물질안전보건자료
(Material Safety Data Sheet)

Name of the product	Heat Resistant 300℃ Silver

1. information about chemicals and companies

A. Product name	Heat Resistant 300℃ Silver
B. Recommended uses and restrictions on use of products	
recommended use of the product	heat-resistant steel
restrictions on the use of the product	Prohibition of use outside of purpose, prohibition of youth sales
C. Supplier information (In case of imported goods, domestic supplier information available for emergency contact)	
Corporate name	Geumgang Paint Industry Co., Ltd
Address	86-75 Chugok-gil, Gogyeong-myeon, Yeongcheon-si, Gyeongsangbuk-do
an emergency telephone number	054-338-7722

2. Hazardous/hazardous

A. Hazard classification and risk classification	No applicable classification information
B. Warning signs including preventive measures	
Picture text	

a sign language	Dangers
Hazardous and dangerous phrases	H225 High Resilient Liquid and Steam
	H304 Swallowing into the airways can be fatal
	H315 Causes irritation to the skin
	H319 Severe irritation to the eyes
	H332 Inhalation is harmful
	H335 May cause respiratory irritation
	H336 May cause drowsiness or dizziness
	H340 May cause genetic defects
	Can cause H350 cancer
	H373 Long-term or repeated exposure can cause damage to the body
	H410 Very toxic to aquatic life due to long-term effects
Preventive measures statement	
Prevention	Obtain a manual for handling P201 before use. P202 Do not handle all safety precautions until you have read and understood them.
	P210 Keep away from heat, parks, flames, and high heat - No smoking
	Seal the P233 container tightly.
Prevention	P240 Connect or ground containers and containers.
	P241 Use electric, ventilation, lighting, and equipment to prevent explosions.
	P242 Use only non-sparking tools.
	P243 Take antistatic measures.
	Do not inhale P260 (dust, fume, gas, mist, steam, and spray).
	Avoid inhaling P261 (dust, fume, gas, mist, steam, and spray).
	Wash the handling area thoroughly after handling P264.
	P271 Only handle outdoors or in well-ventilated areas.
	Do not discharge into the P273 environment.
	Wear P280 (protective gloves, protective clothing, safety glasses, face protection equipment).
Response	If you have swallowed P301+P310, seek medical attention immediately.
	P302+P352 Wash with plenty of water if it gets on your skin.
	P303+P361+P353 Remove all contaminated clothing if it gets on your skin (or hair). Wash/shower your skin with water.

	If you inhale P304+P340, move to a place with fresh air and rest in an easy-to-breathe position.
	P305+P351+P338 Wash carefully with water for a few minutes when it gets on your eyes. Remove your contact lenses, if possible. Keep washing.
	P308+P313 seek medical measures and advice if exposed or concerned about exposure.
	P312 If you feel uncomfortable, see a medical institution (doctor).
	P314 Seek medical measures and advice if you feel uncomfortable.
	P321 first aid.
	P331 Don't make me vomit.
	P332+P313 Seek medical measures and advice if skin irritation occurs.
	P337+P313 If eye irritation persists, seek medical action and advice.
	P362+P364 Take off contaminated clothing and wash it before use again.
	P370+P378 Use a fire extinguisher to extinguish a fire in case of fire.
	P391 Collect leaks.
Storage	Store the P403+P233 container tightly sealed in a well-ventilated place.
	P403+P235 Store in a well ventilated place and keep at low temperature.
	P405 Store in a storage area with lock.
Disposal	Dispose of P501 contents containers (in accordance with relevant laws and regulations).

3. Name and content of components

Material name	Tinnitus (Tolerant)	CAS번호	함유량(%)
2-butanone oxime	METHYL ETHYL KETOXIME	96-29-7	0.01-1
toluene-2,4/2,6-diisocyanate	toluene diisocyanate	26471-62-5	0.1-3
	Toluene diisocyanate		
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy		64742-82-1	11-20
xylene	Xylene (Ortho, Meta, Paraic)	1330-20-7	22-30
	Dimethylbenzene (Oso, Meta, Para-isomer)		
	Xylene, o,m,p-isomers		
	Xylene(o,m,p-isomers)		
ethylbenzene	ethyl benzene	100-41-4	2-7
	Ethyl benzene		
Aluminum		7429-90-5	10-17
Phthalic acid anhydride	Phthalic anhydride	85-44-9	0.1-3
	Phthalic anhydride		
pentaerythritol		115-77-5	1-5
talc	talc,	14807-96-6	18-27
	Talc		
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	MIXED VEGETABLE OIL ACIDS;	61788-66-7	6-13
2-Ethylhexanoic acid cobalt salt		13586-82-8	0.01-1
2-ethylhexane, rare earth salts		61788-37-2	0.01-1
Silsesquioxanes, Ph Pr -		68037-90-1	5-12

4. emergency measures

A. When it gets into your eyes	Wash your eyes immediately under running water for at least 20 minutes upon contact with any material
	Take medical action immediately
	Get urgent medical attention
	Wash skin and eyes immediately with running water for at least 20 minutes upon contact with substances
	Immediately wipe off any dirt on the skin upon contact and wash the skin and eyes under running water for at least 20 minutes
	Wash carefully with water for a few minutes when it gets on your eyes. Remove them if possible. Keep washing.
	If eye irritation persists, seek medical action and advice.

B. When you come into contact with your skin	Get medical attention from an industrial medicine specialist
	Wash your skin immediately under running water for at least 20 minutes upon contact with any substance
	Remove contaminated clothes and shoes and isolate them
	Wash clothes and shoes thoroughly before reuse
	Take medical action immediately
	If it is a hot material, soak or wash the affected area in a large amount of cold water to remove heat
	Get urgent medical attention
	Remove contaminated clothes and shoes and isolate contaminated areas
	Wash skin and eyes immediately with running water for at least 20 minutes upon contact with substances
	Prevent the spread of contaminated areas during minor skin contact In case of burns, cool the area immediately with cold water as long as possible, and do not remove any clothing attached to the skin
	Wash your skin with soap and water Immediately wipe off any dirt on the skin upon contact and wash the skin and eyes under running water for at least 20 minutes
	Remove all contaminated clothing if it gets on your skin (or hair). Wash/shower your skin with water.
	If you feel uncomfortable, see a medical doctor.
	If you feel uncomfortable, seek medical measures and advice.
	Seek medical measures and advice if skin irritation occurs.
	Ask for medical measures and advice if skin irritation or erythema appears.
	Remove or remove all contaminated clothing.
	Take off contaminated clothing and wash it before using it again.
	Wash contaminated clothing before use again.
	Get medical attention from an industrial medicine specialist
C. When you inhale it	Get urgent medical attention
	Move to a place with fresh air
	If you are not breathing, perform ventilation
	If you have difficulty breathing, supply oxygen
	Remove with clean air if exposed to excess dust or fumes and take medical action if you have cough or other symptoms.
	Move to a place with fresh air
	Get urgent medical attention
	If you are not breathing, perform ventilation
	If you eat or inhale substances, do not ventilate using mouth-to-mouth mouth exercise and use appropriate respiratory equipment
	If you have difficulty breathing, supply oxygen
	Please keep it warm and stable
	Seek medical measures and advice if exposed or concerned about exposure.
	See a medical institution immediately.
	If you feel uncomfortable, seek medical measures and advice.
	Don't make me vomit.
	Get medical attention from an industrial medicine specialist
D. When I ate it	Don't feed an unconscious person anything with your mouth
	Take medical action immediately
	Get urgent medical attention
	If you eat or inhale substances, do not ventilate using mouth-to-mouth mouth exercise and use appropriate respiratory equipment
	If you have swallowed, see a medical doctor immediately.
	Seek medical measures and advice if exposed or concerned about exposure.
	If you feel uncomfortable, seek medical measures and advice.
	Wash your mouth.
	Don't make me vomit.

E. Other precautions of doctors	Get medical attention from an industrial medicine specialist Ensure that medical personnel are aware of the substance and take protective measures Do not administer adrenaline. Contact the medical staff in case of exposure and take special emergency measures such as follow-up. Symptoms caused by contact and inhalation may be delayed Ensure that medical personnel are aware of the substance and take protective measures

5. How to deal with explosion and fire

a. Proper (inappropriate) digestive medicine	
an appropriate (inappropriate) digestive medicine	Small fire: dry sand, dry chemical, alcohol-resistant foam, water spray, general foam, CO2 (appropriate fire extinguishing agent) Large fire: water spray/fog, regular foam (appropriate fire extinguishing agent) High Pressure Water (Inadequate Digestive) Use alcohol foam, carbon dioxide or water spray for digestion related to this substance Use dry sand or soil for asphyxiation
b. Certain hazards arising from chemicals	
a specific hazard arising from a chemical substance	Can be ignited by heat, spark and flame Containers may explode when heated Some may burn but do not ignite easily In case of fire, irritable and toxic gases can be generated Inhalation of substances can be harmful Some liquids may cause dizziness and vapor that causes suffocation Can decompose at high temperatures to produce toxic gases Intense polymerization can cause fire and explosion Steam can be transferred to ignition source and ignited During burning, irritating and very toxic gases can be generated by pyrolysis or combustion Can form explosive mixtures at or above flashpoints Containers may explode when heated High Mars: easily ignited by heat, spark, and flame Leaks are at risk of fire/explosion Generating combustible gases when in contact with water Can be reignited after digestion Risk of steam explosion indoors, outdoors, and sewers Can be ignited by heat, spark and flame Some may burn but do not ignite easily Steam can form an explosive mixture with air Steam can travel to ignition source and flash back Can ignite when in contact with water or moist air Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes Steam can cause dizziness or suffocation without awareness Fire can cause irritable, corrosive, and toxic gases Inhalation and contact irritates or burns skin and eyes Inhalation and skin absorption may be toxic Inhalation and contact of vapors, substances, and decomposition products can result in serious injury or death Can come into contact with water to produce corrosive solutions Highly flammable liquids and vapors
C. Protective equipment and preventive measures to be worn in case of fire extinguishing	
2-butanone oxime	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance

	Please be careful as it may melt and be transported
	Some may be transported at high temperatures, so be careful
	Dig a ditch for the disposal of the digester so that the material does not scatter
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
	In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
toluene-2,4/2,6-diisocyanate	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance
	Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces
toluene-2,4/2,6-diisocyanate	Be careful as it reacts (intensely) with water to release combustible, corrosive/toxic gases, etc
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	Do not allow water to enter the container
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance
	Please be careful as it may melt and be transported
	Dig a ditch for the disposal of the digester so that the material does not scatter
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
	In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
xylene	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance
	Most of them are lighter than water, so be careful
	Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
	In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
ethylbenzene	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance

