

물질안전보건자료

(Material Safety Data Sheet)

Name of the product

KK-SA SP-BLUE

1. information about chemicals and companies

A. Product name

KK-SA SP-BLUE

B. Recommended uses and restrictions on use of products

recommended use of the product

a top paint on a general iron structure

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

Acute Toxicity (Percutaneous): Classification 3

Skin Corrosive/Skin irritability: Classification 2

Severe eye damage/eye irritation: Classification 2 (2A/2B)

Respiratory irritability: Classification 1 (1A/1B)

Skin irritability: Classification 1 (1A/1B)

Carcinogenicity: Classification 2

Reproductive cell mutagenicity: Classification 2

Reproductive toxicity: Classification 2

Specific target organ toxicity (one exposure): Classification 3 (anesthesia impact)

Specific target organ toxicity (one exposure): Classification 3 (anesthesia impact)

Specific target organ toxicity (one exposure): Classification 3 (respiratory irritation)

Specific target organ toxicity (repeated exposure): Category 1

Aspiration hazard: Classification 1

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

H311 Toxic in contact with skin

H315 Causes irritation to the skin

H317 May cause allergic skin reactions

H319 Severe irritation to the eyes

H334 Inhalation may cause allergic reactions, asthma or shortness of breath, etc

H335 May cause respiratory irritation

H336 May cause drowsiness or dizziness

H341 Suspected to cause a genetic defect (Describe the exposure pathway that causes the genetic defect; only if there is conclusive evidence that it does not cause a genetic defect by other exposure pathways)

H351 Suspected to 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)

Hazardous and dangerous phrases	H361 Suspected to cause damage to the fetus or fertility (specify any known specific effect) (Describe the path of exposure that causes reproductive toxicity, provided there is conclusive evidence that it does not cause reproductive toxicity by other exposure pathways)			
	H372 Describe the exposure route that causes damage to the organ (specify all organs known to be affected by long-term or repeated exposure); provided, however, that there is conclusive evidence that it does not cause specific target organ toxicity (repeated exposure) by other exposure routes.)			
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. Keep away from P210 heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking Seal the P233 container tightly. Ground P240 containers and containers. >; 9 9 9 8 Use a P242 spark-free tool. P243 Take antistatic measures. Do not inhale P260 dust/fume/gas/mist/steam/spray. P261 Avoid inhalation of dust/fume/gas/mist/steam/spray. After handling P264...Wash thoroughly. P270 Do not eat, drink or smoke when using this product. P271 Only handle outdoors or in well-ventilated areas. P272 Do not take contaminated clothing out of the workshop. P280 Wear protective gloves/protective glasses/facial protection. P284 [If ventilation is not good] Wear respirator protection.			
Response	=; 5 =; 9 9 8 =: 5 = 9 2 38 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). If you inhale P304+P340: Move to a place with fresh air and rest in an easy-to-breathe position. P305+P351+P338 On your eyes: Wash carefully with water for a few minutes. Remove contact lenses if possible. Continue washing. P308+P313 If exposed or concerned about exposure: seek medical action/advice. =; 6 9 9 8 P314 Get medical action/advice if you feel uncomfortable. = ; 8 P331 Don't make me vomit. P332+P313 When skin irritation appears: seek medical action/advice. P333+P313 If skin irritation or erythema appears: seek medical action/advice. P337+P313 If eye irritation persists: seek medical action/advice. => 5 =; 9 9 8 P361+P364 Remove all contaminated clothing immediately and clean before use again. P362+P364 Take off contaminated clothing and wash it before use again. P370+P378 In case of fire: To extinguish the fire...Use B. P403+P233 Store in a well-ventilated place. Seal the container tightly. 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 (%)
2-butanone oxime	METHYL ETHYL KETOXIME	96-29-7	0.01-0.2
titanium dioxide		13463-67-7	13-20
Styrene	vinyl benzene	100-42-5	15-20
	Vinyl benzene		

