

물질안전보건자료

(Material Safety Data Sheet)

Name of the product

silver paint

1. information about chemicals and companies

A. Product name

silver paint

B. Recommended uses and restrictions on use of products

recommended use of the product

For rust prevention of steel structures

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

Inflammable liquids: Classification 2

Inflammable solids: Category 1

Water-reactive substances and mixtures: Classification 2

Natural ignition solids: Classification 1

Acute Toxicity (Percutaneous): Classification 4

Skin Corrosive/Skin irritability: Classification 2

Carcinogenicity: Classification 1B

Reproductive cell mutagenicity: Classification 1B

Specific target organ toxicity (repeated exposure): Category 2

Aspiration hazard: Classification 1

Chronic aquatic environmental hazards: Classification 1

B. Warning signs including preventive measures

Picture text



a sign language

Dangers

Hazardous and dangerous phrases

H225 High Resilient Liquid and Steam

H228 Flammable Solid

spontaneous ignition when exposed to H250 air

H261 Produces flammable gas when in contact with water

H304 Swallowing into the airways can be fatal

H312 Hazardous in contact with skin

H315 Causes irritation to the skin

H340 May cause genetic defects (Describe exposure pathways that cause genetic defects, provided there is conclusive evidence that they do not cause genetic defects by other exposure pathways)

H350 Can cause cancer (Describe the path of exposure to cause cancer; only if there is conclusive evidence that it does not cause cancer by other exposure pathways)

H373 Long-term or repeated exposure may cause damage to the organ (specify all organs known to be affected). (Describe the exposure route that causes specific target organ toxicity (repeated exposure); provided, however, that there is conclusive evidence that it does not cause specific target organ toxicity (repeated exposure) by other exposure routes.)

H410 Very toxic to aquatic life due to long-term effects

Preventive measures statement

Prevention

Obtain a manual for handling P201 before use.

Prevention

P202 Do not handle all safety precautions until you have read and understood them.

Response	Keep away from P210 heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking P222 Do not touch the air. P223 Do not come into contact with water. P231+P232 Inert Gas/...Handle and store under. Keep moisture free. Seal the P233 container tightly. Ground P240 containers and containers. P241 Explosion Proof Type [Electric/Ventilation/Lightning/...]...Use the equipment. Use a P242 spark-free tool. P243 Take antistatic measures. Do not inhale P260 dust/fume/gas/mist/steam/spray. After handling P264...Wash thoroughly. Do not discharge into the P273 environment. P280 Wear protective gloves/protective glasses/facial protection. If P301+P310 swallowed: immediate medical institution/doctor/...See a doctor. P302+P335+P334 If you get it on your skin: shake off any material on your skin. Soak it in cold water [or wrap it in a wet bandage]. P302+P352 on skin: plenty of water/...Wash with (e). P303+P361+P353 If you get it on your skin (or hair): Take off all contaminated clothing immediately. Wash your skin with water (or shower). P308+P313 If exposed or concerned about exposure: seek medical action/advice. P312 If you feel uncomfortable, medical institutions/doctors/...See a doctor. P314 Get medical action/advice if you feel uncomfortable. P321 ...Take care of it. P331 Don't make me vomit. P332+P313 When skin irritation appears: seek medical action/advice. P362+P364 Take off contaminated clothing and wash it before use again. P370+P378 In case of fire: To extinguish the fire...Use B. P391 Collect leaks.
	P402+P404 Store in a dry place. Store in an airtight container. P403+P235 Store in a well-ventilated place. Keep it low. Save with P405 lock. Dispose of contents/containers in accordance with P501 waste-related laws and regulations
Storage	
Disposal	