	Most of them are lighter than water, so be careful
	Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
	In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
Aluminum	Digest away from the area and keep a safe distance
	Be careful because some of them are carried in highly flammable liquids
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	Do not allow water to enter the container
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
Phthalic acid anhydride	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance
Phthalic acid anhydride	Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces
	Be careful as it reacts (intensely) with water to release combustible, corrosive/toxic gases, etc
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	Do not allow water to enter the container
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
pentaerythritol	If it's not dangerous, move the container out of the fire area
	Some may be transported to high temperatures
	Leaks may cause contamination
	Contact can cause burns to the skin and eyes
	Dig a ditch for the disposal of the digester so that the material does not scatter
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, cool the container with plenty of water even after extinguishing
	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
	In the event of a tank fire, step back from the tank engulfed in flames
talc	Rescuers should wear appropriate protective gear.
	Digest away from the area and keep a safe distance
	Please be careful as it may melt and be transported
	Dig a ditch for the disposal of the digester so that the material does not scatter
	If it's not dangerous, move the container out of the fire area
	In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn If it's not dangerous, move the container out of the fire area Some may be transported to high temperatures Leaks may cause contamination Contact can cause burns to the skin and eyes
2-Ethylhexanoic acid cobalt salt	Dig a ditch for the disposal of the digester so that the material does not scatter If it's not dangerous, move the container out of the fire area In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Please be careful as it may melt and be transported
2-ethylhexane, rare earth salts 2-ethylhexane, rare earth salts	Dig a ditch for the disposal of the digester so that the material does not scatter If it's not dangerous, move the container out of the fire area In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn If it's not dangerous, move the container out of the fire area Some may be transported to high temperatures Leaks may cause contamination Contact can cause burns to the skin and eyes
Silsesquioxanes, Ph Pr -	Dig a ditch for the disposal of the digester so that the material does not scatter If it's not dangerous, move the container out of the fire area In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames Some may be transported to high temperatures Leaks may cause contamination Contact can cause burns to the skin and eyes

6. How to deal with leakage accidents

A. Measures and protective equipment necessary to protect the human body	Remove all ignition sources If it is not dangerous, stop the leak

	Pay attention to substances and conditions that should be avoided
	Ventilate contaminated areas
	Do not touch or walk around exposed objects
	Avoid dust formation
	Do not enter the space without proper protective equipment, such as an air respirator or a vent mask, until adequate air (oxygen concentration 18–23.5%) is secured.
	Remove all ignition sources as very fine particles can cause fire or explosion.
	Wipe off any spills immediately, and follow the precautions of the protective equipment.
	Isolate the contaminated area.
	Those who do not need to enter or are not equipped with protective equipment should not enter.
	Do not touch or walk around exposed objects
	Remove all ignition sources
	Reduce steam with water spray but do not allow water to enter leaks or containers
	Use water spray to reduce steam or scatter steam clouds to keep water out of contact with leaks
	Be sure to ground all equipment when handling substances
	If it is not dangerous, stop the leak
	Do not touch damaged containers or leaks without wearing proper protective clothing
	Do not clean and dispose of it without professional supervision
	Steam suppression foam can be used to reduce steam generation
	Cover with plastic sheet to stop diffusion
	Avoid dust formation
	Pay attention to substances and conditions that should be avoided
	Do not inhale (dust, fume, gas, mist, steam, and spray).
	Avoid inhaling (dust, fume, gas, mist, steam, and spray).
	Do not get on your eyes, skin or clothing.
B. Measures necessary to protect the environment	Prevent inflows into waterways, sewers, cellars, and enclosed spaces
	Don't let it enter the waterway.
	Leaks may cause contamination
	Prevent inflows into waterways, sewers, cellars, and enclosed spaces
	Do not discharge into the environment.
C. Methods of purification or removal	In case of a small leak, wash off the contaminated area with a large amount of water
	In case of small leaks, absorb with sand, non-combustible material and place in container
	In case of large leaks, make a ditch away from liquid leaks
	Place the leak in a clean, dry container with a clean shovel, close loosely, and transfer the container from the leak area
	In case of powder leakage, cover with plastic sheet to prevent diffusion and keep dry
	Build a levee for digestion and collect water.
	Absorb spills with inert substances (e.g., dry sand or soil) and place them in a chemical waste container.
	Remove airy dust and wet with water to prevent it from dispersing.
	Absorb liquid and wash off contaminated areas with detergent and water.
	Cover with dry sand/soil and other non-combustible materials and cover with plastic sheet to prevent diffusion and contact with rain
	In case of large leaks, make a ditch away from liquid leaks
	Use a clean explosive device to collect absorbed material
	Place the leak in a clean, dry container with a clean shovel, close loosely, and transfer the container from the leak area
	Dig a ditch and don't spray unless instructed
	In case of powder leakage, cover with plastic sheet to prevent diffusion and keep dry

In case of small leaks, absorb with sand, non-combustible material and place in container

Collect the leak.

7. HANDLING AND STORING METHOD

A. Safety instructions

Pay attention to substances and conditions that should be avoided

Wash thoroughly after handling

Work with reference to engineering care and personal protective equipment

Watch out for high temperatures

Be careful not to leak out as it can cause suffocation in an enclosed place by lowering the oxygen concentration in the air.
Check the oxygen concentration before entering the place as there is a risk of oxygen deficiency or death due to oxygen deficiency in high concentration in the air.

Be careful not to leak out, as the liquid rapidly evaporates and replaces air, causing serious suffocation when in a closed area.

Be careful not to leak out as it reaches the harmful concentration of this gas in the air very quickly.

If sprayed, it can reach harmful concentrations of air particles very quickly, so do not spray it.

At 20℃, this material evaporates somewhat slowly, reaching hazardous concentrations, so keep it below 20℃.

Evaporation rarely occurs at 20℃, but spraying can reach harmful concentrations of air particles very quickly, so do not spray.

Evaporation rarely occurs at 20℃, but do not spray or spray as spraying can reach harmful concentrations of air particles very quickly. (Especially for powder)

Evaporation rarely occurs at 20℃, but do not spray as spraying can reach harmful concentrations of air particles very quickly (especially for powder)

Check the oxygen level before entering the area.

Spray or spray will evaporate faster, so do not spray or spray.

Do not apply pressure, cut, weld, solder, bond, pierce, grind, or expose to heat, flame, flame, static electricity, or any other ignition source.

Follow all MSDS/label precautions as product debris may remain after the container has been emptied.

Use carefully when handling/storing.

Open the cap carefully before opening.

Avoid long-term or continuous skin contact.

Do not breathe steam from heated materials.

Do not enter the storage area without proper ventilation.

Be sure to ground all equipment when handling substances

Pay attention to substances and conditions that should be avoided

Pay attention to substances and conditions that should be avoided

Work with reference to engineering care and personal protective equipment

Watch out for high temperatures
Measure and ventilate the oxygen concentration in the air during work as there is a risk of oxygen deficiency when working in a confined space in low-lying areas

Do not handle all safety precautions until you have read and understood them.

Use explosion-proof electricity, ventilation, lighting, (...) and equipment.

Use only non-sparking tools.

Take antistatic measures.

Do not inhale (dust, fume, gas, mist, steam, and spray).

Avoid inhaling (dust, fume, gas, mist, steam, and spray).

Do not get on your eyes, skin or clothing.

Wash the handling area thoroughly after handling.

Do not eat, drink or smoke when using this product.

Only handle outdoors or in well ventilated areas.

B. A safe way to store	Do not take contaminated clothing out of the workshop.
	Keep it airtight
	Store in a cool, dry place
	Pay attention to substances and conditions that should be avoided Drain the empty drum completely and block it properly, immediately return it to the drum controller or arrange it properly.
	Stay away from food and beverages.
	Pay attention to substances and conditions that should be avoided
	Stay away from heat, sparks, flames, and high fever – don't smoke
	Store the container tightly sealed in a well-ventilated place.
	Store in a well-ventilated place and keep at low temperatures.
	Store in a locked storage area.

8. Anti-exposure and personal protective equipment

A. Chemical exposure standards, biological exposure standards, etc

domestic regulations

2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	TWA – 0.005 ppm STEL – 0.02 ppm (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate, permissible)
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	TWA – 100ppm STEL – 150ppm
ethylbenzene	TWA – 100ppm STEL – 125ppm
Aluminum	TWA – 2 mg/m3 Aluminum (soluble salt)
Aluminum	TWA – 10 mg/m3 Aluminum (Metal Dust)
Aluminum	TWA – 2 mg/m3 Aluminum (alkyl)
Aluminum	TWA – 5 mg/m3 Aluminum (Welding Fume)
Aluminum	TWA – 5 mg/m3 Aluminum (Piro Powder)
Phthalic acid anhydride	TWA – 1ppm
pentaerythritol	TWA – 10 mg/m3 pentaerythritol
talc	TWA – 6 mg/m3 Cowpstone
talc	TWA – 3 mg/m3 Cowpstone (respiratory)
talc	TWA – 2 mg/m3 talc [without asbestos, less than 1% silicon oxide crystals (respiratory)] However, for asbestos-containing talc, refer to asbestos (0.1 ea/cm3)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr –	No data

ACGIH regulations

2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	TWA 0.005 ppm
toluene-2,4/2,6-diisocyanate	STEL 0.02 ppm
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	STEL 150 ppm
xylene	TWA 100 ppm
ethylbenzene	TWA 20 ppm
Aluminum	TWA 1 ㎎/㎥
Phthalic acid anhydride	TWA 1 ppm
pentaerythritol	TWA 10 ㎎/㎥
talc	STEL
talc	TWA 2 ㎎/㎥
talc	ETC
	No data

