running was soap and water. to an eye deyelids open and flustiaside of a mouth was leakes place automatical	hingand shoes. ter for at least 15 th with plenty of w	or inhaled the substance. when breathing, although it minutes. water for at least 15 minut and don't make it vomit bide to incline so that the i	es. y force.

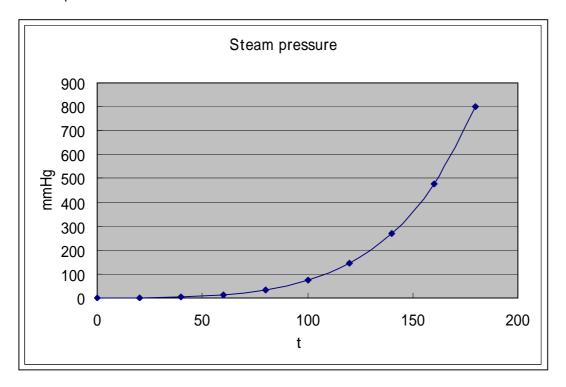
Potassium hydroxide - 2
Fire extinguisher It is nonflammability.
The fire-extinguishing method Cool containers with flooding quantities of water. It is cautious of generating of the hydrogen gas by contact with zinc, aluminum, etc. in a blockade place.
Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

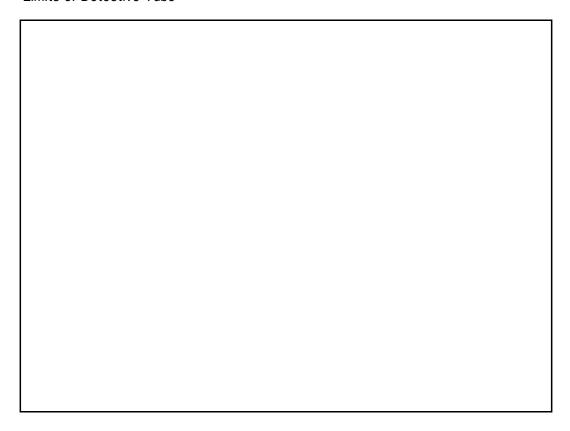
Steam pressure curve	
Limits of Detective Tube	

	Potassium hydroxide - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Dipentene					
Common	Limonene, Cine					
synonyms UN Number					Class3.3/P3326	
IMO Pollution	C	or to realison			0.0000.071 0020	
Category Formula			136.24	Flammable limits	0.75~6.1	
		Molecurar Weight	130.24	in Air (%)		
Appearance	colorless	Vapor		Sollubility in Water	insoluble	
Specific Gravity	0.8405	Specific Gravity	4.7	Boiling Point()	178	
Freezing Point	-95.5	Flash Point()	45	Ignition Point()	237	
Steam Pressure						
Corrosion	human:no	metal:no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: ACGIH: L D50 5000mg/kg (oral rat)					
	Noxiousness: In normal temperature, it is hard to reach detrimental concentration. Irritating to skin, eyes and throat. Toxicity is weak. Environmental influence: There is not biodegradation nature. The accumulation nature to an aquatic life living thing is high. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Dipentene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying, and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	Dipentene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the
The cautions on	The cautions on abandonment A contaminant etc. is contained to an airtight container is sent to the permitted

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

abandonment

Material Name	Sodium hydrogen sulfide				
Common synonyms	Sodium bisulfide	Sodium bisulfide, Sodium hydrosulphide,			
UN Number	2949	CAS Number	16721-80-5	IMDG CODE	Class8/P8225
IMO Pollution Category	В				
Formula	NaHS	Molecurar Weight	56.1	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.79	Vapor Specific Gravity		Boiling Point()	
Freezing Point	350	Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion		A((abdominal cavity	CGIH: rat)		
Noxiousness	Noxiousness: Little hydrogen sulfide gas has occurred. There is corrosive to a living body. Condition may appear behind time. Environmental influence: It is detrimental to an aquatic life living thing. Danger: It is nonflammability. Since hydrogen sulfide gas has the danger of ignition and explosion, a sealing place takes cautions. It melts into water and weak alkalinity is shown.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Sodium hydrogensulfite - 2

	Sodium hydrogensulfite - 2
The measure in case of a fire	Fire extinguisher It is nonflammability.
	The fire-extinguishing method Cool containers with flooding quantities of water. It is cautious of generating of the hydrogen gas by contact with zinc, aluminum, etc. in a blockade place.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Sodium hydrogensulfite - 3 Steam pressure curve Limits of Detective Tube

Sodium hydrogensulfite - 4

	Sodium nydrogensulfite - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diphenylmethane-4,4-diisocyanate				
Common synonyms	MDI, Methylene	MDI, Methylene bis			
UN Number	2489 CAS Number		101-68-8	IMDG CODE	Class6.1/P6140
IMO Pollution Category	В	L			
Formula	C15H10O2N2	Molecurar Weight	250.26	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.19	Vapor Specific Gravity		Boiling Point()	194~199
Freezing Point	37.2	Flash Point()	202	Ignition Point()	232
Steam Pressure					
Corrosion	human:yes	metal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: 0.05mg/ L D 50	m3 A0	CGIH: 0.005ppn	nTWA	
Noxiousness	Noxiousness: Irritating to the skin, eyes and the throat. Condition like asthma is caused. Condition may appear behind time. A bad smell is not felt even if it exceeds permission concentration. Below in permission concentration, condition may occur. Environmental influence: Since it decomposes underwater, the accumulation nature to an aquatic life living thing is low. Danger: It is inflammability. Polymerization is carried out reacting gradually with water etc. and generating carbon dioxide.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Diphenylmethane-4,4-diisocyanate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

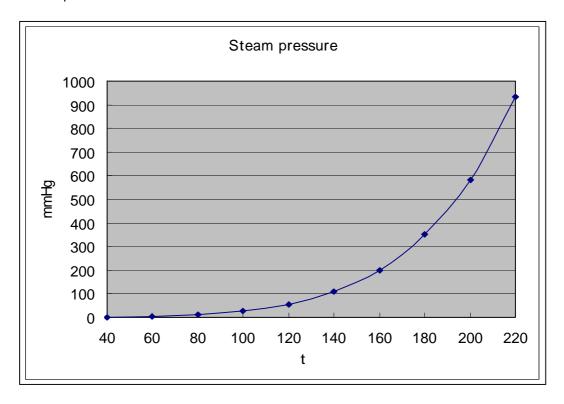
Diphenylmethane-4,4-diisocyanate - 3 Steam pressure curve Limits of Detective Tube

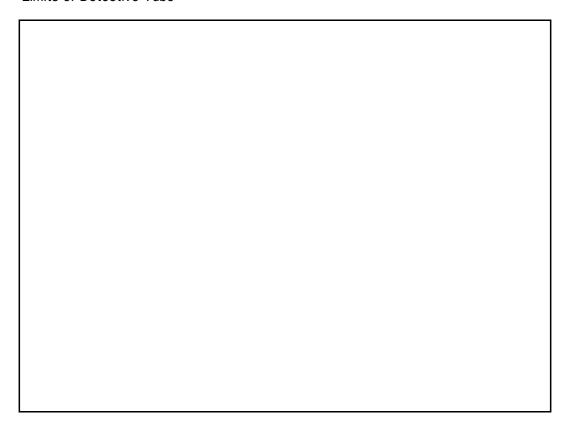
Diphenylmethane-4,4-diisocyanate - 4

	Dipnenylmethane-4,4-dilsocyanate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Nitrobenzene				
Common synonyms	Nitrobenzol, Oil	Nitrobenzol, Oil of mirbane			
UN Number	1662 CAS Number		98-95-3	IMDG CODE	Class6.1/P6208
IMO Pollution Category	В	I			
Formula	C6H5NO2	Molecurar Weight	123.1	Flammable limits in Air (%)	1 . 8 ~ 40
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.2037	Vapor Specific Gravity	4.3	Boiling Point()	211.03
Freezing Point ()	5.85	Flash Point()	88	Ignition Point()	482
Steam Pressure	1mmHg(20)				
Corrosion	human:no	metal∶no	Oxidation	yes	
TLV,Toxicity by Ingestion	Japan∶1ppm L D50 640mg/k		CGIH:1ppmTWA	A A3 skin	
	Noxiousness: Irritating to skin, eyes and throat. Blood is affected and have an attack of methemoglobinemia. There is danger of skin absorption. Carcinogenic is checked in the animal experiment. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Nitrobenzene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. A solidyfing agent is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	Nitrobenzene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.
	At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a
	predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

The cautions on

abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Dibutyl phthalate				
Common synonyms					
UN Number	3082	CAS Number	84-74-2	IMDG CODE	Class9/P9028
IMO Pollution Category	A				
Formula	C6H4(COOC4H9)2	Molecurar Weight	278.35	Flammable limits in Air (%)	0.5~2.5
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.048	Vapor Specific Gravity		Boiling Point()	339
Freezing Point	-35	Flash Point()	187	Ignition Point()	402
Steam Pressure					
Corrosion	human: me	etal:	Oxidation		
TLV,Toxicity by Ingestion	Japan∶5mg/m3 L D50 8000mg/kg		GIH:5mg/m3T	WA	
	Noxiousness: There is almost no volatility, and detrimental steam is not generated if not exposed to high temperature. It is known for the animal experiment that it may have toxic influence on a man's reproduction. Environmental influence: Biodegradation nature is low. The accumulation nature to an aquatic life living thing is high. Toxicity is strong to an aquatic life living thing. Danger: It is inflammability. It is a stable substance and there is usually no danger of ignition and explosion. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Dibutyl phthalate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. A solidyfing agent is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

	Dibutyl phthalate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
The cautions on	The cautions on abandonment A contaminant etc. is contained to an airtight container is sent to the permitted

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

abandonment

Material Name	Triethanolamine	Triethanolamine			
Common					
synonyms	Triethylolamine,				
UN Number	2491	CAS Number	102-71-6	IMDG CODE	Class8/P8169
IMO Pollution Category	D				
Formula	N(CH2CH2OH)3	Molecurar Weight	149.2	Flammable limits in Air (%)	1 . 3 ~ 8 . 5
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.1242	Vapor Specific Gravity	5.2	Boiling Point()	206.7
Freezing Point	18	Flash Point()	179	Ignition Point()	324
Steam Pressure					
Corrosion	human∶no r	netal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 8680mg/k		GIH:5mg/m3	ΓWA	
	Noxiousness: In normal temperature, it is hard to reach detrimental concentration. Acute toxicity is low. Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. The accumulation nature is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Triethanolamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

Triethanolamine - 3 Steam pressure curve Limits of Detective Tube

	Triethanolamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

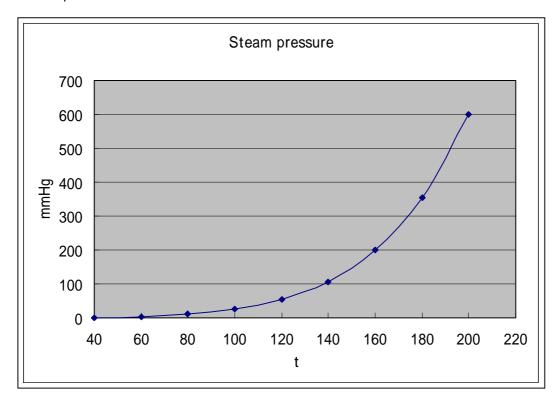
The cautions on abandonment

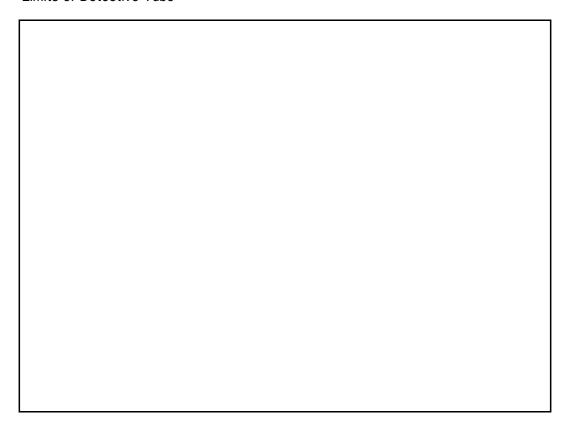
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diethyl sulphate	Diethyl sulphate			
Common synonyms	Ethyl sulphate, Sulfuric acid diethyl ester				
UN Number	1594 CAS Number		64-67-5	IMDG CODE	Class6.1/P6130
IMO Pollution Category	В				
Formula	(C2H5)2SO4	Molecurar Weight	154.18	Flammable limits in Air (%)	4 . 1 ~
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.1774	Vapor Specific Gravity	5.3	Boiling Point()	208
Freezing Point	25.2	Flash Point()	104	Ignition Point()	436.1
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 880mg/k		CGIH:		
	Noxiousness: Irritating to skin, eyes and throat. Environmental influence: Decomposes gradually by water. Danger: It is inflammability. Vapor is heavier than air. It reacts violently with water. The mixture with water invades metal and generates ignition and explosive hydrogen gas.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Diethyl sulphate - 2