3. Name and content of components			
Material name	Nomenclature (tolerance)	CAS number	content (%)
수소탈황화된 중질 나프타 (석유)(Naphtha (petroleum), hydrodesulfurized heavy)		64742-82-1	38-47
xylene	Xylene (Ortho, Meta, Paraic)	1330-20-7	1-3
	Dimethylbenzene (Oso, Meta, Para-isomer)		
	Xylene, o,m,p-isomers		
	Xylene(o,m,p-isomers)		
ethylbenzene	ethyl benzene	100-41-4	0.1-1
	Ethyl benzene		
Aluminum		7429-90-5	8-15
석유탄화수소 수지(PETROLEUM HYDROCARBON RESIN)	Extraction, Residual Residues (EXTRACT,	64742-16-1	37-46
Hydrogenated Talo Fatty Acids		61790-38-3	0.01-3

4. First aid 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

B. When you come into contact with your skin

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.

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, seek medical measures and advice.

Seek medical measures and advice if skin irritation occurs.

Take off contaminated clothing and wash it before using it again.

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 have difficulty breathing, supply oxygen

Please keep it warm and stable

Seek medical measures and advice if exposed or concerned about exposure.

If you feel uncomfortable, seek medical measures and advice.

Don't make me vomit.

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.

If you feel uncomfortable, seek medical measures and advice.

Don't make me vomit.

E. Other precautions of doctors

Ensure that medical personnel are aware of the substance and take protective measures

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 explosions and fires

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 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 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	
수소탈황화된 중질 나프타 (석유)(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
수소탈황화된 중질 나프타 (석유)(Naphtha (petroleum), hydrodesulfurized heavy)	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

ethylbenzene

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

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

석유탄화수소 수지(PETROLEUM
HYDROCARBON RESIN)

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

Hydrogenated Talo Fatty Acids

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

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

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

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).

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

Dig a ditch and don't spray unless instructed

In case of powder leakage, cover with plastic sheet to prevent diffusion and keep dry

Collect the leak.

7. HANDLING AND STORAGE 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

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

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).

Wash the handling area thoroughly after handling.

Only handle outdoors or in well ventilated areas.

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.

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.

B. A safe way to store

8. Exposure Prevention and Personal Protection

A. Chemical exposure standards, biological exposure standards, etc

domestic regulations

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)

PETROLEUM HYDROCARBON RESIN

No data

Hydrogenated Talo Fatty Acids

No data

ACGIH regulations	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	STEL 150 ppm
xylene	TWA 100 ppm
ethylbenzene	TWA 20 ppm
Aluminum	TWA 1 mg/m³
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
biological exposure standards	
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
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
Other exposure criteria	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
B. Proper engineering management	Use process isolation, local exhaust, or keep the air level below the exposure limit
B. Proper engineering management	Use process isolation, local exhaust, or other engineering management to adjust the air level below the exposure limit.
B. Proper engineering management	If dust, fumes, or mist is generated during operation, ventilate to ensure air pollution remains below the exposure limit
B. Proper engineering management	Install face wash facilities and safety showers for facilities that store or use this substance.
C. Personal protective equipment	
Respiratory protection	
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 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 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 5000 ppm, wear a front or electric half-flow/pressure-requiring continuous flow/pressure-requiring half-breathing device with appropriate filters or septic tanks

xylene	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
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-aiding (SCBA) or pressure-required self-aiding (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-aiding (SCBA) or pressure-required self-aiding (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/m ³ , 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/m ³ , wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 20000 mg/m ³ , 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/m ³ , wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 125mg/m ³ , 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/m ³ , 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/m ³ , wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 50000 mg/m ³ , 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/m ³ , wear the appropriate type of filter while wearing a type of respirator
Aluminum	If the exposure concentration is lower than 125mg/m ³ , 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/m ³ , 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/m ³ , wear a front or helmet/hood type with appropriate filter, pressure-required air mask
Aluminum	If the exposure concentration is lower than 50000 mg/m ³ , wear a self- airing (SCBA) or pressure-required self- airing (SCBA) respirator with appropriate filters
PETROLEUM HYDROCARBON RESIN	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
PETROLEUM HYDROCARBON RESIN	"For particulate matter, the following respiratory protection is recommended
Hydrogenated Talo Fatty Acids	#VALUE!
Hydrogenated Talo Fatty Acids	Wear a respirator certified by the Occupational Safety and Health Agency to match the physicochemical properties of the exposed material
Hydrogenated Talo Fatty Acids	-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)
Hydrogenated Talo Fatty Acids	"For gas/liquid substances, the following respiratory protection is recommended
eye protection	-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"
eye protection	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator

eye protection	Wear breathable goggles to protect your eyes against particulate matter that may irritate your eyes or cause other health problems
eye protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
eye protection	Wear safety glasses or breathable goggles to protect your eyes from vaporized organic substances that cause eye irritation or other health problems
eye protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
eye protection	Wear breathable safety glasses to protect your eyes against particulate matter that may irritate your eyes or cause other health problems
eye protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
eye protection	To protect your eyes from vaporized organic substances that cause eye irritation or other health problems, wear safety or breathable safety glasses
eye 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
Hand protection	
physical protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them

9. PHYSICAL CHEMICAL CHARACTERISTICS

A. Appearance	
character	Liquid
Color	Silver
I. The smell	Sweet Smell (1)
C. Smell threshold	No data
D. pH	No data
E. Melting/freezing point	13 °C
F. Initial boiling point and boiling point range	138 °C
G. A flashpoint	27 °C
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	1.62X10+2 (mg/L)
F. Steam density	3.7
Ha. Specific gravity	0.8~1.2
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 Reactivity

a. Chemical stability and possibility of adverse reactions	
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
PETROLEUM HYDROCARBON RESIN	Containers may explode when heated
PETROLEUM HYDROCARBON RESIN	Some may burn but do not ignite easily
PETROLEUM HYDROCARBON RESIN	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
PETROLEUM HYDROCARBON RESIN	Fire can cause irritable, corrosive, and toxic gases
Hydrogenated Talo Fatty Acids	Stable at room temperature and pressure
Hydrogenated Talo Fatty Acids	Containers may explode when heated
Hydrogenated Talo Fatty Acids	Some may burn but do not ignite easily
Hydrogenated Talo Fatty Acids	In case of fire, irritable and toxic gases can be generated
Hydrogenated Talo Fatty Acids	Inhalation of substances can be harmful
Hydrogenated Talo Fatty Acids	Some liquids may cause dizziness and vapor that causes suffocation
B. Conditions to avoid	
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
PETROLEUM HYDROCARBON RESIN	Ignition sources such as heat, spark, flame, etc
Hydrogenated Talo Fatty Acids	Ignition sources such as heat, spark, flame, etc
C. Substances that should be avoided	

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	combustible substances
xylene	No data
ethylbenzene	No data
Aluminum	Water
PETROLEUM HYDROCARBON RESIN	combustible substances
Hydrogenated Talo Fatty Acids	combustible material
Hydrogenated Talo Fatty Acids	irritable, toxic gases
D. Hazardous substances produced during decomposition	
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
PETROLEUM HYDROCARBON RESIN	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
PETROLEUM HYDROCARBON RESIN	Corrosive/toxic fumes
Hydrogenated Talo Fatty Acids	No data

11. Information about toxicity

A. Information on most likely exposure routes

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data

PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data

B. Health hazard information

acute toxicity	
an oral form	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	LD50 > 5000 mg/kg Rat
xylene	LD50 3523 mg/kg Rat (EU Method B1)
ethylbenzene	LD50 3500 mg/kg Rat
Aluminum	LD50 > 15900 mg/kg Rat (OECD TG 401)
PETROLEUM HYDROCARBON RESIN	LD507000 mg/kg (mammals)
Hydrogenated Talo Fatty Acids	No data
transdermal skin	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	LD50 > 3160 mg/kg Rabbit
xylene	LD50 1100 mg/kg (Converted Acute Toxicity Estimate (EU CLP Harmonization Classification: Classification 4)
ethylbenzene	LD50 > 20000 mg/kg Rabbit (OECD Guideline 402 GLP)
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
Inhale	