xylene	Phenyl ethylene		
	Xylene (Ortho, Meta, Paraic)	1330-20-7	28-36
	Dimethylbenzene (Oso, Meta, Para-isomer)		
	Xylene, o,m,p-isomers		
ethylbenzene	Xylene(o,m,p-isomers)		
	ethyl benzene	100-41-4	3-8
	Ethyl benzene		
Phthalic acid anhydride	Phthalic anhydride	85-44-9	6-10
	Phthalic anhydride		
copper phthalocyanine	COPPER PHTHALOCYANINE BLUE;	147-14-8	0.1-2
88 > >		5280-66-0	0-0.1
	C.I. Dye Red 48, Manganese (2+) Salt (C.I. PIC		
glycerol		56-81-5	3-7
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	MIXED VEGETABLE OIL ACIDS;	61788-66-7	12-17
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	ORGANOPHILIC CLAY;	68953-58-2	0.1-1
2-ethylhexane, rare earth salts		61788-37-2	0.01-0.2
Fatty acids, (c=6-19)-branched, manganese salts		68551-42-8	0.01-0.2

4. First aid instructions

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

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

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

Take off all contaminated clothing if it gets on your skin (or hair). Wash/shower your skin with water.

If you feel uncomfortable, seek medical attention/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.

Wash contaminated clothing before use 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 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

If breathing becomes difficult by inhaling, move to a place with fresh air and rest in an easy-to-breathe position.

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

If you are exposed or concerned about exposure: seek medical action/advice.

See a medical institution immediately.

See a medical institution.

Don't make me vomit.

See a medical institution (doctor) if you experience respiratory symptoms.

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 from swallowing, see a medical institution.

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

If you are exposed or concerned about exposure: seek medical action/advice.

Wash your mouth.

Don't make me vomit.

D. When I ate it

E. Other precautions of doctors

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 cope with explosions or 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

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

If heated or contaminated with water, containers can explode

Containers may explode when heated

When heated, steam can be mixed with air to form an explosive mixture: indoor, outdoor, sewers at risk of explosion

High Mars: easily ignited by heat, spark, and flame

Leaks are at risk of fire/explosion

Risk of steam explosion indoors, outdoors, and sewers

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

Some may produce combustible hydrogen gas when in contact with metal

Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes

Reacting with water can produce a lot of heat that will increase the concentration of fumes in the air

Corrosive/toxic: Inhalation, ingestion, and contact of vapor, dust, and substances can result in serious injury, burns and death

Contact with molten materials can cause serious burns to the skin and eyes

Steam can cause dizziness or suffocation without awareness

Inhalation and contact irritates or burns skin and eyes

Inhalation and skin absorption may be toxic

Toxic, corrosive/combustible gases are generated by reacting with water and moist air

Highly flammable liquids and vapors

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

titanium dioxide

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

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Styrene

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 Be careful as it can be carried hot 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
xylene	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 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
ethylbenzene	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 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
Phthalic acid anhydride	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 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
copper phthalocyanine	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 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 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
C.I. pigment red 48:4	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 Digest away from the area and keep a safe distance Please be careful as it may melt and be transported
glycerol	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
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	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 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
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	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

2-ethylhexane, rare earth salts

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

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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

Fatty acids, (c=6–19)–branched, manganese salts

6. How to cope 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

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

Steam suppression foam can be used to reduce steam generation

Do not allow water to enter the container

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/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

Leaks are corrosive/toxic and may cause contamination

Leaks may cause contamination

C. Methods of purification or removal

Prevent inflows into waterways, sewers, cellars, and enclosed spaces
Do not discharge into the environment.

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

Collect leaks using a clean explosive device and place them in a loosely covered plastic container

Dissolve it in water and collect it

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

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

7. Handling and storage methods

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.

: 6 : 8 6 6

: 6

particles very quickly, so do not spray.

: 6

harmful concentrations of air particles very quickly. (Especially for powder)

: 6

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

Work with reference to engineering care and personal protective equipment

Watch out for high temperatures

Watch out for heat

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.

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.

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.

Lock and save.