	Diethyl sulphate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle.
	Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

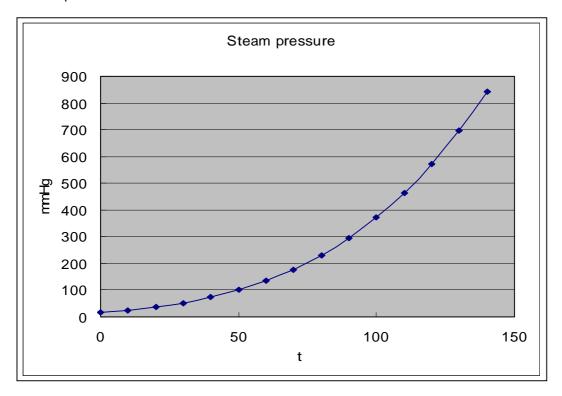


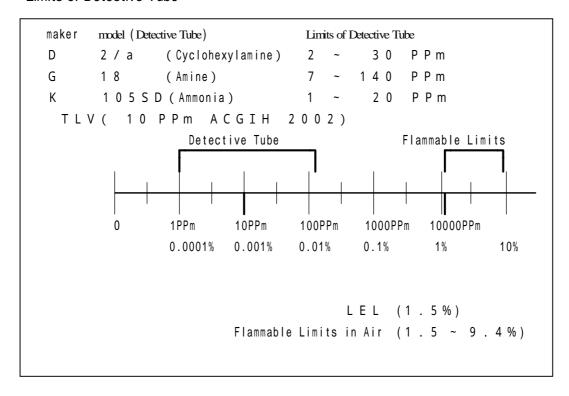


	Diethyl sulphate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car not it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Cyclohexylamin	Cyclohexylamine			
Common synonyms	Hexahydroaniline, Aminocyclohexane				
UN Number	2357 CAS Number		108-91-8	IMDG CODE	Class8/P8156
IMO Pollution Category	С				
Formula	C6H13N	Molecurar Weight	99.18	Flammable limits in Air (%)	0.5~21.7
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.8647	Vapor Specific Gravity	3.4	Boiling Point()	134.5
Freezing Point ()	-17.7	Flash Point()	31	Ignition Point()	293
Steam Pressure					
Corrosion	human:yes	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 156mg/k		GIH:10ppmT\	NA A4	
	Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Cyclohexylamine - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors.
	Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	Cyclohexylamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethyl-3-ethoxv	Ethyl-3-ethoxy propionate			
Common	Ethylethoxy propionate				
synonyms				01 00	
UN Number IMO Pollution		CAS Number		IMDG CODE	Class3.3
Category	С				
Formula	C7H14C3	Molecurar Weight		Flammable limits in Air (%)	1 . 0 5 ~
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.949	Vapor Specific Gravity	5	Boiling Point()	170.1
Freezing Point	-100	Flash Point()	82.2	Ignition Point()	377
Steam Pressure					
Corrosion	human:no	metal∶no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan: L D50 5000mg/		CGIH:		
Noxiousness	Flammable liquids, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. There is a central-nerves control action. Environmental influence: The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethyl-3-ethoxy propionate - 2

	Ethyl-3-ethoxy propionate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

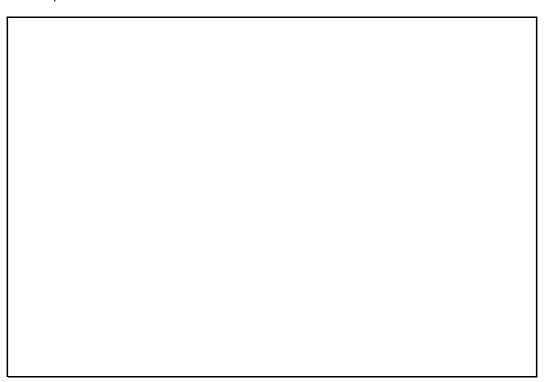
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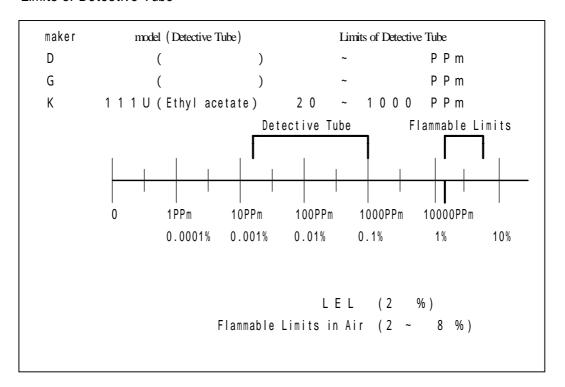
	Ethyl-3-ethoxy propionate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predeterm
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

	n-Butyl methacrylate					
Common synonyms				_		
UN Number	2227	CAS Number	97-88-1	IMDG CODE	Class3.3/P3316	
IMO Pollution Category	D					
Formula	C8H14O2	Molecurar Weight	142.2	Flammable limits in Air (%)	2 ~ 8	
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.894	Vapor Specific Gravity	4.9	Boiling Point()	163	
Freezing Point	-25	Flash Point()	52.2	Ignition Point()	294	
Steam Pressure						
Corrosion	human:no	metal∶no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: ACGIH: L D50 22600mg/kg (oral rat)					
Noxiousness	Flammable liquids Noxiousness: Irritating to eyes. There is danger of skin absorption. Poisoning condition may appear behind time. Environmental influence: It hydrolyzes underwater. The accumulation nature to an aquatic life living thing is medium. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. A plastic and rubber are corroded.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

n-Butvl methacrylate - 2

	n-Butyl methacrylate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer is sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	n-Butyl methacrylate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

		1 2			
Material Name	Calcium hypoch	nlorite			
Common synonyms	Calcium oxychloride, Bleaching powder				
UN Number	2880	CAS Number	7778-54-3	IMDG CODE	Class5.1/P5138
IMO Pollution Category	С				
Formula	Ca(OCI)2	a(OCI)2 Molecurar Weight 187.07 Flammable limits in Air (%)			
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.15	Vapor Specific Gravity		Boiling Point()	
Freezing Point ()		Flash Point()		Ignition Point ()	
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	yes	
TLV,Toxicity by Ingestion	Japan: L D50	A	CGIH:		
Noxiousness	Acute toxicity substance, Corrosion substance Noxiousness: Irritating to skin, eyes and throat. There is corrosive strong to a living body. Environmental influence: It is detrimental to an aquatic life living thing. Danger: When there is a strong oxidizing quality and an inflammable substance is contacted, it may be made to ignite, although it is nonflammability. Combustion is accelerated in case of a fire.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Calcium hypochlorite - 2

	Calcium hypochlorite - 2
The measure in case of a fire	It is nonflammability. The fire-extinguishing method Only water must not be used in case of a surrounding fire, and dry chemical, alcohl-resistant foam, etc. must not use it.
	Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing
	When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

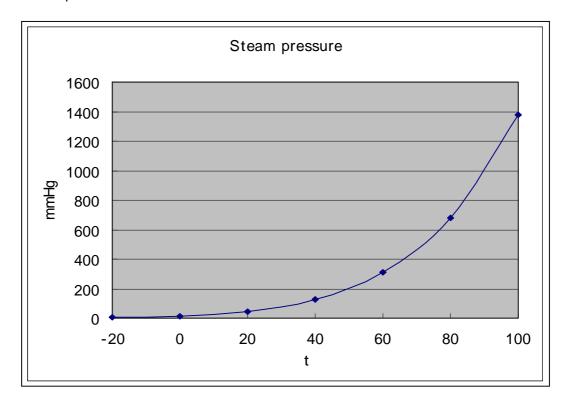
Calcium hypochlorite - 3 Syeam pressure curve Limits of Detective Tube

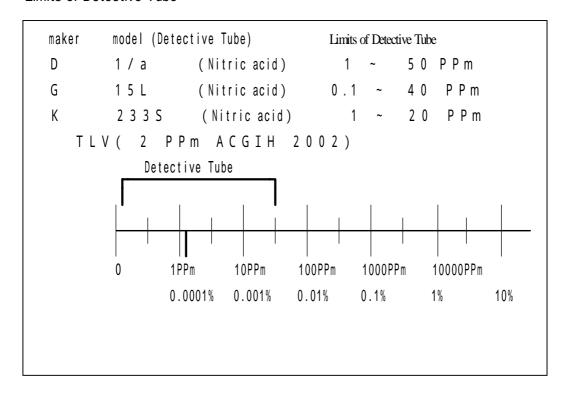
Calcium hypochlorite - 4

	Calcium hypochiorite - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Nitric acid				
Common synonyms	Aquafortis, Azotic acid, Hydrogen nitrate				
UN Number	2031 CAS Number 7697-37-2 IMDG CODE Class8/P8195				
IMO Pollution Category	С				
Formula	HNO3	Molecurar Weight	63	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.5	Vapor Specific Gravity		Boiling Point()	86
Freezing Point	-42	Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:yes	metal:yes	Oxidation	yes	
TLV,Toxicity by Ingestion	Japan:2ppm LD50		ACGIH:2ppmT\	WA 4ppmSTEL	
Noxiousness	Acute toxicity substance, Corrosion substance. Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: It is detrimental to an aquatic life living thing. Danger: It is nonflammability. If water is contacted, heat will be generated and the amount of generating of corrosive steam will increase. Metal is invaded and hydrogen gas with explosion danger is generated. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Nitric acid - 2
The measure in case of a fire	Fire extinguisher It is nonflammability.
	The fire-extinguishing method Cool containers with flooding quantities of water. It is cautious of generating of the hydrogen gas by contact with metal in a blockade place.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	Nitric acid - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.
	At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a
	predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Butyl benzyl phthalate					
Common synonyms	1,2-Benzenedicarboxylic acid butyl phenylmethyl ester, BBP					
UN Number	3082 CAS Number 85-68-7 IMDG CODE Class9/P9028					
IMO Pollution Category	А					
Formula	C19H20O4 Molecurar Weight 312.37 Flammable limits in Air (%)					
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	1.117	Vapor Specific Gravity	10.8	Boiling Point()	370	
Freezing Point	-40	Flash Point()	199	Ignition Point()		
Steam Pressure						
Corrosion	human:no	metal∶no	Oxidation	yes		
TLV,Toxicity by Ingestion		A(kg (abdominal cavit	CGIH: ty mouse)			
	Noxiousness: There is almost no volatility, and detrimental steam is not generated if not exposed to high temperature. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is high. Danger: It is inflammability.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Butvl benzvl phthalate - 2

	Butyl benzyl phthalate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

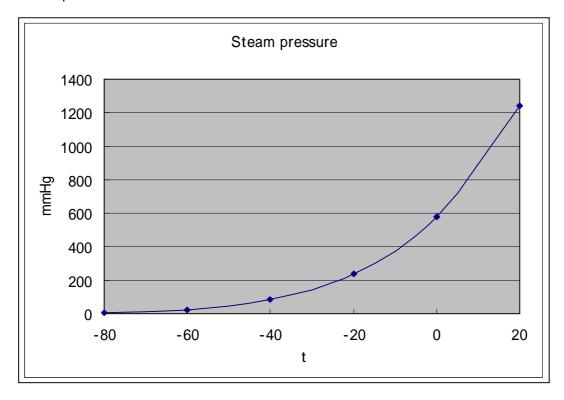
Limits of Detective Tube					

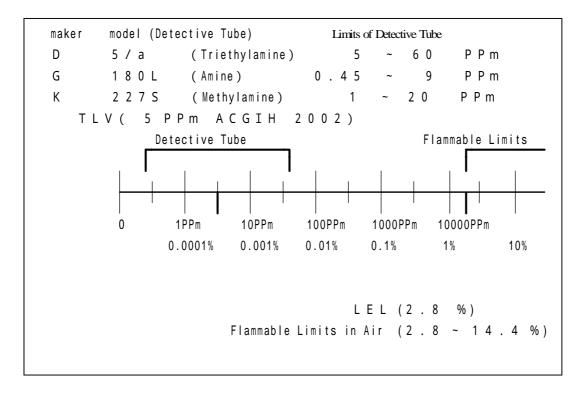
Butvl benzvl phthalate - 4

	Butyl benzyl phthalate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Dimethylamine					
Common synonyms	N-Methylmethanamine, DMA					
UN Number	1160 CAS Number 124-40-3 IMDG CODE Class3.1/P3118 3.2/P3212					
IMO Pollution Category	С					
Formula	(CH3)2NH	Molecurar Weight	45.1	Flammable limits in Air (%) 2 . 8 ~ 1 4 . 4		
Appearance	colorless				easily soluble	
Specific Gravity	0.6804	Vapor Specific Gravity	1.6	Boiling Point()	6.88	
Freezing Point	-93	Flash Point()	-17.8	Ignition Point()	400	
Steam Pressure	400mmHg(20)				
Corrosion	human:yes	metal∶no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan:10ppm L D50 698mg/k		CGIH:5ppmTW	/A 15ppmSTEL A4		
	Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. A plastic and rubber are corroded.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Dimethylamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