	No data
	No data
	No data
	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	0.15 g/g creatinine Medium: urine Time: end of shift Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific)
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
Other exposure criteria	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	TWA : 6mg/m3 - NIOSH
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
B. Proper engineering management	Use process isolation, local exhaust, or keep the air level below the exposure limit
	Use process isolation, local exhaust, or other engineering management to adjust the air level below the exposure limit.
	If dust, fumes, or mist is generated during operation, ventilate to ensure air pollution remains below the exposure limit
	Install face wash facilities and safety showers for facilities that store or use this substance.
C. Personal protective equipment	
Respiratory protection	
2-butanone oxime	Wear a respirator certified by the Occupational Safety and Health Agency to match the physicochemical properties of the exposed material
2-butanone oxime	-A face filter type dust mask or an air filter type dust mask (high-efficiency fine particle filter) or a dust mask with an electric fan (dust, mist, fume filter)
2-butanone oxime	"For gas/liquid substances, the following respiratory protection is recommended
toluene-2,4/2,6-diisocyanate	-Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask"

toluene-2,4/2,6-diisocyanate	(Toluene-2,4-diisocyanate and toluene-2,6-diisocyanate)
toluene-2,4/2,6-diisocyanate	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.05 ppm, wear an appropriate filter or septic while wearing a type of respirator
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.125ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.25 ppm, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter or septic tank
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 5 ppm, wear a front or helmet/hood type, pressure-required air mask with appropriate filters or septic tanks
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	If the exposure concentration is lower than 50 ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	"For gas/liquid substances, the following respirator is recommended "Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic
xylene	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
xylene	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
xylene	If the exposure concentration is less than 1000 ppm, wear an appropriate filter or purifier while wearing a type of respirator
xylene	If the exposure concentration is lower than 2500 ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
xylene	If the exposure concentration is lower than 1000000ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
ethylbenzene	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
ethylbenzene	If the exposure concentration is less than 1000 ppm, wear an appropriate filter or purifier while wearing a type of respirator
ethylbenzene	If the exposure concentration is lower than 2500 ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
ethylbenzene	If the exposure concentration is lower than 5000 ppm, wear a front or electric half-flow/pressure-requiring continuous flow/pressure-requiring half-breathing device with appropriate filters or septic tanks
ethylbenzene	If the exposure concentration is lower than 100000 ppm, wear a front or helmet/hood type, pressure-required air mask with appropriate filters or septic tanks
ethylbenzene	If the exposure concentration is lower than 1000000ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
Aluminum	Aluminum (soluble salt)
Aluminum	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Aluminum	If the exposure concentration is lower than 20mg/m3, wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 50 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
Aluminum	If the exposure concentration is lower than 100 mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
Aluminum	If the exposure concentration is lower than 2000 mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask

Aluminum	If the exposure concentration is lower than 20000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
Aluminum	Aluminum (metal dust)
Aluminum	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Aluminum	If the exposure concentration is less than 100mg/m3, wear the appropriate type of filter while wearing the type of respirator
Aluminum	If the exposure concentration is less than 250 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
Aluminum	If the exposure concentration is lower than 500mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
Aluminum	If the exposure concentration is lower than 10000mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 100000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
Aluminum	Aluminum (alkyl)
Aluminum	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Aluminum	If the exposure concentration is lower than 20mg/m3, wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 50 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
Aluminum	If the exposure concentration is lower than 100 mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
Aluminum	If the exposure concentration is lower than 2000 mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 20000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
Aluminum	Aluminum (welded fume)
Aluminum	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Aluminum	If the exposure concentration is lower than 50mg/m3, wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 125mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
Aluminum	If the exposure concentration is lower than 250 mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
Aluminum	If the exposure concentration is lower than 5000 mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 50000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
Aluminum	Aluminum (Piro Powder)
Aluminum	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Aluminum	If the exposure concentration is lower than 50mg/m3, wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 125mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
Aluminum	If the exposure concentration is lower than 250 mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter

Aluminum	If the exposure concentration is lower than 5000 mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 50000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
Phthalic acid anhydride	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Phthalic acid anhydride	If the exposure concentration is lower than 10 ppm, wear the appropriate type of filter while wearing a type of respirator
Phthalic acid anhydride	If the exposure concentration is lower than 25 ppm, wear a loose-fitting hood/helmet electric respirator or continuous flow dust mask with the appropriate type of filter
Phthalic acid anhydride	If the exposure concentration is lower than 50 ppm, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter
Phthalic acid anhydride	If the exposure concentration is lower than 1000 ppm, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Phthalic acid anhydride	If the exposure concentration is lower than 10000 ppm, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate filters
pentaerythritol	pentaerythritol
pentaerythritol	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
pentaerythritol	If the exposure concentration is less than 100mg/m3, wear the appropriate type of filter while wearing the type of respirator
pentaerythritol	If the exposure concentration is less than 250 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
pentaerythritol	If the exposure concentration is lower than 500mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
pentaerythritol	If the exposure concentration is lower than 10000mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
pentaerythritol	If the exposure concentration is lower than 100000 mg/m3, wear a self-airing (SCBA) or pressure-required self-airing (SCBA) respirator with appropriate
talc	Sowpstone
talc	Sowpstone (breathing)
talc	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of the exposed material
talc	talc [no asbestos, less than 1% silicon oxide crystals (respiratory)] However, for talc containing asbestos, see asbestos (0.1 ea/cm3)
talc	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of the exposed material
talc	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	"For gas/liquid substances, the following respirator is recommended
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	-Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask"
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
2-Ethylhexanoic acid cobalt salt	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
2-Ethylhexanoic acid cobalt salt	"For particulate matter, the following respiratory protection is recommended
2-Ethylhexanoic acid cobalt salt	

2-ethylhexane, rare earth salts	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
2-ethylhexane, rare earth salts	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
2-ethylhexane, rare earth salts	"For gas/liquid substances, the following respirator is recommended
Silsesquioxanes, Ph Pr -	-Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for
Silsesquioxanes, Ph Pr -	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
Silsesquioxanes, Ph Pr -	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
eye protection	"For particulate matter, the following respiratory protection is recommended
	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
	Wear breathable goggles to protect your eyes against particulate matter that may irritate your eyes or cause other health problems
	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
	Wear safety glasses or breathable goggles to protect your eyes from vaporized organic substances that cause eye irritation or other health problems
	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
	Wear breathable safety glasses to protect your eyes against particulate matter that may irritate your eyes or cause other health problems
	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
	To protect your eyes from vaporized organic substances that cause eye irritation or other health problems, wear safety or breathable safety glasses
Hand protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
	Wear the following safety glasses that may cause eye irritation or other health problems. - Closed-type safety glasses for gaseous organic matter - Air-permeable safety glasses for vapor organic matter - Air-permeable safety glasses for particulate matter
physical protection	

9. physicochemical properties

A. Appearance	
character	Liquid
Color	Silver
I. The smell	the smell of organic solvents
C. Smell threshold	No data
D. pH	No data
E. Melting/freezing point	No data
F. Initial boiling point and boiling point range	No data
G. A flashpoint	26 ℃
H. Evaporation rate	No data
I. Flammable (solid, gas)	No data
J. Upper/lower limits on the range of flammables or explosions	No data
J. Steam pressure	No data
T. Solubility	No data
F. Steam density	No data
Ha. Specific gravity	0.9~1.3
G. N-octanol/water distribution coefficient (Kow)	No data
You. Natural firing temperature	No data
More. Decomposition temperature	No data
R. Viscosity	No data
M. molecular weight	No data

10. Stability and responsiveness

a. Chemical stability and possibility of adverse reactions	
2-butanone oxime	Can decompose at high temperatures to produce toxic gases
2-butanone oxime	Containers may explode when heated
2-butanone oxime	Some may burn but do not ignite easily
2-butanone oxime	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
toluene-2,4/2,6-diisocyanate	Can decompose at high temperatures to produce toxic gases
toluene-2,4/2,6-diisocyanate	If heated or contaminated with water, containers can explode
toluene-2,4/2,6-diisocyanate	When heated, steam can be mixed with air to form an explosive mixture: indoor, outdoor, sewers at risk of explosion
toluene-2,4/2,6-diisocyanate	Some may burn but do not ignite easily
toluene-2,4/2,6-diisocyanate	Steam can travel to ignition source and flash back
toluene-2,4/2,6-diisocyanate	Some may produce combustible hydrogen gas when in contact with metal
toluene-2,4/2,6-diisocyanate	Corrosive/toxic: Inhalation, ingestion, and contact of vapor, dust, and substances can result in serious injury, burns and death
toluene-2,4/2,6-diisocyanate	Contact with molten materials can cause serious burns to the skin and eyes
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Can decompose at high temperatures to produce toxic gases
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Containers may explode when heated
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Some may burn but do not ignite easily
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
xylene	Highly flammable liquids and vapors
xylene	Intense polymerization can cause fire and explosion
xylene	Can form explosive mixtures at or above flashpoints
xylene	Containers may explode when heated
xylene	High Mars: easily ignited by heat, spark, and flame
xylene	Leaks are at risk of fire/explosion
xylene	Risk of steam explosion indoors, outdoors, and sewers
xylene	Steam can form an explosive mixture with air
xylene	Steam can travel to ignition source and flash back
xylene	Steam can cause dizziness or suffocation without awareness
xylene	Fire can cause irritable, corrosive, and toxic gases
xylene	Inhalation and contact irritates or burns skin and eyes
xylene	Inhalation and skin absorption may be toxic
ethylbenzene	Highly flammable liquids and vapors
ethylbenzene	Intense polymerization can cause fire and explosion
ethylbenzene	Can form explosive mixtures at or above flashpoints
ethylbenzene	Containers may explode when heated
ethylbenzene	High Mars: easily ignited by heat, spark, and flame
ethylbenzene	Leaks are at risk of fire/explosion
ethylbenzene	Risk of steam explosion indoors, outdoors, and sewers
ethylbenzene	Steam can form an explosive mixture with air
ethylbenzene	Steam can travel to ignition source and flash back
ethylbenzene	Inhalation and skin absorption may be toxic
Aluminum	Leaks are at risk of fire/explosion
Aluminum	Generating combustible gases when in contact with water
Aluminum	Can be reignited after digestion
Aluminum	Can be ignited by heat, spark and flame
Aluminum	Some react violently with water
Aluminum	Can ignite when in contact with water or moist air
Aluminum	Inhalation and contact of vapors, substances, and decomposition products can result in serious injury or death