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) Steam LC50 1600 ppm 4 hr Rat (13.3 mg/LEPA OPP 81–3, GLP;1330–20–7; EU CLP Harmonization Classification: Classification 4)
ethylbenzene	mg/L (ECHA, HSDB), RD50=1432 ppm 6.2 mg/L; EU CLP Harmonization Classification 4)
Aluminum	분진 LC50> 0.888 mg/l 4 hr Rat (OECD TG 403, GLP)
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
Corrosive or irritable skin	
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
PETROLEUM HYDROCARBON RESIN	No irritation is observed when conducting a Reconstructed Human Epidermis (RhE) test on human extracorporeal skin tissue
Hydrogenated Talo Fatty Acids	No data
Severe eye damage or irritation	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Non-polar (rabbit)
xylene	"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
ethylbenzene	Regulations on the classification and labeling of chemicals by the Ministry of Environment: Classification 2"
Aluminum	As a result of the eye irritation test in rabbits, there was no mild irritation or corneal damage to the conjunctiva
PETROLEUM HYDROCARBON RESIN	Eye Damage/Stimulus Trial Results In Rabbits, No Stimulus Similar Substances: Aluminium Oxide TBH FDA of the United States
Hydrogenated Talo Fatty Acids	No data
respiratory sensitivity	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	Respiratory hypersensitivity test in male mice shows no hypersensitivity (similar substance: aluminum oxide)
skin sensitivity	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	Mice Localized Lymph node test OECD TG 429 Non-hypersensitivity
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	As a result of skin hypersensitivity test on guinea pig males, no hypersensitivity similar substances: aluminum oxide AK 43/79 and aluminum oxide AK 44/79
carcinogenicity	No data
Occupational Safety and Health Act	No data

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
Ministry of Employment and Labor Examination	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	No data
ethylbenzene	No data
	No data
	2
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
IARC	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	No data
ethylbenzene	3
Aluminum	2B
	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
OSHA	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
ACGIH	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	No data
ethylbenzene	A4
Aluminum	A3
	A4 (Aluminum metal and insoluble compounds)
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
NTP	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data

EU CLP	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	1B
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
germ cell mutagenicity	
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" "In vitro DNA damage test results negative analogues in the absence of metabolism: AICl3 obtained from Sigma, chromosomal aberration test using mammalian bone marrow cells in vivo negative analogues in the absence of metabolism: AICl3 obtained from Sigma OECD TG 475
PETROLEUM HYDROCARBON RESIN	Aluminium causes concentration-dependent biotypic changes in sister chromosome counts, increasing unscheduled DNA integration"
Hydrogenated Talo Fatty Acids	
reproductive toxicity	No data
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	
ethylbenzene	No data 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/m³ due to decreased neonatal weight, BMCL10 (mother toxicity) = 2675 mg/m³ due to maternal weight loss
Aluminum	"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.
PETROLEUM HYDROCARBON RESIN	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 NOAEL(Maternal/Development Toxicity)=500ppm are shown."
Hydrogenated Talo Fatty Acids	"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"
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	No data
ethylbenzene	No data
Aluminum	
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	Giddiness has been reported in humans, significant arousal, progression, and anesthesia have been reported in experimental animals. Exposure to 100 ppm442 mg/m³ in humans causes weak irritation to the eyes and upper airways and slight effects on the central nervous system
Specific target organ toxicity (repeated exposure)	It causes nervous system effects and airway stimulation such as dizziness in experimental animals.