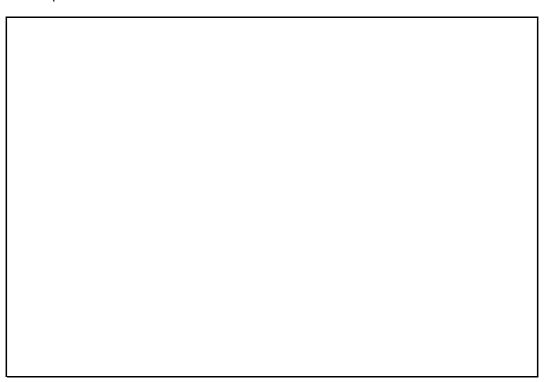


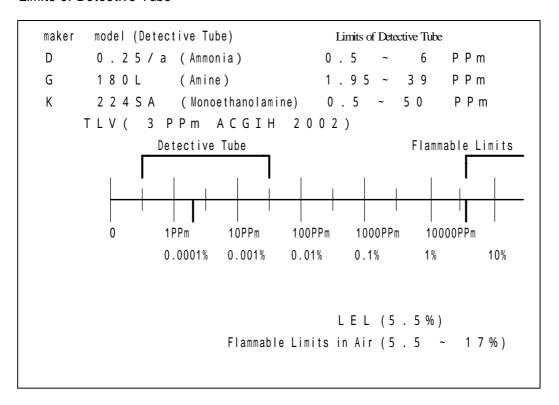


	Dimethylamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethanolamine					
Common	Aminoethanol, Hydroxyethylamine					
synonyms UN Number						
IMO Pollution	2491	CAS Number	141-43-5	IMDG CODE	Class8/P8169	
Category	D					
Formula	H2NCH2CH2OH	Molecurar Weight	149.2	Flammable limits in Air (%)	5.5~17	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.0117	Vapor Specific Gravity	2.1	Boiling Point()	171.1	
Freezing Point	10.5	Flash Point()	85	Ignition Point()	410	
Steam Pressure						
Corrosion	human:no m	etal∶no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: L D50 2100mg/kg		GIH:3ppmTW	/A 6ppmSTEL		
Noxiousness	Acute toxicity substance, Corrosion substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Ethanolamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	Ethanolamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.
	Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments
	Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much].
	Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

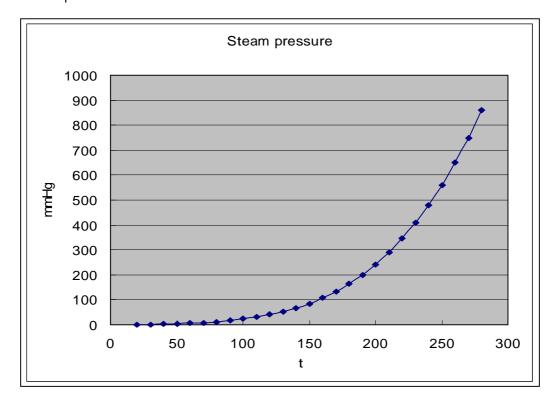
The cautions on

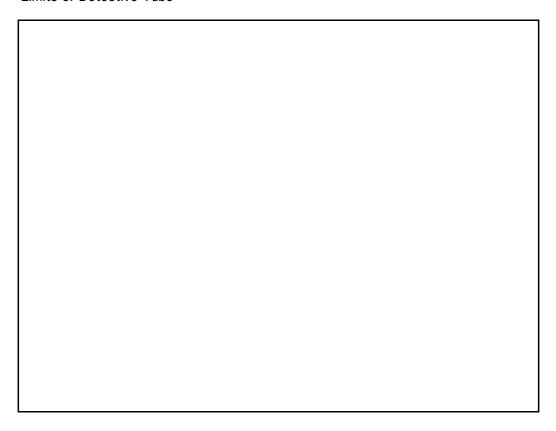
abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diethanolamine						
Common		Too be a discolor of					
synonyms	Diethylolamine, 2,2-Iminodiethanol						
UN Number	1760	CAS Number	111-42-2	IMDG CODE	Class8/P8147		
IMO Pollution Category	D	D					
Formula	HN(CH2CH2OH)2	Molecurar Weight	105.1	Flammable limits in Air (%)	1 . 6 ~ 9 . 8		
Appearance	colorless			Sollubility in Water	easily soluble		
Specific Gravity	1.0881	Vapor Specific Gravity	3.6	Boiling Point()	271		
Freezing Point	28	Flash Point()	138	Ignition Point()	662.2		
Steam Pressure							
Corrosion	human∶no me	etal:no	Oxidation	no			
TLV,Toxicity by Ingestion	Japan : L D 50 710mg/kg (GIH:2mg/m3T	WA skin			
First Aid	Noxiousness: Irritating to skin, eyes and throat. There is danger of skin absorption. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability. Vapor is heavier than air.						
	Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.						

	Diethanolamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

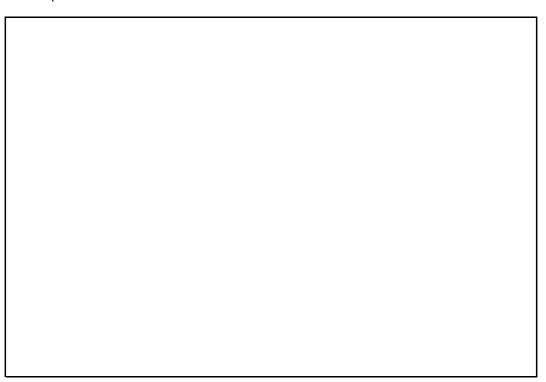


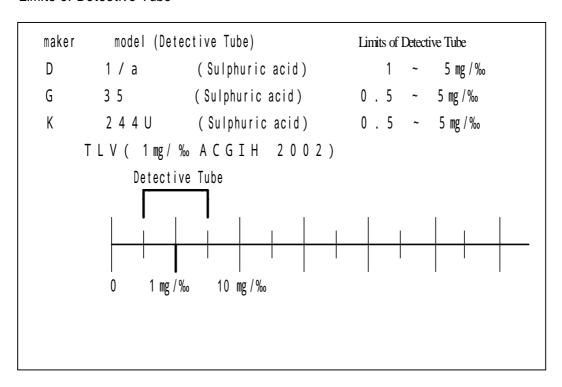


	Diethanolamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predeter
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Sulphuric acid	Sulphuric acid					
Common synonyms	Sulfuric acid, Oil of vitriol						
UN Number	1830	CAS Number	IMDG CODE	Class8/P8230			
IMO Pollution Category	С						
Formula	H2SO4	Molecurar Weight	98.1	Flammable limits in Air (%)			
Appearance	colorless			Sollubility in Water	easily soluble		
Specific Gravity	1.834	Vapor Specific Gravity		Boiling Point()	340		
Freezing Point ()	10.36	Flash Point()		Ignition Point()			
Steam Pressure							
Corrosion	human:yes	metal:yes	Oxidation	yes			
TLV,Toxicity by Ingestion	Japan:1mg/m3 L D50 2140mg/		CGIH:1mg/m3	BTWA 3mg/m3STEL	A2		
Noxiousness	Acute toxicity substance, Corrosion substance Noxiousness: Irritating to skin, eyes and throat. Carcinogenic is suspected to a man. Poisoning condition may appear behind time. Environmental influence: It is detrimental to an aquatic life living thing. Danger: It reacts with water and generates heat violently. Although concentrated sulfuric acid makes nonconductor and does not invade iron, if it dilutes, it will invade much metal and will generate ignition and explosive hydrogen gas.						
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.						

	Sulfuric acid - 2
The measure in case of a fire	Fire extinguisher It is nonflammability.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In order to react violently with water, don't drain water off directly. In case of large fire, use much water spray. Cool containers with flooding quantities of water. It is cautious of hydrogen gas generating by contact to metal in especially a closing place. Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





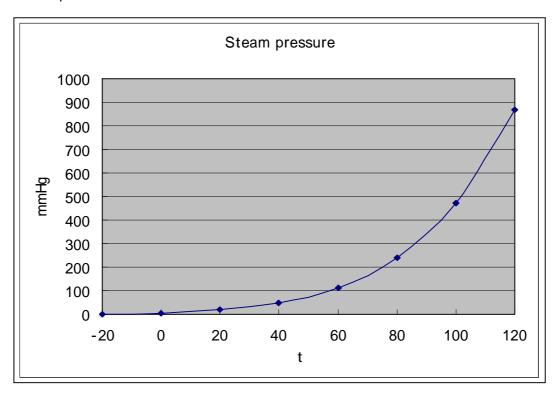
	Sulfuric acid - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car tec., and a breake and the province of the desorption of a hose.
The cautions on	The cautions on abandonment A contaminant etc. is contained to an airtight container is sent to the permitted

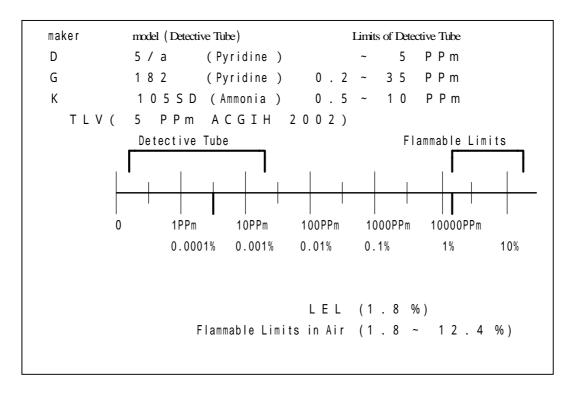
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

abandonment

Material Name	Pyridine					
Common synonyms	Azabenzene					
UN Number	1282	CAS Number	110-86-1	IMDG CODE	Class3.2/P3277	
IMO Pollution Category	D					
Formula	C5H5N	Molecurar Weight	79.1	Flammable limits in Air (%)	1 . 8 ~ 1 2 . 4	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	0.977	Vapor Specific Gravity	2.7	Boiling Point()	115.5	
Freezing Point	-41.8	Flash Point()	20	Ignition Point()	482	
Steam Pressure						
Corrosion	human:yes	metal∶no	Oxidation	no		
TLV,Toxicity by Ingestion	Japan: L D50 891mg/k		CGIH:5ppmTW	/A		
	Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: The accumulation nature to an aquatic life living thing is medium. Danger: Inflammability is high. It mixes with air, vapor becomes explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Pyridine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