Aluminum	Can come into contact with water to produce corrosive solutions
Phthalic acid anhydride	If heated or contaminated with water, containers can explode
Phthalic acid anhydride	When heated, steam can be mixed with air to form an explosive mixture: indoor, outdoor, sewers at risk of explosion
Phthalic acid anhydride	Some may burn but do not ignite easily
Phthalic acid anhydride	Steam can travel to ignition source and flash back
Phthalic acid anhydride	Some may produce combustible hydrogen gas when in contact with metal
Phthalic acid anhydride	Corrosive/toxic: Inhalation, ingestion, and contact of vapor, dust, and substances can result in serious injury, burns and death
Phthalic acid anhydride	Contact with molten materials can cause serious burns to the skin and eyes
Phthalic acid anhydride	Fire can cause irritable, corrosive, and toxic gases
pentaerythritol	Stable at room temperature and pressure
pentaerythritol	Containers may explode when heated
pentaerythritol	Some may burn but do not ignite easily
pentaerythritol	In case of fire, irritable and toxic gases can be generated
pentaerythritol	Inhalation of substances can be harmful
pentaerythritol	Some liquids may cause dizziness and vapor that causes suffocation
talc	Containers may explode when heated
talc	Some may burn but do not ignite easily
talc	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
talc	Fire can cause irritable, corrosive, and toxic gases
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Stable at room temperature and pressure
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Containers may explode when heated
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Some may burn but do not ignite easily
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	In case of fire, irritable and toxic gases can be generated
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Inhalation of substances can be harmful
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Some liquids may cause dizziness and vapor that causes suffocation
2-Ethylhexanoic acid cobalt salt	Can decompose at high temperatures to produce toxic gases
2-Ethylhexanoic acid cobalt salt	Containers may explode when heated
2-Ethylhexanoic acid cobalt salt	Some may burn but do not ignite easily
2-Ethylhexanoic acid cobalt salt	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
2-ethylhexane, rare earth salts	Stable at room temperature and pressure
2-ethylhexane, rare earth salts	Containers may explode when heated
2-ethylhexane, rare earth salts	Some may burn but do not ignite easily
2-ethylhexane, rare earth salts	In case of fire, irritable and toxic gases can be generated
2-ethylhexane, rare earth salts	Inhalation of substances can be harmful
2-ethylhexane, rare earth salts	Some liquids may cause dizziness and vapor that causes suffocation
Silsesquioxanes, Ph Pr -	Stable at room temperature and pressure
Silsesquioxanes, Ph Pr -	Containers may explode when heated
Silsesquioxanes, Ph Pr -	Some may burn but do not ignite easily
Silsesquioxanes, Ph Pr -	In case of fire, irritable and toxic gases can be generated
Silsesquioxanes, Ph Pr -	Inhalation of substances can be harmful
B. Conditions to avoid	
2-butanone oxime	Ignition sources such as heat, spark, flame, etc
toluene-2,4/2,6-diisocyanate	Ignition sources such as heat, spark, flame, etc
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Ignition sources such as heat, spark, flame, etc
xylene	Stay away from heat, sparks, flames, and high fever - don't smoke
ethylbenzene	Stay away from heat, sparks, flames, and high fever - don't smoke
Aluminum	Moisture

Aluminum	Ignition sources such as heat, spark, flame, etc
Phthalic acid anhydride	Ignition sources such as heat, spark, flame, etc
pentaerythritol	Ignition sources such as heat, spark, flame, etc
talc	Ignition sources such as heat, spark, flame, etc
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Ignition sources such as heat, spark, flame, etc
2-Ethylhexanoic acid cobalt salt	Ignition sources such as heat, spark, flame, etc
2-ethylhexane, rare earth salts	Ignition sources such as heat, spark, flame, etc
Silsesquioxanes, Ph Pr -	Ignition sources such as heat, spark, flame, etc
C. Substances that should be avoided	
2-butanone oxime	combustible substances
toluene-2,4/2,6-diisocyanate	Metal
toluene-2,4/2,6-diisocyanate	Water
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	combustible substances
xylene	No data
ethylbenzene	No data
Aluminum	Water
Phthalic acid anhydride	Metal
Phthalic acid anhydride	Water
pentaerythritol	combustible material
pentaerythritol	irritable, toxic gases
talc	combustible substances
talc	Separation group:
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	combustible material
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	irritable, toxic gases
2-Ethylhexanoic acid cobalt salt	combustible substances
2-ethylhexane, rare earth salts	combustible material
2-ethylhexane, rare earth salts	irritable, toxic gases
Silsesquioxanes, Ph Pr -	combustible material
D. Hazardous substances produced during decomposition	
2-butanone oxime	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
2-butanone oxime	Corrosive/toxic fumes
2-butanone oxime	irritable, toxic gases
toluene-2,4/2,6-diisocyanate	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Corrosive/toxic fumes
xylene	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
ethylbenzene	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
Aluminum	irritable, corrosive, toxic gases
Phthalic acid anhydride	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
pentaerythritol	No data
talc	Corrosive/toxic fumes
talc	irritable, corrosive, toxic gases
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	Corrosive/toxic fumes
2-Ethylhexanoic acid cobalt salt	irritable, corrosive, toxic gases

2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data

11. information about toxicity

A. Information on most likely exposure routes	
2-butanone oxime	"Could cause irritation, drowsiness and blood disorders.
toluene-2,4/2,6-diisocyanate	It can cause irritation, nausea, vomiting, drowsiness, and blood disorders.
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Possibly fatal during skin contact, irritation, and allergic reactions.
xylene	It can cause irritation (sometimes severe)."
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
pentaerythritol	No data
pentaerythritol	Substances that can be absorbed into mucous membranes, eyes, and skin and cause systemic effects (ACGIH, Ministry of Employment No. 2018-24; skin)
pentaerythritol	Can be absorbed by the body by inhalation
pentaerythritol	Inhalation and absorption by fire extinguishers
talc	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Can be absorbed by the body by the inhalation of steam
2-Ethylhexanoic acid cobalt salt	Inhalation, skin, and body absorption by digestive organs
2-ethylhexane, rare earth salts	No data
2-ethylhexane, rare earth salts	No data
2-ethylhexane, rare earth salts	No data
2-ethylhexane, rare earth salts	Can be absorbed by the body by inhalation
2-ethylhexane, rare earth salts	Inhalation and absorption by fire extinguishers
Silsesquioxanes, Ph Pr -	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
B. Health hazard information	Can be absorbed by the body by the inhalation of steam
	Inhalation, skin, and body absorption by digestive organs
acute toxicity	No data
an oral form	
2-butanone oxime	
toluene-2,4/2,6-diisocyanate	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	LD50 930 mg/kg Rat
ethylbenzene	LD50 4130 mg/kg Rat (Rat count data, OECD TG 401)
Aluminum	LD50 > 5000 mg/kg Rat
Phthalic acid anhydride	LD50 3523 mg/kg Rat (EU Method B1)
pentaerythritol	LD50 3500 mg/kg Rat
pentaerythritol	LD50 > 15900 mg/kg Rat (OECD TG 401)
talc	LD50 1530 mg/kg Rat
talc	LD50 > 5110 mg/kg Rat
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	LD50 > 5000 mg/kg Rat
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
transdermal skin	No data
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	LD50 185 ㎎/㎏ Rabbit
ethylbenzene	LD50 > 9400 ㎎/㎏ Rabbit (OECD Guideline 402)
Aluminum	LD50 > 3160 ㎎/㎏ Rabbit
Phthalic acid anhydride	LD50 1100 mg/kg (Converted Acute Toxicity Estimate (EU CLP Harmonization Classification: Classification 4)
pentaerythritol	LD50 > 20000 ㎎/㎏ Rabbit (OECD Guideline 402 GLP)
pentaerythritol	No data
talc	LD50 > 3160 ㎎/㎏ Rabbit
talc	LD50 > 10000 ㎎/㎏ Rabbit
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	LD50 > 2000 ㎎/㎏ Rat
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
Inhale	No data
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	Steam LC50 5922 ppm 4 hr Rat (25.713 mg/LEPA OPP 81-3, GLP;1330-20-7; EU CLP Harmonization Classification: Classification 4)
ethylbenzene	Steam LC50 4000 ppm 4hr Rat (Rad LC50=4000 ppm 4hr conversion: 17.8 mg/L (ECHA, HSDB), RD50=1432 ppm 6.2 mg/L; EU CLP Harmonization Classification 4)
Aluminum	분진 LC50> 0.888 ㎎/ℓ 4 hr Rat (OECD TG 403, GLP)
Phthalic acid anhydride	분진 LC50> 2.14 ㎎/ℓ 4 hr Rat (OECD TG 403, GLP)
pentaerythritol	Dust LC50> 5.15mg/l 4hr Rat
pentaerythritol	No data
talc	Mist LC50> 2.1 mg/L 4 hr Rat ((similar material test data)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
Corrosive or irritable skin	
2-butanone oxime	Non-polar (rabbit)
toluene-2,4/2,6-diisocyanate	Intermediate irritation with a primary skin irritation index of 4.7 in the irritation test using rabbits
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Normal stimulation (rabbit)
xylene	A skin irritation test using rabbits. EU Method B.4 results show that the primary skin irritation index 3 is intermediate irritation
ethylbenzene	The results of the skin irritation test using rabbits show moderate irritation
Aluminum	Skin Corrosion/Stimulating Test Results In Rabbits, Non Corrosive Similar Substances: Aluminium Oxide TBH OECD TG 404, GLP
Phthalic acid anhydride	"Skin Corrosion/Stimulus Test Results in Rabbits, No Stimulus Index: 0
pentaerythritol	Skin Corrosion/Stimulating Test Results in Rabbits: Mild Stimulating PDII: 1.5"
talc	Edema score: 0/0, not in GHS classification criteria, Rabbit, OECO Guideline for Testing of Chemicals. OECO, ISBN-92-64-12221-4 (1981)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Relative tissue survival (%): 112.9, non-irritating, human, EU Method B.46
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
Severe eye damage or irritation	No data
2-butanone oxime	