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	"Inhalation of substances results in blistering emphysema, bronchial pneumonia and bleeding. Also, concentration of intercellular tissue in liver, brain and zira."
xylene	Inhalation of substances exacerbates pulmonary tuberculosis Insufficient classification due to toxic effects, lack of reliable data" No data No data No data Central 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	
Aluminum	
PETROLEUM HYDROCARBON RESIN	
Hydrogenated Talo Fatty Acids	
Harmful to aspiration	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	"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
ethylbenzene	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 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"
Aluminum	"Orthally targeted long-term systemic toxicity test using rats shows NOAEL = 302 mg/kg diet-like substances: Aluminium hydroxide OECD TG 407
PETROLEUM HYDROCARBON RESIN	Repeated, long-term exposure affects the lungs. Affects the nervous system
Hydrogenated Talo Fatty Acids	Long-term nephrotoxicity test results for rats, LOAEC = 50 mg/m3 air-like substances: Alpowder OECD TG 413
Other Hazardous Effects	Inhalation of substances affects the central nervous system, resulting in impaired function
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Six months of aluminum intake in rats showed increased concentrations in bones, liver and kidneys, especially uncontrollable changes in the kidneys and brain."
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	
Hydrogenated Talo Fatty Acids	No data

12. Environmental impact	
a. Ecotoxicity	
Fish	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	LC50 2.6 mg/ℓ 96 hr (OECD Guideline 203)
ethylbenzene	LC50 5.1 mg/ℓ 96 hr
Aluminum	No data

PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
crustaceans	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	LC50 4.3 mg/ℓ 96 hr 7 타 (Crangon crangon)
xylene	LC50 3.6 mg/ℓ 24 hr (OECD TG202)
ethylbenzene	LC50 1.8 mg/ℓ 48 hr Daphnia magna (Ceriodaphnia dubia NOEC 1.0 mg/L (0.96 mg/L) 7days)
Aluminum	NOEC > 100 mg/ℓ 48 hr Daphnia magna
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
bird	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	EC50 1.3 mg/ℓ 48 hr (OECD TG201, GLP)
ethylbenzene	EC50 2.6 mg/ℓ 96 hr 7 타 (marine invertebrate)
Aluminum	NOEC ≥ 0.052 mg/ℓ 72 hr Selenastrum capricornutum (OECD TG 201, GLP)
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
B. Residual and degradable	
Residuality	
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
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
Degradable	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
C. Bio-enriched	
Concentration	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	BCF 25.9 (Oncorhynchus mykiss)
ethylbenzene	BCF 1 (BCF)
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
biodegradable	
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

PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
La. soil mobility	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	No data
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
E. Other harmful effects	
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 갑각류Daphnia magna: NOEC = 0.076 mg/Lreproduction, 0.137 mg/Limmobilisation 21d OECD TG 211, GLP
PETROLEUM HYDROCARBON RESIN	
Hydrogenated Talo Fatty Acids	No data

13. Precautions for disposal	
A. Method of disposal	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Dispose of contents and containers as stipulated in the Waste Management Act.
xylene	"Take care of it in one of the following ways.
ethylbenzene	1. Incineration.
Aluminum	2. After treatment by evaporation and concentration, incinerate the residue.
PETROLEUM HYDROCARBON RESIN	3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.
Hydrogenated Talo Fatty Acids	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."
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	"Take care of it in one of the following ways.
xylene	1. After treatment using the reaction of neutralization, oxidation, and reduction, use the method of agglomeration, precipitation, filtration, and dehydration.
ethylbenzene	2. Treat by evaporation and concentration.
Aluminum	3. Refine by means of separation, distillation, extraction, and filtration."
PETROLEUM HYDROCARBON RESIN	(1) Treat with neutralization, hydrolysis, oxidation, and reduction.
Hydrogenated Talo Fatty Acids	2) Burn at high temperature or melt at high temperature. 3) Solidify it.
	Dispose of contents and containers as stipulated in the Waste Management Act.
	Dispose of contents and containers as stipulated in the Waste Management Act.
	Dispose of the contents containers (in accordance with the relevant laws and reg