Pyridine - 4

The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

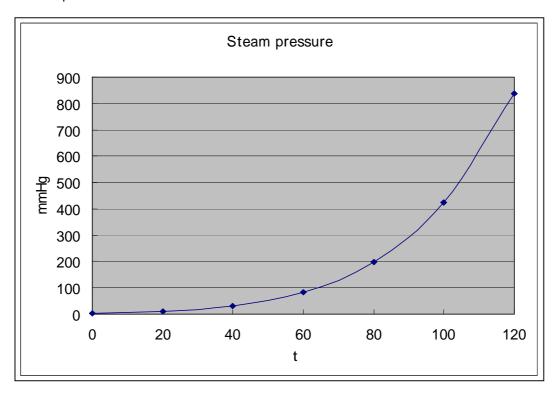
The cautions on abandonment

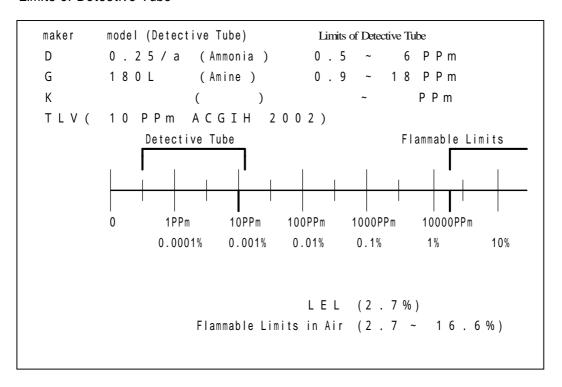
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Motorial Name	Ethylonodiamina				
	Ethylenediamine				
Common synonyms					
UN Number	1604	CAS Number	107-15-3	IMDG CODE	Class8/P8170
IMO Pollution Category	С				
Formula	NH2CH2CH2NH2	Molecurar Weight	60.1	Flammable limits in Air (%)	2.7~16.6
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.8994	Vapor Specific Gravity	2.1	Boiling Point()	117
Freezing Point	8.5	Flash Point()	33.9	Ignition Point()	385
Steam Pressure					
Corrosion	human:yes	metal:no	Oxidation	no	
TLV,Toxicity by Ingestion	Japan:10ppm ACGIH:10ppmTWA A4 skin L D50 760mg/kg (oral rat)				
Noxiousness	Corrosion substance, Flammable liquids Noxiousness: Irritating to skin, eyes and throat. There is danger of skin absorption. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. It is detrimental to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Ethylenediamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle.
	Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Steam pressure curve





	Ethylenediamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ammonium gulfato					
Common	Ammonium sulfate					
synonyms						
UN Number		CAS Number	7783-20-2	IMDG CODE		
IMO Pollution Category	D					
Formula	(NH4)2SO4	Molecurar Weight	132.13	Flammable limits in Air (%)		
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.76	Vapor Specific Gravity		Boiling Point()		
Freezing Point	513	Flash Point()		Ignition Point()		
Steam Pressure						
Corrosion	human:	metal:	Oxidation			
TLV,Toxicity by Ingestion	Japan : L D50 2840mg/		CGIH:			
Noxiousness	Noxiousness: In the usual handling, there is almost no detrimental nature in a human body. Environmental influence: Danger: It is nonflammability. When involved in a fire, there is a possibility of generating strong stimulative sulfurous acid gas, nitrogen oxide, and ammonia gas, by heat decomposition.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Ammonium sulfate - 2
The measure in case of a fire	Fire extinguisher It is nonflammability.
	The fire-extinguishing method Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Ammonium sulfate - 3 Steam pressure curve Limits of Detective Tube

	Ammonium sulfate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car not a tanker are equipped with emergency implements for a predete
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethyleneglycol diacetate				
Common synonyms					
UN Number		CAS Number	111-55-9	IMDG CODE	
IMO Pollution Category	С				
Formula	C2H4(CH3COO)2	Molecurar Weight	146.1	Flammable limits in Air (%)	1 . 6 ~ 8 . 4
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.1	Vapor Specific Gravity	5	Boiling Point()	191
Freezing Point ()	-31	Flash Point()	96	Ignition Point()	
Steam Pressure					
Corrosion	human: m	netal:	Oxidation		
TLV,Toxicity by Ingestion	Japan∶ L D50 6850mg/k		CGIH:		
	Noxiousness: Since volatility is low, detrimental concentration is not reached in normal temperature. Stimulative to skin, eyes and throat is weak. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethyleneglycol diacetate - 2

	Ethyleneglycol diacetate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Ethyleneglycol diacetate - 3 Steam pressure curve Limits of Detective Tube

	Ethyleneglycol diacetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predetermined d
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Butyraldehyde					
Common						
synonyms UN Number	1129	CAS Number	123-72-8	IMDG CODE	Class3.2/P3196	
IMO Pollution		CAS Number	123-72-0	IMDG CODE	Class3.2/P3196	
Category	С			Florence de la lineita	Г	
Formula	CH3CH2CH2CHO	Molecurar Weight	72.1	Flammable limits in Air (%)	1.9~12.5	
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.8048	Vapor Specific Gravity		Boiling Point()	74.7	
Freezing Point	-99	Flash Point()	-9	Ignition Point()		
Steam Pressure						
Corrosion	human: m	etal:	Oxidation			
TLV,Toxicity by Ingestion	Japan: L D50 5890mg/k	-	CGIH:			
	Flammable liquids, Acute toxicity substance Noxiousness: Irritating to skin, eyes and throat. Poisoning condition may appear behind time. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. There is toxicity to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Polymerization may be caused by heating.					
First Aid	Polymerization may be caused by heating. If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Don't make the inside of a mouth wash well with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Butyraldehyde - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

Steam pressure curve	
Limits of Detective Tube	

	Butyraldehyde - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t

The cautions on abandonment

The cautions on

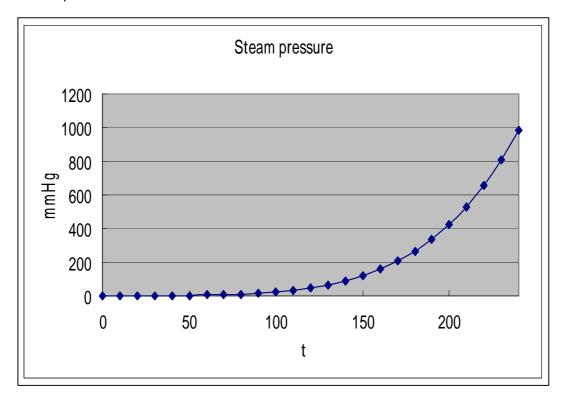
abandonment

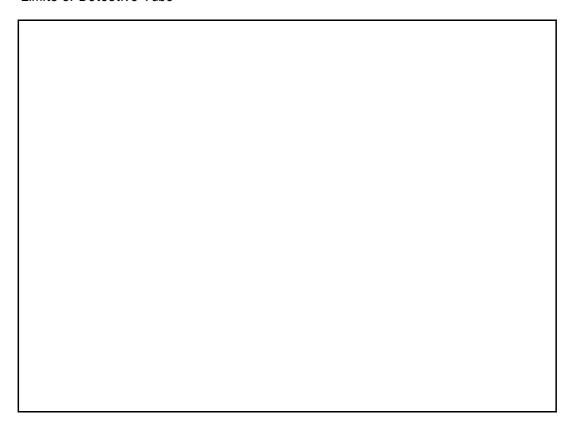
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Octanoic acid					
Common						
synonyms	2-Ethylhexanoic acid					
UN Number		CAS Number	149-57-5	IMDG CODE	Class8	
IMO Pollution Category	D					
Formula	C4H9CH(C2H5)COOH Molecurar Weight 144.22 Flammable limits in Air (%) 0 . 8				0.8~6.0	
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.9077	Vapor Specific Gravity	5	Boiling Point()	226.9	
Freezing Point	-83	Flash Point()	126.7	Ignition Point()	371	
Steam Pressure	0.03	BmmHg (20)				
Corrosion	human:yes metal	∶yes	Oxidation	yes	S	
TLV,Toxicity by Ingestion	Japan: L D 50 3000mg/kg (ora	ACGIH:				
	Noxiousness: IThere are stimulative and corrosive to skin, eyes and throat. It is made to eat metal. Environmental influence: Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Reduction is strong.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Octanoic acid - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

Steam pressure curve





The cautions on handling, and transportation / windward. storage

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

The cautions on abandonment

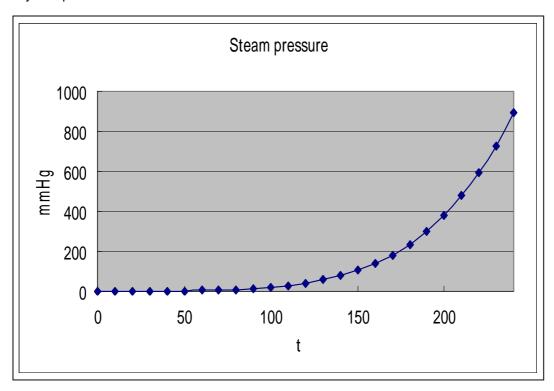
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

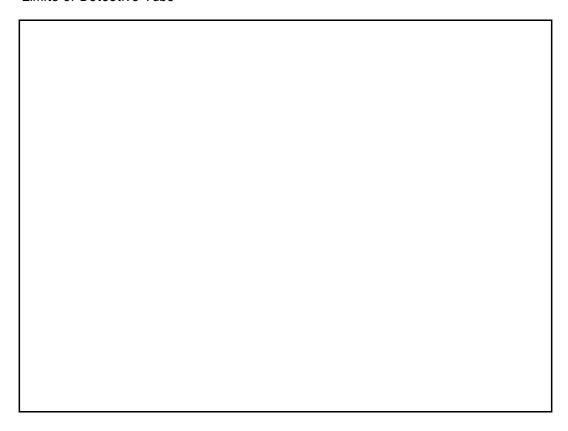
Material Name	Polymethylene	Polymethylene polyphenyl polyisocyanate			
Common			•	unhanul iggavangta	
synonyms	Papi,Polymeric MDI,Crude MDI,Polymethylene polyphenyl isocyanate				
UN Number	2810	CAS Number	9016-87-9	IMDG CODE	
IMO Pollution Category		D			
Formula		Molecurar Weight		Flammable limits in Air (%)	
Appearance	Tea brown			Sollubility in Water	
Specific Gravity	1.24	Vapor Specific Gravity	14	Boiling Point()	232
Freezing Point		Flash Point()	218	Ignition Point()	
Steam Pressure		0.005mmHg(20)			
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan : L D 50 10000mg	-	GIH:		
Noxiousness	Noxiousness: Irritating to skin, eyes and throat The asthma externals symptom is caused. It is likely to appear delaying the symptom. Even if a permissible density is exceeded, it doesn't feel it as a stench. The symptom might occur to the density below a permissible density. Environmental influence: The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. Polymerization is carried out reacting with water etc. and generating carbon dioxide.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Polymethylene polyphenyl polyisocyanate - 2

	Polymethylene polyphenyl polyisocyanate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	

Syeam pressure curve





Polymethylene polyphenyl polyisocyanate - 4

	Polymethylene polyphenyl polyisocyanate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Polybutene	Polybutene			
Common synonyms	Polybutylene, Polyisobutylene				
UN Number		CAS Number	9003-28-5	IMDG CODE	
IMO Pollution Category					
Formula		Molecurar Weight	250 ~ 2500	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.83 ~ 0.912	Vapor Specific Gravity		Boiling Point()	
Freezing Point	-50 ~ 20	Flash Point()	115 ~ 230	Ignition Point()	
Steam Pressure					
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan: L D 50 5890mg.		CGIH:		
	Noxiousness: Toxicity is low. A high density gas acts as suffocated gas. Environmental influence: There is little data about biodegradation nature to carry out. There is accumulation in the aquatic life living thing. Danger: It is an inflammability. The explosion limit is not known. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Polybutene - 2

	Polybutene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources.
	Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.