B. A safe way to store

8. Exposure protection and personal protective gear

A. Chemical exposure standards, biological exposure standards, etc

domestic regulations

2-butanone oxime	No data
titanium dioxide	TWA – 10mg/m ³ Carcinogenic 2
Styrene	TWA – 20 ppm STEL – 40 ppm (permissible)
xylene	TWA – 100ppm STEL – 150ppm
ethylbenzene	TWA – 100ppm STEL – 125ppm
Phthalic acid anhydride	TWA – 1ppm
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	TWA – 10 mg/m ³ glycerin mist

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... No data

2-ethylhexane, rare earth salts No data

Fatty acids, (c=6–19)–branched, manganese salts TWA – 1 mg/m³ Manganese and Inorganic Compounds

ACGIH regulations

2-butanone oxime No data

titanium dioxide

Styrene	TWA 20 ppm
Styrene	STEL 40 ppm
xylene	STEL 150 ppm
xylene	TWA 100 ppm
ethylbenzene	TWA 20 ppm
Phthalic acid anhydride	TWA 1 ppm
copper phthalocyanine	; 9
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
biological exposure standards	
2-butanone oxime	No data
titanium dioxide	No data
	400 mg/g creatinine Medium: urine Time: end of shift Parameter: Mandelic acid plus 2 3 > 9
Styrene	Styrene
xylene	No data
	0.15 g/g creatinine Medium: urine Time: end of shift Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific)
ethylbenzene	
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
Other exposure criteria	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	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	
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
	–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"
titanium dioxide	
titanium dioxide	Carcinogenic 2
titanium dioxide	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
titanium dioxide	If the exposure concentration is less than 100mg/m3, wear the appropriate type of filter while wearing the type of respirator
titanium dioxide	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
titanium dioxide	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
titanium dioxide	If the exposure concentration is lower than 10000mg/m3, wear a front or helmet/hood type with appropriate filter, pressure–required air mask
Styrene	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
xylene	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of the exposed material
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 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
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
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
Phthalic acid anhydride	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

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 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
copper phthalocyanine	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
copper phthalocyanine	"For particulate matter, the following respiratory protection is recommended
copper phthalocyanine	"Filtered face mask or air-filtered dust mask (high-efficiency particulate filter) or electric fan-attached dust mask (dust, mist, fume filter) "
C.I. pigment red 48:4	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
C.I. pigment red 48:4	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
C.I. pigment red 48:4	"For particulate matter, the following respiratory protection is recommended
glycerol	iltered face mask or air-filtered dust mask (high-efficiency particulate filter) or electric fan-attached dust mask (dust, mist, fume filter) "
glycerol	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
glycerol	glycerin mist
glycerol	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
glycerol	If the exposure concentration is less than 100mg/m3, wear a suitable filter or a septic while wearing a type of respirator
glycerol	If the exposure concentration is less than 250 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask (the dust mask is only for liquid aerosols)
glycerol	If the exposure concentration is lower than 500mg/m3, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter or septic tank
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	If the exposure concentration is lower than 10000mg/m3, wear a front or helmet/hood type with appropriate filter or purification tank, pressure-required air mask
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	If the exposure concentration is lower than 100000 mg/m3, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator with appropriate filters or septic tanks
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	"For gas/liquid substances, the following respirator is recommended
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	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"
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
2-ethylhexane, rare earth salts	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
2-ethylhexane, rare earth salts	"For particulate matter, the following respiratory protection is recommended
2-ethylhexane, rare earth salts	
Fatty acids, (c=6-19)-branched, manganese salts	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator

Fatty acids, (c=6–19)–branched, manganese salts	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
Fatty acids, (c=6–19)–branched, manganese salts	"For gas/liquid substances, the following respirator is recommended
Fatty acids, (c=6–19)–branched, manganese salts	–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, (c=6–19)–branched, manganese salts	If the exposure concentration is lower than 50 mg/m3, wear a front or electric or air–supplied continuous flow/pressure requirement type respirator with appropriate filter
Fatty acids, (c=6–19)–branched, manganese salts	If the exposure concentration is lower than 1000mg/m3, wear a front or helmet/hood type with appropriate filter, pressure–required air mask
Fatty acids, (c=6–19)–branched, manganese salts	If the exposure concentration is lower than 10000 mg/m3, wear a self–airing (SCBA) or pressure–required self–airing (SCBA) respirator with appropriate filters
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
eye protection	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
eye protection	Install emergency cleaning facilities (shower type) and face wash facilities in locations where workers can access them
Hand protection	Wear protective gloves of appropriate material considering the physical and chemical properties of chemicals
physical protection	Wear protective clothing of appropriate material considering the physical and chemical properties of the chemical