toluene-2,4/2,6-diisocyanate	Severe stimulation (100ul, rabbit)
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Severe eye damage/corrosion test results with rabbits showed highly stimulating reversible stimulation that completely alleviates within 14 days (Overall stimulation index = 36.5/110)/ Severe eye damage/corrosion test results with rabbits showed corneal stimulation that does not recover within 30 days when not washed out, reversible stimulation that completely alleviates within 8-19 days (Keratoconjunctival index = 0.66/4, iris index = 0.33/2, conjunctival index = 3/3, conjunctival edema = 4/4)
xylene	Non-polar (rabbit)
ethylbenzene	"Short-term Exposure Criteria Show eye and respiratory irritation effects on human bodies exposed to mixed xylene at 100 ppm STEL o- Conjunctive redness (vessels diffuse more above normal and crimson, individual vessels are not easily identified) was observed upon xylene infusion in rabbits, . Conjunctive chemo (swelling above normal) and conjunctival secretions (above normal) were observed in 5 rabbits at 1 hour after ophthalmology
Aluminum	Regulations on the classification and labeling of chemicals by the Ministry of Environment: Classification 2"
Phthalic acid anhydride	As a result of the eye irritation test in rabbits, there was no mild irritation or corneal damage to the conjunctiva
pentaerythritol	Eye Damage/Stimulus Trial Results In Rabbits, No Stimulus Similar Substances: Aluminium Oxide TBH FDA of the United States
talc	Eye damage/stimulation test results in rabbits, irritable stimulation index: 0.5-4 occurs, but recovers within 7 days
talc	Not applicable to GHS classification criteria, Rabbit, Corneal Confusion (0), iris (0), conjunctival congestion (0), conjunctival edema (0), OECD TG 405
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No hypersensitivity, Rat, in vivo, male
2-Ethylhexanoic acid cobalt salt	No irritation, Rabbit, Corneal Confusion (0), iris (0), conjunctival congestion (1.2), conjunctival edema (0.7), OECD TG 405
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
respiratory sensitivity	No data
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	No data
ethylbenzene	As a result of the skin sensitivity test using guinea pigs, CAS No. 26471-62-5 is a similar substance that causes respiratory sensitivity
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	Respiratory hypersensitivity test in male mice shows no hypersensitivity (similar substance: aluminum oxide)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	"Responding to the respiratory hypersensitivity test on guinea pigs, it is found to be a substance with hypersensitivity due to infection with the serum albumin PA-GPSA complex of guinea pigs."
2-Ethylhexanoic acid cobalt salt	Respiratory hypersensitivity tests in guinea pigs have found serological analysis that causes respiratory allergies."
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
skin sensitivity	No data
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	
ethylbenzene	No data
Aluminum	Local lymph node test LLNA shows skin sensitivity in OECD TG429
Phthalic acid anhydride	No data
pentaerythritol	Not classified according to GHS criteria (no hypersensitivity), Mouse, Localized Lymph node trial (LLNA), GLP, female, OECD TG 429

talc	No hypersensitivity, guinea pig, female, OECD TG 406
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	Allergic dermatitis has been reported
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
carcinogenicity	
Occupational Safety and Health Act	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
Ministry of Employment and Labor Examination	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulf	No data
xylene	No data
ethylbenzene	2
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	1A (limited to talc containing asbestos)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
IARC	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	2B
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	3
ethylbenzene	2B
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	3
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	2B (Cobalt and cobalt compounds)
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
OSHA	

2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
ACGIH	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	A4
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	A4
ethylbenzene	A3
Aluminum	A4 (Aluminum metal and insoluble compounds)
Phthalic acid anhydride	A4
pentaerythritol	No data
talc	A4
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
NTP	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	R
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
EU CLP	
2-butanone oxime	2
toluene-2,4/2,6-diisocyanate	2
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	1B
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data

pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
germ cell mutagenicity	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	Results of the return mutation test using microorganisms in vitro OECD TG 471, positive with or without metabolism, and small nuclear test using mammalian red blood cells in vivo OECD TG 474, GLP, negative similar substance CAS No. 26471-62-5
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	** EU CLP: 1B
xylene	Returned mutation test using in vitro bacteria OECD TG471 result negative, small nuclear test using mouse bone marrow cells in vivo OEF 474, GLP result negative
ethylbenzene	Genotoxicity test using mouse lymphoma L5178Y cell negative, chromosomal aberration test using CHO cells negative, OECD TG476, GLP, OECD TG 473
Aluminum	Micronuclear test results using mouse bone marrow cells negative, Unscheduled DNA synthesis using mammalian hepatocytes; UDS test results negative, OECD TG474, OECD TG486, GLP"
Phthalic acid anhydride	"In vitro DNA damage test results negative analogues in the absence of metabolism: AlCl3 obtained from Sigma, chromosomal aberration test using mammalian bone marrow cells in vivo negative analogues in the absence of metabolism: AlCl3 obtained from Sigma OECD TG 475
pentaerythritol	Aluminium causes concentration-dependent biotypic changes in sister chromosome counts, increasing unscheduled DNA integration"
talc	"Return mutation test results with in vitro microorganisms, negative OECD TG 471
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Gene mutation test using mammalian culture cells in vitro shows negative OECD TG 476, GLP regardless of the presence or absence of metabolic activity system
2-Ethylhexanoic acid cobalt salt	DNA damage test through sister chromatin analysis of mammals in vitro negative with or without metabolism
2-ethylhexane, rare earth salts	Chromosomal aberration test using mammalian cells in vitro, negative with or without metabolic activity"
Silsesquioxanes, Ph Pr -	in vitro - reversible mutation test with bacteria: negative (S. typhimurium TA98, regardless of metabolism), OECD TG 471, GLP
reproductive toxicity	"in vivo - genetic mutation test with mammalian germ cells: negative (rat, male), OECD TG 478 in vitro - chromosomal aberration test with mammalian cells: negative (rat pleural mesomal cells (RPMC), no metabolic system), OECD TG 473, EU Method B.10"
2-butanone oxime	
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	
Phthalic acid anhydride	No data
pentaerythritol	Results of the second generation inhaled reproductive toxicity test (OECD TG 416, GLP) with rats (Nasal discharge in males and red-tinged fur in females) were observed in the parent generation. Rhinitis, hyperplasia and dysplasia of the respiratory epithelium were found, and the frequency of hyperplasia
talc	No data

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No toxic effects related to reproduction and development were observed up to the highest concentration (500 ppm) tested as a result of the second-generation reproductive toxicity test in rats (repeated inhalation exposure, EPA OPPTS870.3800). NOAEC (productive/development/parent toxicity)>= Developmental inhalation toxicity test (OECD TG414) results with 500 ppm rats BMCL10 (development) = 5761 mg/㎥ due to decreased neonatal weight, BMCL10 (mother toxicity) = 2675 mg/㎥ due to maternal weight loss
2-Ethylhexanoic acid cobalt salt	"As a result of the second generation inhaled reproductive toxicity test (OECD TG416, GLP) with rats, no adverse effects related to reproduction or development were observed up to 500 ppm. NOEL for parental systemic toxicity is NOEL=100 ppm due to weight loss and liver weight gain.
2-ethylhexane, rare earth salts	As a result of the inhalation development toxicity test (EOCD TG414, GLP) using rats, no deformity effect was observed up to 2000 ppm. Neonatal weight loss at 1000 or 2000 ppm was weak. Maternal toxicity decreased weight and feed consumption at 1000 and 2000 ppm. NOAEL=2000ppm and
Silsesquioxanes, Ph Pr -	"Oral reproductive toxicity test results in rats NOAEL = 266 mg/kg bw/day (OECD TG 414)
Specific target organ toxicity (one exposure)	Developmental and reproductive toxicity test results in pregnant rats, fetuses removed between 6-18 days"
2-butanone oxime	"Oral reproductive toxicity test in rats shows no significant effect NOAEL = 1,000 mg/kg bw/day
toluene-2,4/2,6-diisocyanate	32 Week Oral Reproductive Toxicity Trial Results In Mice No Significant Effects observed NOAEL = 3,570 (male), 1,785 (female) mg/kg bw/day"
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	"No evidence of reproductive or developmental toxicity at marginal doses of 1000 mg/kg bw/d under the conditions of this study," OECD TG 422, GLP
xylene	Under the conditions of this study, both maternal and fetal NOAELs are considered 1000 mg/kg/day, rat, OECD TG 414, GLP"
ethylbenzene	"Daily administration of 900 mg of talc/kg body weight to pregnant rabbits on days 6 to 18 of pregnancy showed no effect on the fetus. No dose-related effects were seen in reproductive function. NOAEL is considered 900 mg/kg
Aluminum	NOAEL (developmental toxicity) = 1600 mg/kg bw/day, administration of 1600 mg/kg bw talc in corn oil did not affect reproductive, developmental indicators, did not affect maternal, fetal survival, rat, GLP"
Phthalic acid anhydride	"Acute inhaled long-term toxicity test in rats shows abnormal breathing, eye discharge, facial light, anal color change, weight loss, lung and liver discoloration, OECD TG 403, GLP
pentaerythritol	Inhaling in humans causes fever in the upper airways
talc	"Execution: The only signs of toxicity were diarrhea, and 7 hours after administration, in 3 rats (2 males and 1 female). All other rats were normal / No abnormalities in autopsy (Rats / Male / Female / OECD TG 401 / GLP) Inhalation: When removed from the chamber after a 4-hour inhalation study, signs of a bent posture and standing hairs are commonly seen during short periods in animals. Wet fur is usually recorded during exposure and during short periods after exposure. It is considered to be due to the inhibition procedure, and a reduced respiratory rate was observed in all animals upon removal from the chamber and at 1 h after removal. One day after exposure, all animals exhibited only increased respiratory rates. On day 2 postexposure, all animals recovered normally. / No macroscopic abnormalities were found among the
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	
2-Ethylhexanoic acid cobalt salt	"Executive: No observed clinical signs / No specific pathological abnormalities found (Ratt / Male / OECD TG 423 / GLP) Percutaneous: Test items showed mild signs of skin irritation (weak scratch) after single-dose application to one female (n° 14) on days 3 and 4. The clinical signs observed were present only on the day of application, possibly due in part to stress induced by the application process. These signs are: Red nose discharge to one female (n° 15) at 2, 3, and 4 hours and to three males (n° 21, 23, 24) at 1, 2, 3, and 4 hours. One male (n° 21) immediately developed diarrhea after 30 minutes and 1 hour. At autopsy, female number 14 showed tissue changes in the fluid-filled large intestine. Since this finding was seen in only one animal and was not related to any specific clinical signs, it was unlikely to be related to the test items (Ratt/male/female/OECD TG 402/GLP)
2-ethylhexane, rare earth salts	
Silsesquioxanes, Ph Pr -	Inhalation: No clinical signs were observed during exposure. After exposure, blephar hyperplasia and congenital manifestations were observed in two males and one female on day 1 alone. (Ratt / Male / Female / OECD TG 403 / GLP) "
Specific target organ toxicity (repeated exposure)	No data
2-butanone oxime	No data

toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	entral neurological disorders (poor appetite, vomiting, nightmares, forgetfulness, anxiety, dizziness after posture change, etc.) have been observed and reported in humans and animals. It has been reported that chronic exposure to substances can cause hearing loss due to noise. National Institute of Environmental Research's Hazardous Classification of Toxic Substances: Classification 1
ethylbenzene	"The results of the 13-week repeated oral toxicity test with rats were based on hematologic changes indicating weak regenerative anemia, increased liver weight, and changes in central lobular hepatocyte hypertrophy, NOAEL=75 mg/kg bw/dayOECD TG408, GLP, ECHA
Aluminum	As a result of the 13-week repeated inhalation toxicity test using mice, liver and kidney weight increased at 750 ppm3.55 mg/L or higher, but no other histopathologic findings or harmful effects were observed. NOAEC=1000 ppm4.74 mg/LOECD TG413, ECHA
Phthalic acid anhydride	To identify inhaled neurotoxicity OECD TG424 using rats, repeated inhalation exposure at a concentration of 200-800 ppm for 4 weeks-13 weeks did not recover the hearing threshold even 8 weeks after stopping exposure at a concentration of 400 ppm or more. OHC losses of 200-800 ppm during the 8-week recovery period increased severely to 4% and 100%, respectively. LOAEL=200 ppm"
pentaerythritol	"Orthally targeted long-term systemic toxicity test using rats shows NOAEL = 302 mg/kg diet-like substances: Aluminium hydroxide OECD TG 407
talc	Repeated, long-term exposure affects the lungs. Affects the nervous system
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Long-term nephrotoxicity test results for rats, LOAEC = 50 mg/m3 air-like substances: Alpowder OECD TG 413
2-Ethylhexanoic acid cobalt salt	Inhalation of substances affects the central nervous system, resulting in impaired function
2-ethylhexane, rare earth salts	Six months of aluminum intake in rats showed increased concentrations in bones, liver and kidneys, especially uncontrollable changes in the kidneys and brain."
Silsesquioxanes, Ph Pr -	"Repeated oral toxicity test in mice shows female mice lose weight, lung and kidney lymphocytes; chronic bile duct inflammation, male adrenal atrophy LOAEL = ca.1,717 female, ca.2,340 male mg/kg bw/day
Harmful to aspiration	The results of the 13-week repeated oral toxicity test in rats showed that males lost less than 10% of their weight at high concentrations and females were not affected at high-low concentrations. There was no statistically significant difference in mortality and severe chronic inflammatory degenerative or proliferative degeneration occurs. NOAEL = 500 mg/kg, some effects on weight loss, lungs and kidneys were observed, but the concentration in which the
2-butanone oxime	pentaerythritol is well tolerated in rats up to 1000 mg/kg bw/d dose; only saliva secretion is recorded; no target organ effects are observed at any dose level; considered NOAEL=1000 mg/kg-bw/day; Rat, OECD TG 408, GLP
toluene-2,4/2,6-diisocyanate	"Prologic (chronic): oral exposure using talc as feed for 101 days in rats (cancer/male) showed NOAEL of 100 mg/kg/day. There were no adverse events at the typical toxic terminus, and one of the animals treated with talc Inhalation (chronic): Through rats, exposure for 7.5 hours a day and 5 days a week at a concentration of 10.8 mg talc/㎥ of dust breathable for 6 to 12 months showed that the two groups with treatment periods of 6 and 12 months showed high mortality. 50% of the animals died during treatment in both
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	groups, and exposure to the test substance resulted in distinct fibrosis. Pulmonary adenoma detected in 1 of 24 animals exposed, Rat, OECD TG 452"
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data

Silsesquioxanes, Ph Pr -	No data
Other Hazardous Effects	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data

12. environmental impact

a. Ecotoxicity

Fish

2-butanone oxime	LC50 843 ㎎/ℓ 96 hr
toluene-2,4/2,6-diisocyanate	LC50 164.5 ㎎/ℓ 96 hr
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	LC50 2.6 ㎎/ℓ 96 hr (OECD Guideline 203)
ethylbenzene	LC50 5.1 ㎎/ℓ 96 hr
Aluminum	No data
Phthalic acid anhydride	LC50 > 99 ㎎/ℓ 96 hr 기타 (Oryzias latipes, OECD Guideline 203, GLP)
pentaerythritol	LC50 > 100 ㎎/ℓ 96 hr Oryzias latipes
pentaerythritol	(water index, freshwater, GLP)
talc	LC50 89581.016 ㎎/ℓ 96 hr Fishes species
talc	(QSAR, Exponential)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	(Using Log KOWIN, the water-octanol distribution coefficient is outside the range of -4<log Cow<8)

crustaceans

2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	LC50 4.3 ㎎/ℓ 96 hr 기타 (Crangon crangon)
xylene	LC50 3.6 ㎎/ℓ 24 hr (OECD TG202)
ethylbenzene	LC50 1.8 ㎎/ℓ 48 hr Daphnia magna (Ceriodaphnia dubia NOEC 1.0 ㎎/L (0.96㎎/L) 7days)
Aluminum	NOEC > 100 ㎎/ℓ 48 hr Daphnia magna
Phthalic acid anhydride	EC50 71 ㎎/ℓ Daphnia magna (OECD TG 202, GLP)
pentaerythritol	EC50 > 1000 ㎎/ℓ 24 hr Daphnia magna
pentaerythritol	(water index, freshwater, GLP)
talc	LC50 36812.359 ㎎/ℓ 48 hr Daphnid species
talc	(QSAR model, QSAR model, 담수)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data

Silsesquioxanes, Ph Pr -	No data
bird	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	EC50 1.3 ㎎/ℓ 48 hr (OECD TG201, GLP)
ethylbenzene	EC50 2.6 ㎎/ℓ 96 hr 기타 (marine invertebrate)
Aluminum	NOEC ≥ 0.052 ㎎/ℓ 72 hr Selenastrum capricornutum (OECD TG 201, GLP)
Phthalic acid anhydride	EC50 68 ㎎/ℓ 72 hr Selenastrum capricornutum (OECD TG 201, GLP)
pentaerythritol	EC50 > 1000 ㎎/ℓ 72 hr Pseudokirchneriella subcapitata
pentaerythritol	(OECD TG 201, Exponential, Freshwater, GLP)
talc	EC50 7202.7 ㎎/ℓ 96 hr Green algae
talc	(QSAR model, QSAR model, 담수)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
B. Residual and degradable	
Residuality	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	log Kow 2.1 to 6 (estimated)
xylene	log Kow 3.15
ethylbenzene	log Kow 3.15
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	01 -1.7 log Kow
pentaerythritol	(log Pow, 23℃)
talc	01 -9.4 log Kow
talc	(log Pow, 25℃)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	log Kow 2.64
Silsesquioxanes, Ph Pr -	No data
Degradable	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	BOD5/COD (Japan MITI test, the vapor of the material is decomposed by reacting with photochemical hydroxyl radicals manufactured in the atmosphere, with a half-life of 1.7 days)
toluene-2,4/2,6-diisocyanate	COD
toluene-2,4/2,6-diisocyanate	BOD 0
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	Average BOD5/COD biodegradation is 100.9%
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data

Silsesquioxanes, Ph Pr -	No data
C. Bio-enriched	
Concentration	
2-butanone oxime	BCF 0.55 ((25℃), Cyprinus carpio(Fish, fresh water), 2mg/l)
toluene-2,4/2,6-diisocyanate	BCF 380
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	BCF 25.9 (Oncorhynchus mykiss)
ethylbenzene	BCF 1 (BCF)
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	01 0.3 ~ 0.6 BCF
talc	01 3.162 BCF
talc	(ℓ/㎏)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	BCF
biodegradable	
2-butanone oxime	24.7 (%) 28 days ((aerobic, activated sludge))
toluene-2,4/2,6-diisocyanate	50 ~ 90 % 2 day (27℃)
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	90% 28 days (Dissociable, OECD TG301F, GLP)
ethylbenzene	70 ~ 80 % 28 day (ISO 14593 CO2 headspace시험, GLP)
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	83.7 01 28 day
pentaerythritol	(CO2 evolution)
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
D. Soil mobility	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
E. Other harmful effects	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	Crustacea: 21d-NOECDaphnia magna=1.1 mg/liter OECD TG 211, GLP CAS No. 26471-62-5, EU CLP Chronic Aquatic Environmental Hazard Classification 3

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	"Chronic toxicity test for fish NOEC56d>1.3 mg/L
ethylbenzene	Waterflake Chronic Toxicity Test US EPA 600/4-91-003 Results NOEC=1.17 mg/L"
Aluminum	조류 Selenastrum capricornutum, NOEC96h=3.4 mg/L 지수식 EPA 1985, GLP
Phthalic acid anhydride	갑각류Daphnia magna: NOEC = 0.076 mg/Lreproduction, 0.137 mg/Limmobilisation 21d OECD TG 211, GLP
pentaerythritol	"어류: NOECOncorhynchus mykiss = 10 mg/L, LOEC = 32 mg/L 60d
talc	갑각류: NOECDaphnia magna = 16 mg/L 21d OECD TG 211, GLP
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	조류: NOECSelenastrum capricornutum = 32 mg/L 72hr OECD TG 201, GLP"
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data

13. Precautions for disposal

A. Disposal method	Dispose of contents and containers as stipulated in the Waste Management Act.
toluene-2,4/2,6-diisocyanate	"Take care of it in one of the following ways.
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	1. Incineration.
xylene	2. After treatment by evaporation and concentration, incinerate the residue.
ethylbenzene	3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.
Aluminum	4. Use neutralization, oxidation, reduction, polymerization, and condensation reactions to treat.
Phthalic acid anhydride	5. Incineration of residues, or after re-treatment by means of agglomeration, sedimentation, filtration, and dehydration, incinerate residues."
pentaerythritol	Dispose of contents and containers as stipulated in the Waste Management Act.
talc	"Take care of it in one of the following ways.
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	1. Incineration.
2-Ethylhexanoic acid cobalt salt	2. After treatment by evaporation and concentration, incinerate the residue.
2-ethylhexane, rare earth salts	3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.
Silsesquioxanes, Ph Pr -	4. Use neutralization, oxidation, reduction, polymerization, and condensation reactions to treat.
B. Precautions for disposal	5. Incineration of residues, or after re-treatment by means of agglomeration, sedimentation, filtration, and dehydration, incinerate residues."
2-butanone oxime	"Take care of it in one of the following ways.
toluene-2,4/2,6-diisocyanate	1. After treatment using the reaction of neutralization, oxidation, and reduction, use the method of agglomeration, precipitation, filtration, and dehydration.
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	2. Treat by evaporation and concentration.
xylene	3. Refine by means of separation, distillation, extraction, and filtration."
ethylbenzene	(1) Treat with neutralization, hydrolysis, oxidation, and reduction.
Aluminum	2) Burn at high temperature or melt at high temperature.
Phthalic acid anhydride	3) Solidify it."
pentaerythritol	No data
talc	Dispose of contents and containers as stipulated in the Waste Management Act.
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Dispose of contents and containers as stipulated in the Waste Management Act.
2-Ethylhexanoic acid cobalt salt	Dispose of contents and containers as stipulated in the Waste Management Act.