Polybutene - 3 Steam pressure curve Limits of Detective Tube

	Polybutene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the ti

The cautions on abandonment

The cautions on

abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Olefin mixtures	(C5-C15)			
Common	Ololli Illizares	(00 0.0)			
synonyms			T		
UN Number		CAS Number		IMDG CODE	
IMO Pollution Category				,	
Formula		Molecurar Weight		Flammable limits in Air (%)	
Appearance				Sollubility in Water	
Specific Gravity		Vapor Specific Gravity		Boiling Point()	
Freezing Point		Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan :	А	CGIH:		
Hazard and Noxiousness	Classification: Noxiousness: Environmental Danger:	influence :			
First Aid	If inhaled In case of conta When it goes in If swallowed				

Olefin mixtures(C-5-C15) - 2

		Olefin mixtures(C-5-C15) - 2
The measure in case of a fire	Fire extinguisher	
	The fire-extinguishing method	
	Firefighters protection	
The measure at the time of leak	Notes to a human body	
	Notes to environment	
	A method of removing	
Democrat Protective	Personal Protective Equipment	
Personal Protective Equipment and Detector		
Detector	Detector	
The management the	Leak on board	
The measure at the time of leak on the sea		
300	Leak on the sea	

Olefin mixtures(C-5-C15) - 3 Steam pressure curve Limits of Detective Tube

Olefin mixtures(C-5-C15) - 4

The cautions on handling, and transportation / storage	Handling Container handling Storage
	Transport
The cautions on abandonment	The cautions on abandonment

Material Name	Acrylamide				
Common synonyms	Propeneamide				
UN Number	2074	CAS Number	79-06-1	IMDG CODE	Class6.1/P6054
IMO Pollution Category	!)			
Formula	CH2=CHCONH2	Molecurar Weight	71.08	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.122	Vapor Specific Gravity		Boiling Point()	
Freezing Point		Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:yes m	netal:no	Oxidation	r	10
TLV,Toxicity by Ingestion	Japan:0.3mg/m3 LD50 170mg/kg (CGIH: 0.03mg/	/m3 TWA A2 skin	
	There are stimulation and a causticity for the skin, eyes, and airways. It is likely to appear delaying the poisoning symptom. Carcinogenesis is confirmed in the animal experiment. There is a skin absorption. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It doesn't burn easily though it is combustion. The explosive gas might be caused in steam mixing it with air if heated. The polymerization is caused by heating. Steam is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

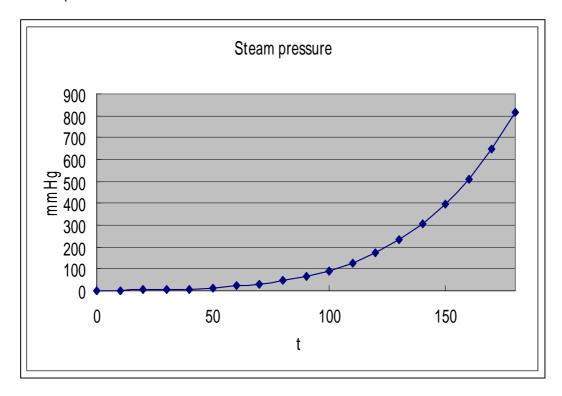
	Acrylamide - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
The meaning of the	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

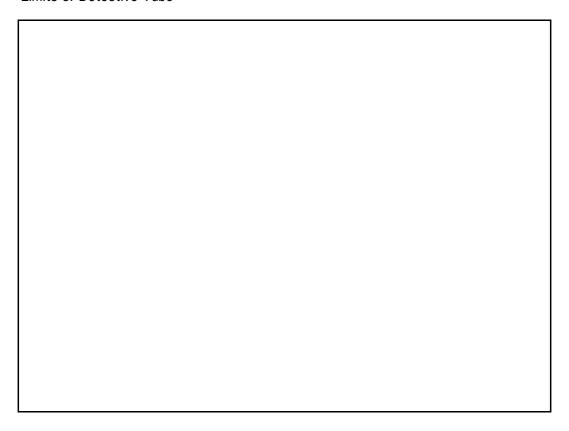
Acrylamide - 3
Steam pressure curve

·	Acrylamide - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predetermined d
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Heptanol				
Common synonyms	Heptyl alcohl				
UN Number		CAS Number	70995-11-2	IMDG CODE	
IMO Pollution Category		С			
Formula	CH3(CH2)6OH	Molecurar Weight	116.21	Flammable limits in Air (%)	1.2 ~ 10.0
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.882	Vapor Specific Gravity	4.04	Boiling Point()	176.81
Freezing Point	-34.03	Flash Point()	74	Ignition Point()	300
Steam Pressure	0.9mmHg(20)				
Corrosion	human: m	human: metal: Oxidation			
TLV,Toxicity by Ingestion	Japan: ACGIH: L D50 500mg/kg (oral rat)				
	Toxicity is low. Environmental influence: There is biodegradation nature. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas.Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Heptanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
	Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





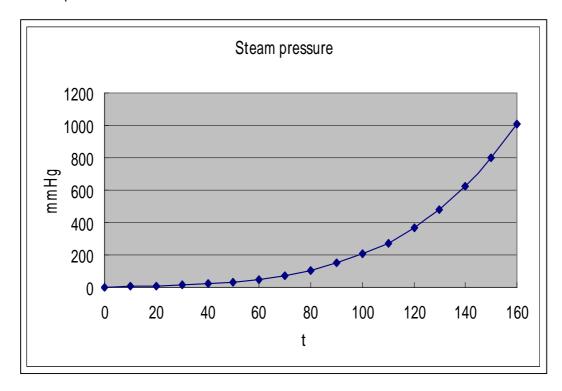
Heptanol - 4 The cautions on Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. handling, and A suitable protection implement is worn if needed and work is done from the transportation / windward. storage Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, evewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention. The cautions on The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted abandonment

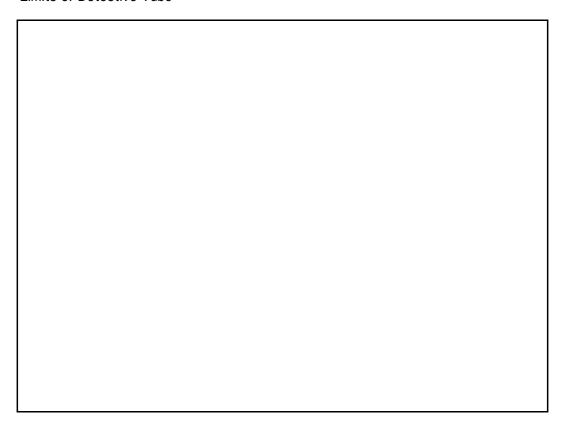
industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Palm oil fatty a	Palm oil fatty acid methyl ester				
Common synonyms	Coconut methyl ester					
UN Number		CAS Number		IMDG CODE		
IMO Pollution Category		D				
Formula		Molecurar Weight		Flammable limits in Air (%)		
Appearance	Straw			Sollubility in Water		
Specific Gravity	0.85	Vapor Specific Gravity		Boiling Point()	148	
Freezing Point		Flash Point()	65	Ignition Point()		
Steam Pressure						
Corrosion	human: r	metal:	Oxidation			
TLV,Toxicity by Ingestion	Japan: L D50	AC	CGIH:			
	Noxiousness: It is the one used for food and there is substantially no influence on the human body. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It doesn't burn easily and it is necessary heating.					
First Aid	If inhaled In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Palm oil fatty acid methyl ester - 2

	Palm oil fatty acid methyl ester - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	



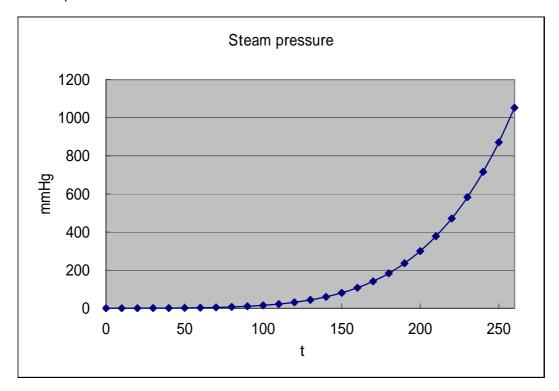


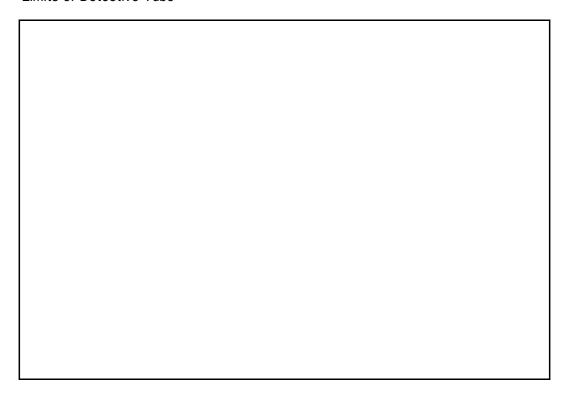
Palm oil fatty acid methyl ester - 4

	Palm oil fatty acid methyl ester - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at th
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Undecanol				
Common synonyms	Undecyl alchol,DIADOL 11				
UN Number	3082 CAS Number 112-42-5 IMDG CODE				
IMO Pollution Category	E	3			
Formula	CH3(CH2)9CH2OH	Molecurar Weight	172	Flammable limits in Air (%)	
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.822	Vapor Specific Gravity	6	Boiling Point()	243
Freezing Point	19	Flash Point()	117	Ignition Point()	
Steam Pressure		6 ~ 15.0mmHg			
Corrosion	human: me	tal:	Oxidation		
TLV,Toxicity by Ingestion	Japan: L D 50	ACC	GIH:		
	Noxiousness: Toxicity is low. Environmental influence: There is biodegradation nature. There is accumulation in the aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Undecanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.





The cautions on handling, and transportation / storage

Handling

Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward.

Work environment is maintained below at permission concentration.

When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared.

Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes.

A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near.

The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity.

Container handling

A container uses a thing without breakage, corrosion, a crack, etc.

It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc.

Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments

Storage

A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition.

It is desirable to place a watchman when engaged in work [in the place currently kept so much].

Transport

When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured.

At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it.

The residual substance in a hose is completely processed at the time of the desorption of a hose.

A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.

The cautions on abandonment

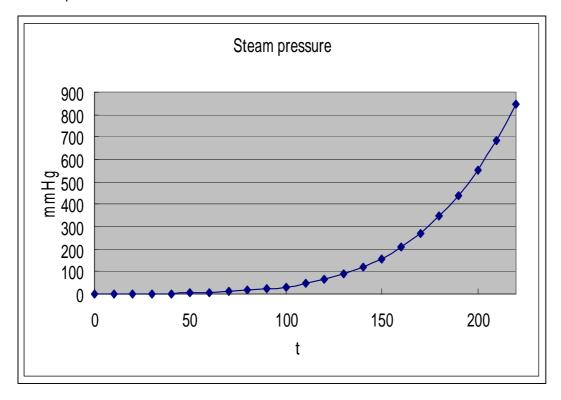
The cautions on abandonment

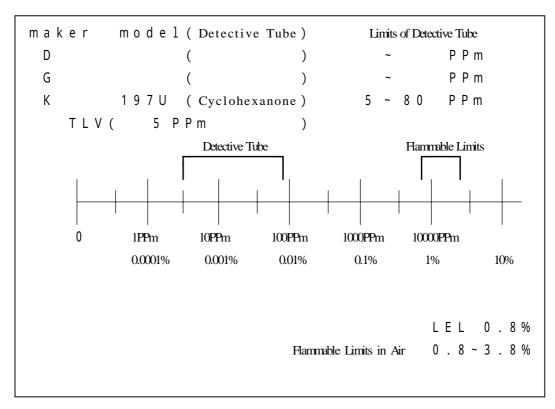
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Isophorone				
Common synonyms	3,3,5-Trimethyl-2-cyclohexen-1-one				
UN Number		CAS Number	78-59-1	IMDG CODE	
IMO Pollution Category		D			
Formula	C8H14O	Molecurar Weight	138.21	Flammable limits in Air (%)	0.8 ~ 3.8
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	0.9929	Vapor Specific Gravity	4.8	Boiling Point()	215
Freezing Point ()	-8.1	Flash Point()	84	Ignition Point()	460
Steam Pressure		0.2mmHg(20)			
Corrosion	human:no	metal∶no	Oxidation	n	0
TLV,Toxicity by Ingestion	Japan : L D50 2330mg/		CGIH∶5ppm TL	V-C A3	
	Noxiousness: There is stimulation for the skin, eyes, and airways. Carcinogenic is confirmed in the animal experiment. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Isophorone - 2

	Isophorone - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





	Isophorone - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time

The cautions on abandonment

The cautions on abandonment

A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Olefin mixtures(C5-C7)			
Common synonyms				
UN Number	CAS Number		IMDG CODE	
IMO Pollution Category				
Formula	Molecurar Weight		Flammable limits in Air (%)	
Appearance			Sollubility in Water	
Specific Gravity	Vapor Specific Gravity		Boiling Point()	
Freezing Point ()	Flash Point()		Ignition Point()	
Steam Pressure				
Corrosion		Oxidation		
TLV,Toxicity by Ingestion	Japan: A	ACGIH:		
Noxiousness	Noxiousness: Environmental influence; Danger:			
First Aid	If inhaled In case of contact When it goes into an eye If swallowed			

Olefin mixtures(C5-C7) - 2

	Olefin mixtures(C5-C7) - 2
The measure in case	Fire extinguisher
of a fire	The fire-extinguishing method
	Firefighters protection
The measure at the	Notes to a human body
time of leak	Notes to environment
	A method of removing
Personal Protective	Personal Protective Equipment
Equipment and	
Detector	Detector
The measure at the	Leak on board
time of leak on the	Leak on board
sea	Leak on the sea

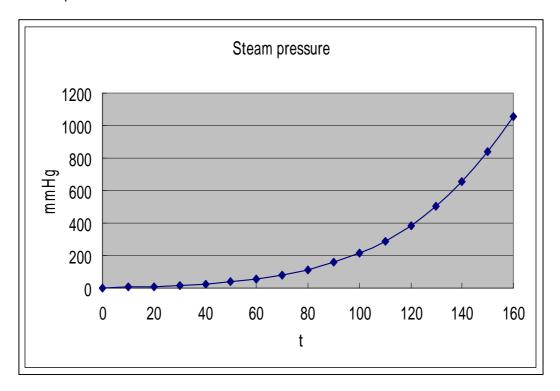
Olefin mixtures(C5-C7) - 3 Steam pressure curve Limits of Detective Tube