14. Information required for transportation	
A. United Nations No	

hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No UN transport hazard classification information
xylene	1307
ethylbenzene	1175
Aluminum	1396
PETROLEUM HYDROCARBON RESIN	No UN transport hazard classification information
Hydrogenated Talo Fatty Acids	No UN transport hazard classification information
B. Proper shipping name	
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)
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
C. Risk rating in transportation	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	3
ethylbenzene	3
Aluminum	4.3
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
D. Courage rating	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	III
ethylbenzene	II
Aluminum	II
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
E. Marine pollutants	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	a non-partisan party
ethylbenzene	a non-partisan party
Aluminum	relevant
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
F. Special safety measures that users need or need to know about transportation or transportation	
emergency measures in case of fire	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	F-E
ethylbenzene	F-E
Aluminum	F-G
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
Emergency measures in case of spill	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable

xylene	S-D
ethylbenzene	S-D
Aluminum	S-O
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
15. Status of legal regulations	
. Regulations under the Occupational Safety and Health	
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
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
B. Regulations under the Chemical Substances Control Act	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	toxic substances
ethylbenzene	No data
Aluminum	No data
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
C. Regulations under the Dangerous Goods Safety Management Act	
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
PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
D. Regulations under the Waste Management Act	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	No data
xylene	designated waste
ethylbenzene	designated waste
Aluminum	designated waste

PETROLEUM HYDROCARBON RESIN	No data
Hydrogenated Talo Fatty Acids	No data
E. Other regulations under domestic and foreign laws	
domestic regulation	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	
xylene	
ethylbenzene	
Aluminum	
PETROLEUM HYDROCARBON RESIN	
Hydrogenated Talo Fatty Acids	
Other domestic regulations	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
Foreign regulations	
US Administrative Information (OSHA Regulations)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (CERCLA Regulations)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	45.3599kg 100lb
ethylbenzene	453.599kg 1000lb
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (EPCRA 302)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (EPCRA 304)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable

Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (EPCRA 313)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Applicable
ethylbenzene	Applicable
Aluminum	Applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (Rotterdam Convention Material)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (Stockholm Convention Material)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
US Management Information (Montreal's emotional material)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Aluminum	Not applicable
PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
EU classification information (final classification results)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Carc. Cat. 2; R45 – Muta. Cat. 2; R46 – Xn; R65
xylene	"Flam. Liq. 3 Acute Tox. 4 * Acute Tox. 4 * Skin Irrit. 2"
ethylbenzene	
Aluminum	
PETROLEUM HYDROCARBON RESIN	
Hydrogenated Talo Fatty Acids	"Flam. Liq. 2
EU classification information (danger phrases)	Acute Tox. 4 *
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	Asp. Tox. 1
xylene	STOT RE 2"
ethylbenzene	"Pyr. Sol. 1
Aluminum	Water-react. 2"

PETROLEUM HYDROCARBON RESIN	Not applicable
Hydrogenated Talo Fatty Acids	Not applicable
EU classification information (safety equipment)	
hydrogenated heavy naphtha (petroleum), hydrodesulfurized heavy	R45, R46, R65
xylene	"H226
ethylbenzene	H332
Aluminum	H312
PETROLEUM HYDROCARBON RESIN	H315"
Hydrogenated Talo Fatty Acids	"H225

16. Other Notes

- A. Source of data
- 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))
- UNI. 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 mm²/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)
PETROLEUM HYDROCARBON RESIN
14303 Chemical Products (Japan) (G. flash point)
14303 Chemical Products (Japan) (Ha. Specific gravity)
14303 Chemical Products (Japan) (Mer. molecular weight)
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(경구)
GESTIS (Skin Corrosion or Irritation)
Hydrogenated Talo Fatty Acids

B. Date of initial preparation	2020-05-19
C. Number of revisions and last revision date	
Number of revisions	
Last revision date	2026-02-03
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."

ulations).