2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
	Dispose of contents and containers as stipulated in the Waste Management Act.

14. Information required for transportation

A. United Nations No	
2-butanone oxime	1993
toluene-2,4/2,6-diisocyanate	2078
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No UN transport hazard classification information
xylene	1307
ethylbenzene	1175
Aluminum	1396
Phthalic acid anhydride	2214
pentaerythritol	No UN transport hazard classification information
talc	No UN transport hazard classification information
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No UN transport hazard classification information
2-Ethylhexanoic acid cobalt salt	No UN transport hazard classification information
2-ethylhexane, rare earth salts	No UN transport hazard classification information
Silsesquioxanes, Ph Pr -	No UN transport hazard classification information
B. Proper shipping name	
2-butanone oxime	Flammable liquid, NOS (Titanium Tetraisobutanoate) ()
toluene-2,4/2,6-diisocyanate	DIISOCYANATE TOLUENE DIISOCYANATE
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	XYLENES
ethylbenzene	ETHYLBENZENE
Aluminum	Aluminum powder (no spontaneous ignition and not coated on the surface) (ALUMINIUM POWER, UNCOATED)
Phthalic acid anhydride	PHTHALIC ANHYDRIDE with more than 0.05% of maleic anhydride
pentaerythritol	Trans-retinal
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
C. Risk rating in transportation	
2-butanone oxime	3
toluene-2,4/2,6-diisocyanate	6.1
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	3
ethylbenzene	3
Aluminum	4.3
Phthalic acid anhydride	8
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
D. Courage rating	
2-butanone oxime	III

toluene-2,4/2,6-diisocyanate	II
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	III
ethylbenzene	II
Aluminum	II
Phthalic acid anhydride	III
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
E. Marine pollutants	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	a non-partisan party
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	a non-partisan party
ethylbenzene	a non-partisan party
Aluminum	relevant
Phthalic acid anhydride	a non-partisan party
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr -	No data
F. Special safety measures that users need or need to know about transportation or transportation	
emergency measures in case of fire	
2-butanone oxime	F-E
toluene-2,4/2,6-diisocyanate	F-A
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	F-E
ethylbenzene	F-E
Aluminum	F-G
Phthalic acid anhydride	F-A
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
Emergency measures in case of spill	
2-butanone oxime	S-E
toluene-2,4/2,6-diisocyanate	S-A
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	S-D
ethylbenzene	S-D
Aluminum	S-O
Phthalic acid anhydride	S-B

pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable

15. Status of legal regulations

A. Regulations under the Occupational Safety and Hea

2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	Substances subject to process safety report (PSM) (Regulation amount: 100,000 kg manufacturing and handling storage))
toluene-2,4/2,6-diisocyanate	Hazardous substances to be managed (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate)
toluene-2,4/2,6-diisocyanate	Substances subject to work environment measurement (measurement cycle: 6 months)
toluene-2,4/2,6-diisocyanate	Substances subject to special health examination (diagnostic cycle: 12 months)
toluene-2,4/2,6-diisocyanate	Exposure criteria setting substances
toluene-2,4/2,6-diisocyanate	Acceptance criteria setting substances
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	Substances subject to process safety report (PSM) submission
xylene	Hazardous substances subject to management
xylene	Substances subject to work environment measurement (measurement cycle: 6 months)
xylene	Substances subject to special health examination (diagnostic cycle: 12 months)
xylene	Exposure criteria setting substances
ethylbenzene	Substances subject to process safety report (PSM) submission
ethylbenzene	Hazardous substances subject to management
ethylbenzene	Substances subject to work environment measurement (measurement cycle: 6 months)
ethylbenzene	Substances subject to special health examination (diagnostic cycle: 12 months)
ethylbenzene	Exposure criteria setting substances
Aluminum	Hazardous substances subject to management
Aluminum	Substances subject to work environment measurement (measurement cycle: 6 months)
Aluminum	Substances subject to special health examination (diagnostic cycle: 12 months)
Aluminum	Exposure criteria setting substances
Phthalic acid anhydride	Hazardous substances subject to management
Phthalic acid anhydride	Substances subject to work environment measurement (measurement cycle: 6 months)
Phthalic acid anhydride	Substances subject to special health examination (diagnostic cycle: 12 months)
Phthalic acid anhydride	Exposure criteria setting substances
pentaerythritol	Exposure criteria setting substances
talc	Prohibited substances (limited to talc containing 1% or more of asbestos under the Chemical Substances Control Act)
talc	Materials subject to work environment measurement (measurement cycle: 6 months of materials subject to work environment measurement)
talc	Substances subject to special health examination (diagnostic cycle: 24 months)
talc	Exposure criteria setting substances
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data

Silsesquioxanes, Ph Pr –	No data
B. Regulations under the Chemical Substances Control Act	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	toxic substances
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	toxic substances
ethylbenzene	No data
Aluminum	No data
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	Prohibited substances
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr –	No data
C. Regulations under the Dangerous Goods Safety Management Act	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	2000 liters of 3rd petroleum non-water-soluble liquid
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	4th class 2nd petroleum (non-water soluble) 1000L
ethylbenzene	4th class 1 petroleum (non-water soluble) 200L
Aluminum	Second class metal powder 500kg
Phthalic acid anhydride	No data
pentaerythritol	No data
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr –	No data
D. Regulations under the Waste Management Act	
2-butanone oxime	No data
toluene-2,4/2,6-diisocyanate	designated waste
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	designated waste
ethylbenzene	designated waste
Aluminum	designated waste
Phthalic acid anhydride	No data
pentaerythritol	designated waste
talc	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
2-Ethylhexanoic acid cobalt salt	No data
2-ethylhexane, rare earth salts	No data
Silsesquioxanes, Ph Pr –	designated waste

E. Other regulations under domestic and foreign laws

domestic regulation

2-butanone oxime

toluene-2,4/2,6-diisocyanate

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy

xylene	
ethylbenzene	
Aluminum	
Phthalic acid anhydride	
pentaerythritol	
talc	
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	
2-Ethylhexanoic acid cobalt salt	
2-ethylhexane, rare earth salts	
Silsesquioxanes, Ph Pr -	
Other domestic regulations	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
Foreign regulations	
US Administrative Information (OSHA Regulations)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable

US Management Information (CERCLA Regulations)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	45.3599kg 100lb
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	45.3599kg 100lb
ethylbenzene	453.599kg 1000lb
Aluminum	Not applicable
Phthalic acid anhydride	2267.995kg 5000lb
pentaerythritol	Not applicable
talc	Not applicable

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (EPCRA 302)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (EPCRA 304)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (EPCRA 313)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Applicable
ethylbenzene	Applicable
Aluminum	Applicable
Phthalic acid anhydride	Applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (Rotterdam Convention Material)	
2-butanone oxime	Not applicable

toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (Stockholm Convention Material)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
US Management Information (Montreal's emotional material)	
2-butanone oxime	Not applicable
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
EU classification information (final classification results)	
2-butanone oxime	T; R48/22R43R52-53
	Carc. 2 Acute Tox. 2 * STOT SE 3 Skin Irrit. 2 Eye Irrit. 2 Resp. Sens. 1 Skin Sens. 1
toluene-2,4/2,6-diisocyanate	Aquatic Chronic 3

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Carc. Cat. 2; R45 – Muta. Cat. 2; R46 – Xn; R65
	Flam. Liq. 3 Acute Tox. 4 * Acute Tox. 4 *
xylene	Skin Irrit. 2
	Flam. Liq. 2 Acute Tox. 4 * Asp. Tox. 1
ethylbenzene	STOT RE 2
	Pyr. Sol. 1
Aluminum	Water-react. 2
	Acute Tox. 4 * STOT SE 3 Skin Irrit. 2 Eye Dam. 1 Resp. Sens. 1
Phthalic acid anhydride	Skin Sens. 1
pentaerythritol	해당없음
talc	해당없음
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	해당없음
2-Ethylhexanoic acid cobalt salt	해당없음
2-ethylhexane, rare earth salts	해당없음
Silsesquioxanes, Ph Pr -	해당없음
EU classification information (danger phrases)	
2-butanone oxime	R43, R48/25, R52/53
	H351 H330 H335 H315 H319 H334 H317
toluene-2,4/2,6-diisocyanate	H412
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	R45, R46, R65
	H226 H332 H312
xylene	H315
	H225 H332 H304
ethylbenzene	H373 (hearing organs)
	H250
Aluminum	H261
	H302 H335 H315 H318 H334
Phthalic acid anhydride	H317
pentaerythritol	ot applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable
EU classification information (safety equipment)	
2-butanone oxime	S1/2, S25, S36/37, S45, S61
toluene-2,4/2,6-diisocyanate	Not applicable
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	S53, S45

xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
Phthalic acid anhydride	Not applicable
pentaerythritol	Not applicable
talc	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
2-Ethylhexanoic acid cobalt salt	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Silsesquioxanes, Ph Pr -	Not applicable

16. Other references

A. Source of data
2-butanone oxime
GESTIS (G. Flashpoint)
NLM (Percutaneous)
IUCLID (Certain Target Organ Toxicity (Repeated Exposure)
NTP (Specific Target Organ Toxicity (Repeated Exposure)
Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)
ECB-ESIS(European chemical Substances Information System)(http://ecb.jrc.it/esis)
ECOTOX Database, EPA(http://cfpub.epa.gov/ecotox)
IUCLID Chemical Data Sheet, EC-ECB
International Chemical Safety Cards(ICSC)(http://www.nihs.go.jp/ICSC)
TOXNET, U.S. National Library of Medicine(http://toxnet.nlm.nih.gov)
The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd)
Industrial Addiction Manual, Shingwang Publishing Co., Ltd
Dangerous Goods Information Management System, National Emergency Management Agency (http://hazmat.nema.go.kr)
Chemical Substances Information System, National Academy of Environmental Sciences (http://ncis.nier.go.kr)
toluene-2,4/2,6-diisocyanate
HSDB (Constitution)
HSDB (Color)
HSDB (B. Smell)
HSDB (E. Melting Point/Frozen Point)
ChemIDplus (F. Initial boiling point and boiling point range)
ECHA (G. Flashpoint)
ECHA (I. Flammable (solid, gas)
HSDB (K. Steam Pressure)
CHEMIDplus (Tar. Solubility)
HSDB (wave vapor density)
HSDB (b. specific gravity)
CHEMIDplus (Ger. n-octanol/water distribution coefficient (Kow))
ECHA (You. Natural Firing Temperature)
HSDB (Mer. Molecular Weight)
ECHA (Old)
ECHA (Percutaneous)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (respiratory sensitivity)
HSDB, ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
ECHA (specific target organ toxicity (1 exposure)
ECHA (Specific Target Organ Toxicity (Repeated Exposure)