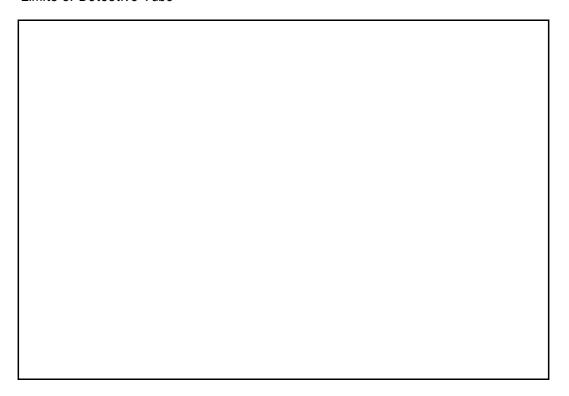
Olefin mixtures(C5-C7) - 4

The cautions on handling, and transportation / storage	Handling Container handling Storage Transport
The cautions on abandonment	The cautions on abandonment

Material Name	Propylene glyc	ol monomethylether	acetate			
Common synonyms	Methoxypropyl	Methoxypropyl acetate				
UN Number	1993	CAS Number	108-65-6	IMDG CODE	Class3.3/P3345	
IMO Pollution Category		D				
Formula		Molecurar Weight	132.1	Flammable limits in Air (%)	1.5 ~ 7.0	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	0.97	Vapor Specific Gravity	4.6	Boiling Point()	146	
Freezing Point	-55	Flash Point()	47.7	Ignition Point()		
Steam Pressure		3.45mmHg(20)				
Corrosion	human:	metal:	Oxidation			
TLV,Toxicity by Ingestion	Japan:5ppm L D50 8532mg		CGIH∶5ppm T	WA skin		
	Noxiousness: There is stimulation for eyes and airways. The liquid removes the skin. Environmental influence: Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Propylene glycol monomethylether acetate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





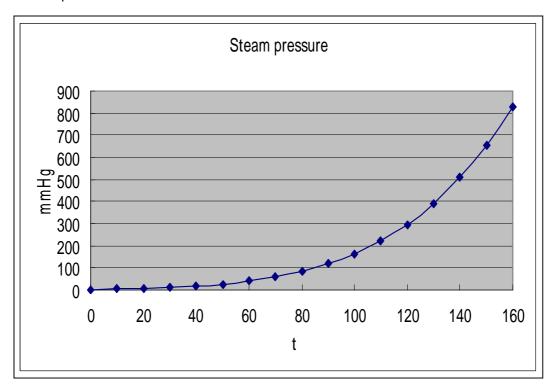
Propylene glycol monomethylether acetate - 4

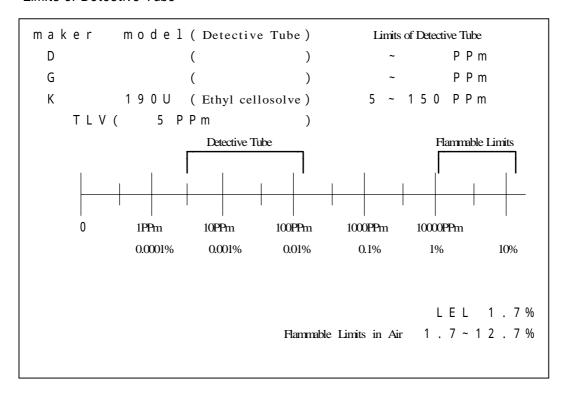
	Propylene glycol monomethylether acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethylglycol acotata				
Common	Ethylglycol acetate				
synonyms	Ethylenegrycol monoethyl ether acetate				
UN Number	1172	CAS Number	111-15-9	IMDG CODE	Class3.3/P3341
IMO Pollution Category	С				
Formula	CH3COOCH2CH2OC2H5	Molecurar Weight	132.2	Flammable limits in Air (%)	1.7 ~ 12.7
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9748	Vapor Specific Gravity	4.7	Boiling Point()	156.3
Freezing Point	-61.7	Flash Point()	52	Ignition Point()	379
Steam Pressure	1.2r	nmHg(20)			
Corrosion	human:no metal	: no	Oxidation	no	0
TLV,Toxicity by Ingestion	Japan:5ppm LD50 3000mg/kg (ora		:5ppm TWA	A skin	
	Noxiousness: There is stimulation for the skin, eyes, and airways. There is a skin absorption. Environmental influence: The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethylglycol acetate -

	Ethylglycol acetate - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method
	In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





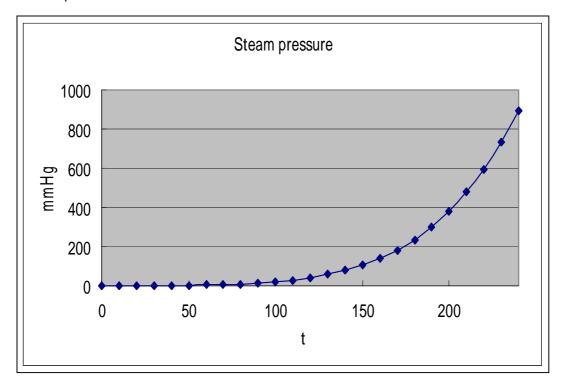
Ethylglycol acetate - 4

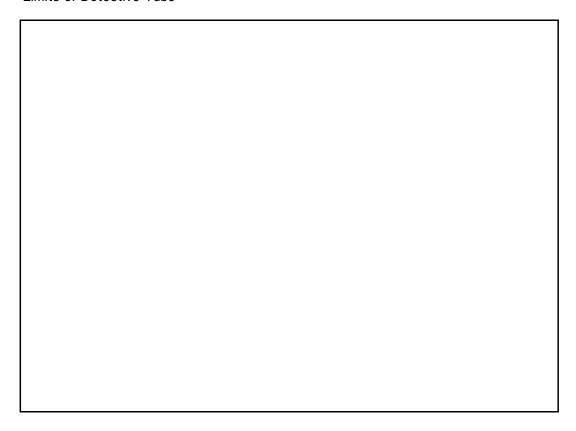
	Ethygycol acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted
asanaoninont	industrial-waste-treatment factory, and carries out abandonment disposal.

	Dipropylene glycol				
Common synonyms	1,1'-Oxy-dipropanol				
UN Number		CAS Number	25265-71-8	IMDG CODE	
IMO Pollution Category					
Formula	СН3СНОНСН2ОСН2СНОНСН3	Molecurar Weight	134.2	Flammable limits in Air (%)	2.9 ~ 12.6
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.02	Vapor Specific Gravity	4.63	Boiling Point()	231.8
Freezing Point	-40	Flash Point()	138	Ignition Point()	350
Steam Pressure	0.008n	nmHg(20)			
Corrosion	human: metal:		Oxidation		
TLV,Toxicity by Ingestion	Japan: L D50 14850mg/kg (oral ra	ACGIH:			
	Noxiousness: Because volatility is low, it doesn't reach a harmful density at the normal temperature. Stimulation to the skin, eyes, and airways is low. Environmental influence: There is biodegradation nature. There is not accumulation in the aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Dipropylene alycol - 2

	Dipropylene glycol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	Dipropylene glycol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diheptyl phthalate					
Common	Diheptylphthalate					
synonyms UN Number	. , ,	CAS Number 78-59-1 IMDG CODE				
IMO Pollution				20 0022		
Category	00114/002071145/2	Mala a	202.54	Flammable limits		
Formula	C6H4(CO2C7H15)2	Molecurar Weight	362.51	in Air (%)		
Appearance	colorless	Vanor		Sollubility in Water	insoluble	
Specific Gravity	0.992	Vapor Specific Gravity	12.5	Boiling Point()	235 ~ 245	
Freezing Point ()	-46	Flash Point()	193	Ignition Point()		
Steam Pressure						
Corrosion	human: met	al:	Oxidation			
TLV,Toxicity by Ingestion	Japan: L D50	ACG	IH:			
	Noxiousness: Because volatility is low, it doesn't reach a harmful density at the normal temperature. Stimulation to the skin, eyes, and airways is low. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Diheptyl phthalate - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

Limits of Detective Tuve	
Limits of Detective Tuve	

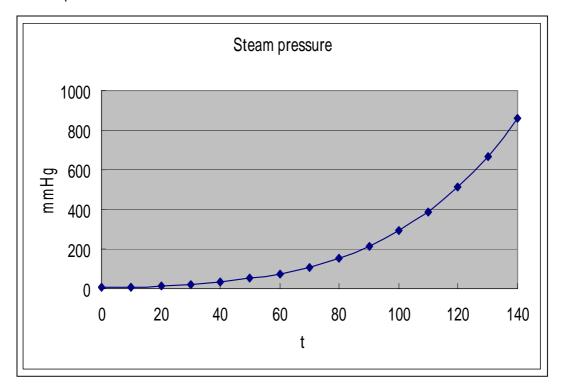
Diheptyl phthalate - 4

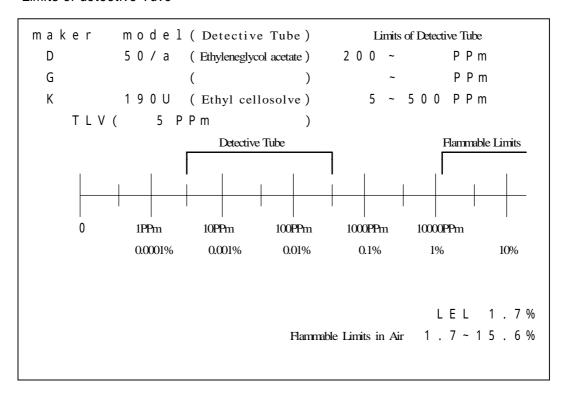
	Dineptyl phthalate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at t
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	2-Ethoxyethanol				
Common synonyms	Ethylene glycol monoethyl ether,ethyl glycol,ethyl cellosolve				
UN Number	1171	CAS Number	110-80-5	IMDG CODE	Class3.3/P3341
IMO Pollution Category	D				
Formula	C2H5OCH2CH2OH	Molecurar Weight	90.12	Flammable limits in Air (%)	1.7 ~ 15.6
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9275	Vapor Specific Gravity	3.1	Boiling Point()	135.1
Freezing Point	-70	Flash Point()	43	Ignition Point()	235
Steam Pressure	3.75mmHg				
Corrosion	human:no metal:no (Oxidation	no	
TLV,Toxicity by Ingestion	Japan:5ppm ACGIH:5ppm(18mg/m3) TWA skin L D50 3000mg/kg (oral rat)				
	Stimulation to the skin, eyes, and airways is low. There is a skin absorption. Genital toxicity might be caused for people. Environmental influence: There is biodegradation nature. There is not accumulation in the aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. A plastic and rubber are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

2-Ethoxyethanol - 2

	2-Ethoxyethanol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
The management the	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA) Notes to a human body
The measure at the time of leak	A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	2-Ethoxyethanol -	. 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the t	r
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.	

Material Name	Turpentine oil					
Common	·					
synonyms	Oil of turpentine,Gum thus,Spirits of turpentine					
UN Number	1299	CAS Number	8006-64-2	IMDG CODE	Class3.3/P3391	
IMO Pollution Category		В				
Formula	C10H16	Molecurar Weight	136	Flammable limits in Air (%)	0.8 ~	
Appearance	colorless			Sollubility in Water	insoluble	
Specific Gravity	0.860 ~ 0.875	Vapor Specific Gravity	4.8	Boiling Point()	150 ~ 170	
Freezing Point ()	-50 ~ -60	Flash Point()	35	Ignition Point()	253.5	
Steam Pressure		10mmHg(37.3)				
Corrosion	human:no	metal∶no	Oxidation	n	10	
TLV,Toxicity by Ingestion	Japan:50ppm L D50 5760mg/		CGIH:100ppm	TWA		
	Noxiousness: There is stimulation for the skin, eyes, and airways. There is an effect of controlling the center nerve. Environmental influence: There is toxicity to an aquatic life living thing. The influence that extends over a long period of time in an aquatic environment might be exerted. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.A plastic and rubber are corroded.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

Turpentine oil - 2

	Turpentine oil - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.

Turpentine oil - 3

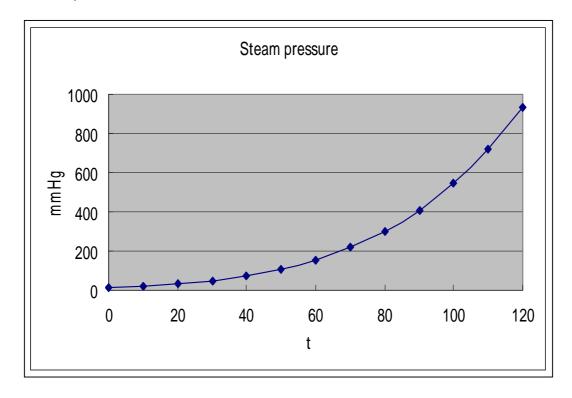
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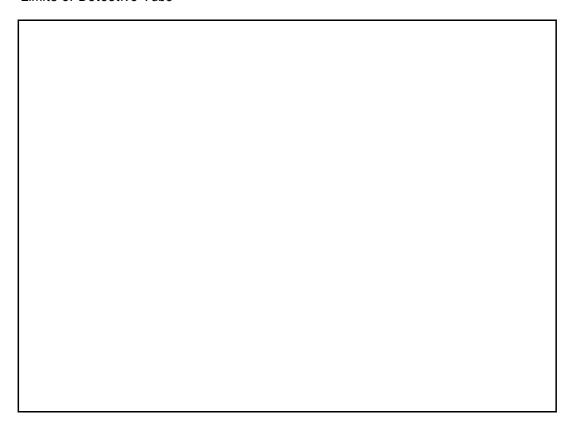
Turpentine oil - 4

	Turpentine oil - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked.It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	1,3-Dichloropropene				
Common synonyms	Dichloropropene,Dichloropropylene,Propylene dichloride,TELONE-				
UN Number	2047 CAS Number 8003-19-8 IMDG CODE Class3.3/P3330				
IMO Pollution Category	E	3			
Formula	CH2CICH=CHCL	Molecurar Weight	112.99	Flammable limits in Air (%)	5.3 ~ 14.5
Appearance	colorless			Sollubility in Water	insoluble
Specific Gravity	1.224	Vapor Specific Gravity	3.9	Boiling Point()	112.2
Freezing Point	-80	Flash Point()	35	Ignition Point()	557
Steam Pressure	;	30mmHg(20)			
Corrosion	human:no m	etal∶yes	Oxidation	n	0
TLV,Toxicity by Ingestion	Japan: L D50 250mg/kg (GIH:1ppm TW	/A skin A4	
	Noxiousness: The skin, eyes, and airways are violently stimulated. It is likely to appear delaying the poisoning symptom. There is a possibility of absorbing it from the skin. Carcinogenic to man cannot be classified. Environmental influence: Perhaps, the accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	1.3-Dichloropropene - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward. Absorbing polymer and a solidyfing agent are sprinkled from the windward, and it solidifies. After checking that generating of gas has been lost, it collects in a recovery net etc.





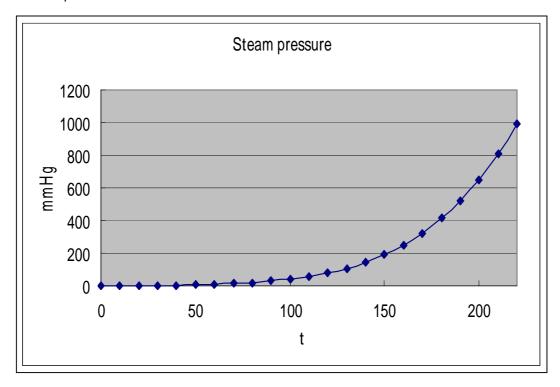
	1.3-Dichloropropene - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
The cautions on	The cautions on abandonment A contaminant etc. is contained to an airtight container is sent to the permitted

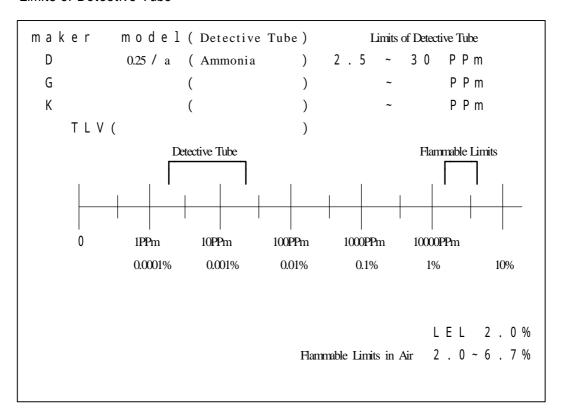
A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

abandonment

	Diethylenetriamine				
Common synonyms	DETA,2,2-Diamino diethylamine				
UN Number	2079 CAS Number 111-40-0 IMDG CODE Class8/P816				Class8/P8161
IMO Pollution Category	D				
Formula	NH2C2H4NHC2H4NH2	Molecurar Weight	103.17	Flammable limits in Air (%)	2 ~ 6.7
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9586	Vapor Specific Gravity	3.6	Boiling Point()	207.1
Freezing Point	-39	Flash Point()	101.7	Ignition Point()	389
Steam Pressure	0.3	37mmHg(20)			
Corrosion	human∶yes me	tal∶no	Oxidation	no	0
TLV,Toxicity by Ingestion	Japan: L D50 1080mg/kg (d		H∶1ppm TW <i>A</i>	A skin	
Noxiousness	Corrosion substance Noxiousness: There is a causticity for the skin, eyes, and airways. It is likely to appear delaying the poisoning symptom. It is likely to absorb it from the skin. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. There is toxicity to an aquatic life living thing. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Solution is a strong base, and the metals such as copper and zinc are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Diethylenetriamine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





	Diethylenetriamine - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. It separates from food, fodder, and the mixture dangerous substance. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emerge
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Aqueous ammonia				
Common synonyms	Aqua ammonia,Ammonia water				
UN Number	2672 CAS Number 1336-21-6 IMDG CODE Class8/P811				Class8/P8111
IMO Pollution Category		С			
Formula	NH4OH	Molecurar Weight	35.05	Flammable limits in Air (%)	16 ~ 25
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.877	Vapor Specific Gravity	0.6	Boiling Point()	-33.4
Freezing Point ()	-77.7	Flash Point()		Ignition Point()	651
Steam Pressure		0.01mmHg(20)			
Corrosion	human:yes	metal:yes	Oxidation	n	0
TLV,Toxicity by Ingestion	Japan: L D50 350mg/k		CGIH∶25ppm T	WA 35ppm STEL	
	Noxiousness: There is stimulation to the skin, eyes, and airways. There is a causticity to the living body. It is likely to appear delaying the poisoning symptom. Environmental influence: It is detrimental to an aquatic life living thing. The accumulation nature to an aquatic life living thing is low. Danger: It is nonflammability. Solution is a strong base, and the metals such as copper and zinc are corroded.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Aqueous ammonia - 2
The measure in case of a fire	Fire extinguisher It is nonflammability. The fire-extinguishing method All the extinction medicines can be used. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Stop leak if you can do it without risk. Saved people from the circumference of the revealed place. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

Aqueous ammonia - 3

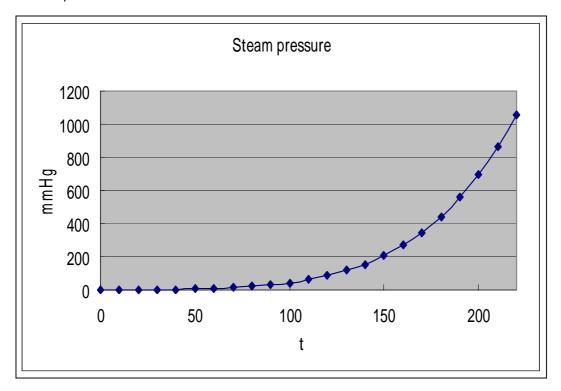
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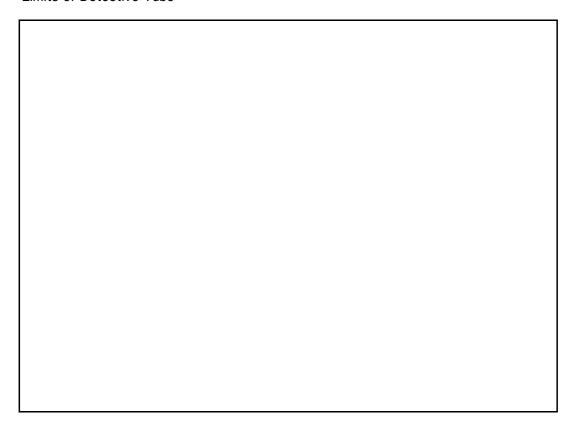
	Aqueous ammonia - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. It separates from food, fodder, and the mixture dangerous substance. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at the time of the desorption of a hose. A tank car and a tanker are equipped with emergency implements for a predetermined display board, fire-extinguishing equipment, and disaster prevention.
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	- Rutyrolooto	ne			
Common	-Butyrolactone				
synonyms	Butyrolactone,4-Hydroxybutyric acid lactone				
UN Number	CAS Number 96-48-0 IMDG CODE				
IMO Pollution Category		D			
Formula	C4H6O2	Molecurar Weight	86.1	Flammable limits in Air (%)	0.3 ~ 16.0
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	1.1	Vapor Specific Gravity	3	Boiling Point()	204
Freezing Point	-44	Flash Point()	98	Ignition Point()	455
Steam Pressure		1.125mmHg			
Corrosion	human:	metal:	Oxidation		
TLV,Toxicity by Ingestion	Japan: L D50 1540mg/		CGIH:		
Noxiousness	Noxiousness: Eyes are stimulated. It influences the central nervous system. The respiratory failure might be caused when taking it. Environmental influence: The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

-Butvrolactone - 2

	-Butyrolactone - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed.
	It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

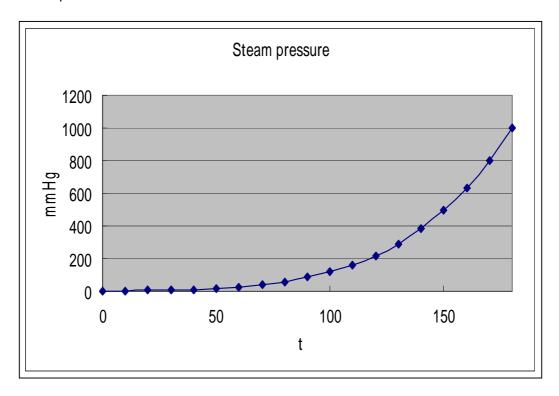


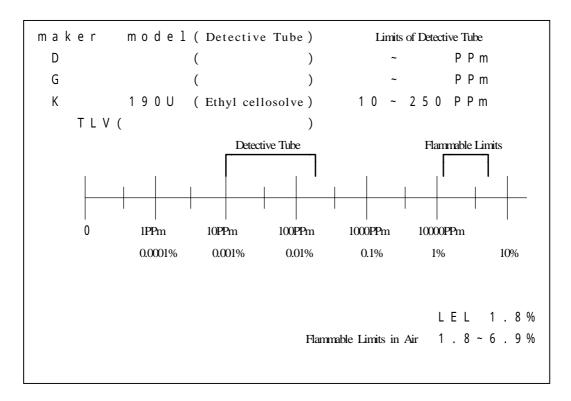


	-Butyrolactone - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car and a tanker are equipped with emergency implements for a predet
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Diacetone alcohol				
Common		-2-pentanone Diag	cetone DAA		
synonyms	4-Hydroxy-4-methyl-2-pentanone,Diacetone,DAA				
UN Number IMO Pollution	1148	CAS Number	123-42-2	IMDG CODE	Class3.3/P3327
Category	D				
Formula	(CH3)2C(OH)CH2COCH3	Molecurar Weight	116.2	Flammable limits in Air (%)	1.8 ~ 6.9
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.9303	Vapor Specific Gravity	4	Boiling Point()	167.9
Freezing Point ()	-44	Flash Point()	58	Ignition Point()	643
Steam Pressure					
Corrosion	human:no meta	l∶no	Oxidation	n	0
TLV,Toxicity by Ingestion	Japan∶ L D50 4000mg/kg (or		:50ppm TWA	A	
	Noxiousness: Eyes and airways are stimulated. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Diacetone alcohol - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection
The second the	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