HSDB (fish)
HSDB (Resolvable)
ECHA (biodegradable)
ECHA (E. Other Hazardous Effects)
EU CLP (E. Other Hazardous Effects)
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy
UNI. AKRON (Melting Point/Frozen Point)
IUCLID (F. Initial Boiling Point and Boiling Point Range)
UNI. AKRON (G. Flash Points)
UNI. AKRON (upper/lower limit of range of flammables or explosions)
IUCLID (C. Steam Pressure)
UNI. AKRON (Tar. Solubility)
IUCLID (B. Specific gravity)
IUCLID (Ger. n-octanol/water distribution coefficient (Kow))
NI. AKRON (You. Natural Firing Temperature)
IUCLID (Old)
IUCLID (transdermal)
IUCLID (crustacea)
IUCLID (Residual)
xylene
HSDB (Constitution)
HSDB (Color)
HSDB (B. Smell)
HSDB (C. Smell threshold)
HSDB (E. Melting Point/Frozen Point)
ICSC (F. Initial Boiling Point and Boiling Point Range)
ICSC (G. Flashpoint)
SRC (J. Upper/lower limits of Flame or Explosion Range)
SRC (Car. Steam Pressure)
HSDB (Tar. Solubility)
HSDB (wave vapor density)
ICSC (B. Percentage)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
SRC (you. spontaneous ignition temperature)
ECHA (R.Viscosity)
pubchem (Mer. molecular weight)
ECHA (Old)
EU CLP Harmonization Classification (Percutaneous)
ECHA; EU CLP Harmonization Classification (Inhalation)
ECHA (Skin Corrosion or Irritation)
※ECHA, regulations on the classification and labeling of chemicals in the Ministry of Environment (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
HSDB, IPCS, ECHA (specific target organ toxicity (1 exposure)
※ GESTIS, ICSC, Toxic Notification (Specific Target Organ Toxicity (Repeated Exposure)
ECHA (Inhalation Hazardous)
ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
HSDB (Residual)
ECHA (Concentrated)
ECHA (biodegradable)
ECHA (D. Soil Mobility)

ECHA (E. Other Hazardous Effects)

ethylbenzene

HSDB (Constitution)

HSDB (Color)

HSDB (B. Smell)

HSDB (C. Smell threshold)

ICSC (E. Melting Point/Frozen Point)

ICSC (F. Initial Boiling Point and Boiling Point Range)

ICSC (G. Flashpoint)

ICSC (J. Upper/lower limits on the range of flammability or explosion)

HSDB (K. Steam Pressure)

ICSC (Tar. Solubility)

HSDB (wave vapor density)

ECHA (b. weight)

HSDB (Ger. n-octanol/water distribution coefficient (Kow))

ICSC (you. natural ignition temperature)

HSDB (Roe. Viscosity)

HSDB (Mer. Molecular Weight)

ECHA, HSDB (Old)

ECHA (Percutaneous)

ECHA, EU CLP Harmonization Classification (Inhalation)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (Growth Cell Mutagenicity)

ECHA (Growth Toxic)

HSDB (specific target organ toxicity (one exposure)

ECHA (Specific Target Organ Toxicity (Repeated Exposure)
Hydrocarbons. Swallowing liquids can cause chemical pneumonia by osmosis. Kinematic coherence rate 0.64 ㎟/s 25 °C (absorption hazard)

ECHA (Fish)

ECHA (crustacea)

ECHA (bird)

HSDB (Residual)

ECHA (Concentrated)

ECHA (biodegradable)

ECHA (D. Soil Mobility)

ECHA (E. Other Hazardous Effects)

Aluminum

ICSC (Original)

ICSC (Color)

HSDB (B. Smell)

HSDB (E. Melting Point/Frozen Point)

HSDB (F. Initial Boiling Point and Boiling Point Range)

HSDB (Tar. Solubility)

HSDB (b. specific gravity)

ICSC (you. natural ignition temperature)

HSDB (Mer. Molecular Weight)

ECHA (Old)

ECHA (Inhalation)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (respiratory sensitivity)

ECHA (Skin Sensitivity)

ECHA, HSDB (Growth Cell Mutagenicity)

ECHA, HSDB (Growth Toxic)

HSDB (specific target organ toxicity (one exposure)
ECHA, ICSC, IPCS, HSDB (specific target organ toxicity (repeated exposure)
IUCLID (crustacea)
ECHA (bird)
ECHA (E. Other Hazardous Effects)
Phthalic acid anhydride
ECHA (Original)
ECHA (Color)
pubchem (me. smell)
HSDB (C. Smell threshold)
HSDB (E. Melting Point/Frozen Point)
HSDB (F. Initial Boiling Point and Boiling Point Range)
ICSC (G. Flashpoint)
ICSC (J. Upper/lower limits on the range of flammability or explosion)
HSDB (K. Steam Pressure)
HSDB (Tar. Solubility)
HSDB (wave vapor density)
HSDB (b. specific gravity)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
ICSC (you. natural ignition temperature)
HSDB (More. Decomposition Temperature)
HSDB (Roe. Viscosity)
HSDB (Mer. Molecular Weight)
ECHA (Old)
HSDB (Percutaneous)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (respiratory sensitivity)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
ECHA, HSDB (specific target organ toxicity (1 exposure)
ECHA (Specific Target Organ Toxicity (Repeated Exposure)
ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
ECHA (D. Soil Mobility)
ECHA (E. Other Hazardous Effects)
pentaerythritol
ECHA (Original)
ECHA (Color)
ECHA (B. Smell)
GESTIS(라. pH)
ECHA (Melting Point/Frozen Point)
ECHA (F. Initial Boiling Point and Boiling Point Range)
HSDB (G. Flash Point)
ECHA (I. Flammable (solid, gas)
ECHA (K. Steam Pressure)
ECHA (Tar. Solubility)
GESTIS (wave vapor density)
ECHA (b. weight)
ECHA (Ger. n-octanol/water distribution coefficient (Kow))
ECHA (You. Natural Firing Temperature)
HSDB (More. Decomposition Temperature)

ECHA (Mer. Molecular Weight)

ECHA (Old)

ECHA (Percutaneous)

ECHA (Inhalation)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (Skin Sensitivity)

ECHA (Growth Cell Mutagenicity)

ECHA (Growth Toxic)

ECHA (specific target organ toxicity (1 exposure)

ECHA (Specific Target Organ Toxicity (Repeated Exposure)

ECHA (Fish)

ECHA (crustacea)

ECHA (bird)

ECHA (Residual)

ECHA (Degradable)

HSDB (Concentrated)

ECHA (biodegradable)

HSDB (D. Soil Mobility)

ECHA(nature)|ECHA(color)|NIOSH(smell)|ECHA(initial boiling point/freezing point)|ECHA(initial boiling point and range)|ICSC(inflammable (solid, gas))|ECHA(vapor pressure)|ECHA(vapor density)|ECHA(specific gravity)|ECHA(n-octanol/water distribution coefficient (Kow))|ECHA(natural firing temperature)|HSDB(molecular weight)|HSDB(transcending)|ECHA(percutaneous)|ECHA(percussion)|ECHA(intake or irritation of the skin)|ECHA(severe eye damage or irritation)|ECHA(skin irritation)|ECHA(proliferative cell mutagenicity)|ECHA(proliferative toxicity)|ECHA(proliferative toxicity)|ECHA(specific target organ toxicity (one exposure))|ECHA(crustacelet)|ECHA(residual)|ECHA(concentrated soil mobility)|ECHA(other harmful effects)|ECHA(proliferative)

talc

HSDB (Constitution)

HSDB (Color)

HSDB (B. Smell)

ECHA (Melting Point/Frozen Point)

ECHA (K. Steam Pressure)

ECHA (Tar. Solubility)

ECHA (wave vapor density)

HSDB (b. specific gravity)

ECHA (Ger. n-octanol/water distribution coefficient (Kow))

HSDB (Mer. Molecular Weight)

ECHA (Old)

ECHA (Percutaneous)

ECHA (Inhalation)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (Skin Sensitivity)

ECHA (Growth Cell Mutagenicity)

ECHA (Growth Toxic)

ECHA (specific target organ toxicity (1 exposure)

ECHA (Specific Target Organ Toxicity (Repeated Exposure)

ECHA (Fish)

ECHA (crustacea)

ECHA (bird)

ECHA (Residual)

ECHA (Concentrated)

ICSC (nature)|ICSC (color)|HSDB (smell)|ICSC (melting point/frozen point)|HSDC (specific gravity)|QSAR (n-octanol/water distribution coefficient (Kow))|Chemical book|RTECS (molecular weight)|HSDB (proliferative cell mutagenicity)|HSDB (proliferative toxicity)|ICSC, HSDB (specific target organ toxicity (one exposure))|HSDB (specific target organ toxicity (repeated exposure))

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)
2-Ethylhexanoic acid cobalt salt
Lookchem (nature)
Lookchem (Color)
Lookchem (me. smell)
Seekchem (F. Initial Boiling Point and Boiling Point Range)
Seekchem (G. Flashpoint)
Lookchem (Tar. Solubility)
Chemical book (B. weight)
ChemSrc (Ger. n-octanol/water distribution coefficient (Kow))
ChemIDplus (mer. molecular weight)
HSDB (Skin Sensitivity)
2-ethylhexane, rare earth salts
Guidechem (nature)
Guidechem (F. Initial Boiling Point and Boiling Point Range)
Guidechem (G. Flashpoint)
Guidechem (Tar. Solubility)
Guidechem (B. Specific gravity)
Guidechem (Ger. n-octanol/water distribution coefficient (Kow))
ChemIDplus (mer. molecular weight)
Guidechem (residual)
Silsesquioxanes, Ph Pr -
lookchem (nature)
lookchem (color)
lookchem (F. Initial boiling point and boiling point range)
lookchem
EPISUITE
EPISUITE (D. Soil Mobility)

B. Date of initial preparation	2020-06-16
C. Number of revisions and last revision date	
Number of revisions	1 회
Last revision date	2023-06-16
D. Other	

" ○ Material safety data (MSDS) has been edited and partially modified by referring to MSDS provided by the Korea Occupational Safety and Health Agency
It's data."