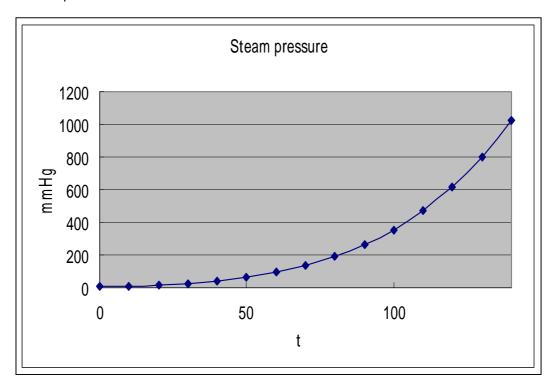


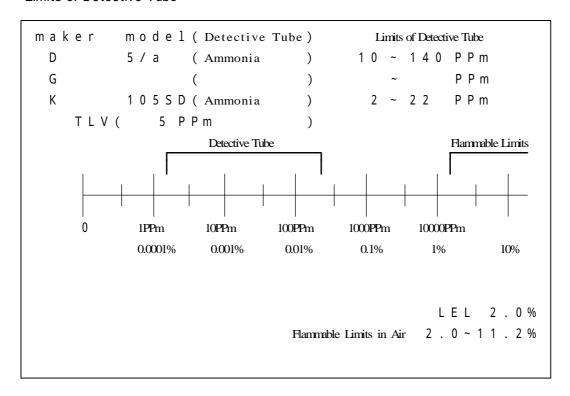


	Diacetone alcohol - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. Confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at th
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Morpholine					
Common synonyms	Tetrahydro-1,4-oxazine,Diethyleneimide oxide					
UN Number	2054	2054 CAS Number 110-91-8 IMDG CODE Class3.3/P3367				
IMO Pollution Category		D				
Formula	C4H9ON	Molecurar Weight	87.12	Flammable limits in Air (%)	2.0 ~ 11.2	
Appearance	colorless			Sollubility in Water	easily soluble	
Specific Gravity	1.007	Vapor Specific Gravity	3	Boiling Point()	128	
Freezing Point	-4.9	Flash Point()	37.8	Ignition Point()	310	
Steam Pressure	0.8	8Kpa/6.601mmHg(3	8)			
Corrosion	human:yes	metal∶no	Oxidation	r	10	
TLV,Toxicity by Ingestion	Japan: L D 50 1050mg.		CGIH∶20ppm T	WA A4 skin		
	Noxiousness: The skin, eyes, and airways are stimulated. There is a causticity for the living body. It is likely to appear delaying the poisoning symptom. There is a possibility of absorbing it from the skin. Carcinogenic to man cannot be classified. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is very low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air. A plastic and rubber are corroded.					
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.					

	Morpholine - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water.
	Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated.
	Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Detective Tube Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. It is made to dissolve in vapor using a spray nozzle, and gas is removed. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.

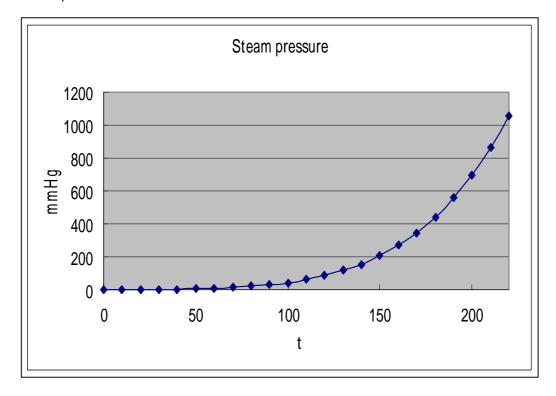


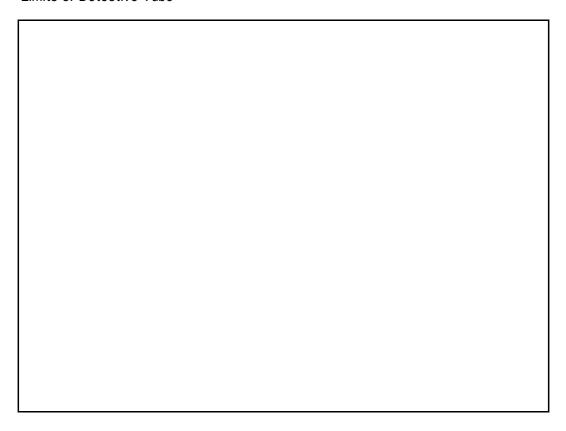


	Morpholine -	4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed at	r
The cautions on abandonment	The cautions on abandonment A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.	

Material Name	Palm kernel acid oil				
Common	Coconut acid				
synonyms UN Number	CAS Number IMDG CODE				
IMO Pollution				IIVIDG CODE	
Category	C				
Formula		Molecurar Weight		Flammable limits in Air (%)	
Appearance	drab			Sollubility in Water	insoluble
Specific Gravity	0.8806	Vapor Specific Gravity		Boiling Point()	204
Freezing Point		Flash Point()		Ignition Point()	
Steam Pressure					
Corrosion	human:	human: metal: Oxidation			
TLV,Toxicity by Ingestion	Japan: ACGIH: L D50				
Noxiousness	Noxiousness: It is the one used for for food, Most detrimental nature cannot be found. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is combustion, but it doesn't burn easily.				
First Aid	In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

	Palm kernel acid oil - 2
The measure in case of a fire	Fire extinguisher Dry chemical, alcohl-resistant foam, CO2, water spray. The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion. A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is protected using a spray nozzle. Leak on the sea When there is no possibility that gas may affect the circumference, monitoring is performed and it waits for disappearance of gas and liquid. When evaporation of gas needs to be reduced, a sea surface is covered by foam from the windward.



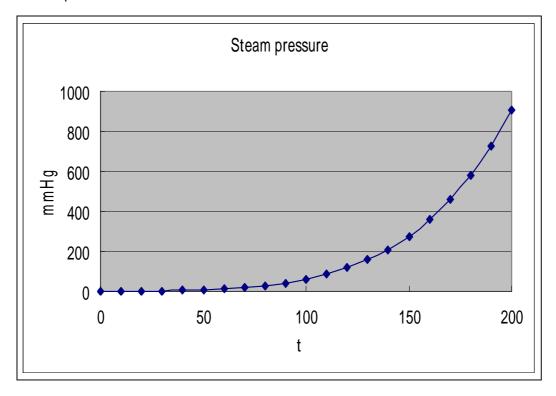


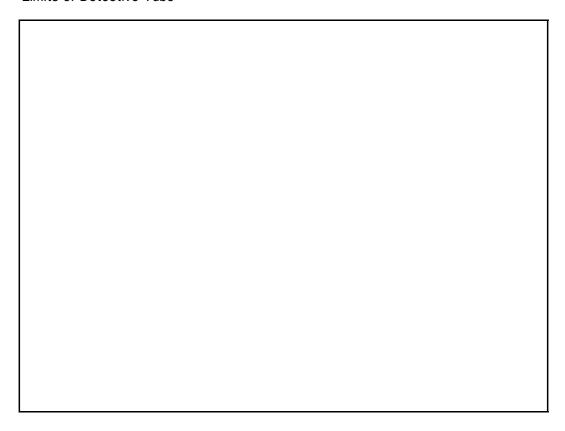
	Palm kernel acid oil - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed
abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

Material Name	Ethylene glycol butyl	ether acetate			
Common	Butyl glycol acetate,2-Butoxyethylacetate,Butyl cellosolve acetate				
synonyms UN Number	CAS Number 112-07-2 IMDG CODE				
IMO Pollution					
Category Formula	C4H9OCH2CH2OOCCH3	Molecurar Weight	160.2	Flammable limits in Air (%)	0.9 ~ 8.5
Appearance	colorless			Sollubility in Water	easily soluble
Specific Gravity	0.94	Vapor Specific Gravity	5.5	Boiling Point()	192
Freezing Point	-64	Flash Point()	71	Ignition Point()	340
Steam Pressure	0.225 ~	0.225 ~ 0.3mmHg(20)			
Corrosion	human: metal: Oxidation				
TLV,Toxicity by Ingestion	Japan: ACGIH: LD50				
	Noxiousness: Irritating to skin, eyes and throat. Environmental influence: There is biodegradation nature. The accumulation nature to an aquatic life living thing is low. Danger: It is inflammability, and above the flash point, it may mix with air and steam may produce explosive gas. Vapor is heavier than air.				
First Aid	If inhaled Move victim to fresh air. Keep victim warm and quiet. It respires artificially, after loosening clothes and securing a respiratory tract, when breathing has stopped, and when breathing is weak. When breathing is difficult, although it is conscious or when breathing, although it is unconscious, oxygen inhalation is effective. In case of contact Remove and isolate contaminated clothingand shoes. Immediately flush skin with running water for at least 15 minutes. Wash skin with soap and water. When it goes into an eye Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. If swallowed Wash the inside of a mouth with water, and don't make it vomit by force. When vomiting takes place automatically, the body is made to incline so that the inhalation to a tracheal gill may not occur.				

Ethylene glycol butyl ether acetate - 2

	Ethylene glycol butyl ether acetate - 2
The measure in case of a fire	Dry chemical, alcohl-resistant foam, CO2, water spray.
	The fire-extinguishing method In case of small fire, use dry chemical, CO2, water spray. In case of large fire, use alcohl- resistantfoam, water spray. Cool containers with flooding quantities of water. Firefighters protection
	Wear positive pressure self-contained breathing apparatus(SCBA)
The measure at the time of leak	Notes to a human body A protection implement is worn in the case of work, it takes care that splash does not adhere to the skin or does not inhale gas, and is made to work from the windward. A lee man is evacuated. Notes to environment
	Eliminate all ignition sources. Stop leak if you can do it without risk. While evacuating people from the circumference of the revealed place, it warns of the danger of a fire and explosion.
	A method of removing When little, it collects in dryness sand and the container which the quality of another ground and inactive absorber is made to absorb, and can be sealed. It collects, after enclosing with landfill, preventing an outflow and leading to a safe place, when extensive. Prevent entry into waterways or sewers. When it flows out at sea, a lee vessel is kept away from the circumference of the leakage spot.
Personal Protective Equipment and Detector	Personal Protective Equipment Breathing appliance: Organic Gas respirators, Air line mask,Self-contained breathing apparats. Gloves: Solvent-proof nature protection glove,Rubber gloves. Eye: Goggles,Face shields,Eye protectors. Body: Rubber boots,Protective clothing Detector Flammable Gas Detector
The measure at the time of leak on the sea	Leak on board As the source of ignition is managed and gas does not enter a closing zone, it washes away overboard with a lot of water. In a lot of outflow, if possible, a bow is turned on the lee. When it cannot turn on the lee, gas is removed using a spray nozzle. It collects, after sprinkling absorbing polymers and a solidifying agent, solidifying and suppressing generating of gas, when it cannot wash away overboard. Leak on the sea Recovery is difficult in order to dissolve in sea water for a short time.





Ethylene glycol butyl ether acetate - 4

	Ethylene glycol butyl ether acetate - 4
The cautions on handling, and transportation / storage	Handling Inhalation is prevented and contact on an eye, membrane, and the skin is avoided. A suitable protection implement is worn if needed and work is done from the windward. Work environment is maintained below at permission concentration. When dealing with it indoors, the equipment which seals the steamy source of emission, or the partial exhaust is prepared. Their clothes are changed, when restroom, eyewashing, washing their face, etc. are fully performed after handling and it adheres to clothes. A leak, overflow, and scattering are prevented and steam is not made to emit. Since it is easy to ignite, fire, sparks, the thing that generates an arc, or the source of high temperature ignition is not used near. The electric apparatus used in a handling place is made into explosion prevention structure, and apparatus takes the measure against static electricity. Container handling A container uses a thing without breakage, corrosion, a crack, etc. It is made to fall indiscriminately and a container does not carry out the violent handling of adding or dragging a shock etc. Since static electricity may be generated by flow, a ground is taken in the container of receipts and payments Storage A container avoids direct rays and keeps them in the good cool place of ventilation. A storage place is considered as fire strict prohibition. It is desirable to place a watchman when engaged in work [in the place currently kept so much]. Transport When carrying with a vehicle, carrying of a yellow card is checked. It confirms that there are not breakage of a container and a leak, it loads so that there may not be a shock, a fall, fall, and breakage, and collapse-of-cargo-piles prevention is ensured. At the time of filling and shipping and discharging, it is made to stop at the flat ground to a tank car etc., and a bumping post is installed to it, and it performs it using the compression gas or the pump below the permission pressure of a tank car to it. The residual substance in a hose is completely processed a
The cautions on abandonment	A contaminant etc. is contained to an airtight container, is sent to the permitted industrial-waste-treatment factory, and carries out abandonment disposal.

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