9. PHYSICAL CHEMICAL PROPERTIES	
A. Appearance	
character	liquid phase
Color	Colored
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	No data
H. Evaporation rate	A
I. Flammable (solid, gas)	No data
J. Upper/lower limits on the range of flammables or explosions	Not applicable
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	70–100
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
titanium dioxide	Can decompose at high temperatures to produce toxic gases
titanium dioxide	Containers may explode when heated
titanium dioxide	Some may burn but do not ignite easily
titanium dioxide	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
Styrene	Flammable liquids and vapors
Styrene	Intense polymerization can cause fire and explosion
Styrene	Can form explosive mixtures at or above flashpoints
Styrene	Containers may explode when heated
Styrene	High Mars: easily ignited by heat, spark, and flame
Styrene	Leaks are at risk of fire/explosion
Styrene	Risk of steam explosion indoors, outdoors, and sewers
Styrene	Steam can form an explosive mixture with air
Styrene	Steam can cause dizziness or suffocation without awareness
Styrene	Inhalation and contact irritates or burns skin and eyes
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
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
copper phthalocyanine	Stable at room temperature and pressure
copper phthalocyanine	Containers may explode when heated
copper phthalocyanine	Some may burn but do not ignite easily
copper phthalocyanine	In case of fire, irritable and toxic gases can be generated
copper phthalocyanine	Inhalation of substances can be harmful
copper phthalocyanine	Some liquids may cause dizziness and vapor that causes suffocation
C.I. pigment red 48:4	Stable at room temperature and pressure
C.I. pigment red 48:4	Containers may explode when heated
C.I. pigment red 48:4	Some may burn but do not ignite easily
C.I. pigment red 48:4	In case of fire, irritable and toxic gases can be generated
C.I. pigment red 48:4	Inhalation of substances can be harmful
C.I. pigment red 48:4	Some liquids may cause dizziness and vapor that causes suffocation
glycerol	Can decompose at high temperatures to produce toxic gases
glycerol	Containers may explode when heated
glycerol	Some may burn but do not ignite easily
glycerol	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
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
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Containers may explode when heated
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Some may burn but do not ignite easily
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Fire can cause irritable, corrosive, and toxic gases
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
Fatty acids, (c=6-19)-branched, manganese salts	Stable at room temperature and pressure
Fatty acids, (c=6-19)-branched, manganese salts	Containers may explode when heated
Fatty acids, (c=6-19)-branched, manganese salts	Some may burn but do not ignite easily
Fatty acids, (c=6-19)-branched, manganese salts	In case of fire, irritable and toxic gases can be generated
Fatty acids, (c=6-19)-branched, manganese salts	Inhalation of substances can be harmful
Fatty acids, (c=6-19)-branched, manganese salts	Some liquids may cause dizziness and vapor that causes suffocation

B. Conditions to avoid	
2–butanone oxime	Ignition sources such as heat, spark, flame, etc
titanium dioxide	Ignition sources such as heat, spark, flame, etc
Styrene	Stay away from heat, sparks, flames, and high fever – don't smoke
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
Phthalic acid anhydride	Ignition sources such as heat, spark, flame, etc
copper phthalocyanine	Ignition sources such as heat, spark, flame, etc
C.I. pigment red 48:4	Ignition sources such as heat, spark, flame, etc
glycerol	Ignition sources such as heat, spark, flame, etc

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) Ignition sources such as heat, spark, flame, etc

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... Ignition sources such as heat, spark, flame, etc

2–ethylhexane, rare earth salts Ignition sources such as heat, spark, flame, etc

Fatty acids, (c=6–19)–branched, manganese salts Ignition sources such as heat, spark, flame, etc

C. Substances that should be avoided

2–butanone oxime	combustible substances
titanium dioxide	combustible substances
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	Metal
Phthalic acid anhydride	Water
copper phthalocyanine	combustible material
copper phthalocyanine	irritable, toxic gases
C.I. pigment red 48:4	combustible material
C.I. pigment red 48:4	irritable, toxic gases
glycerol	combustible substances

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) combustible material

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) irritable, toxic gases

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... combustible substances

2–ethylhexane, rare earth salts combustible material

2–ethylhexane, rare earth salts irritable, toxic gases

Fatty acids, (c=6–19)–branched, manganese salts combustible material

Fatty acids, (c=6–19)–branched, manganese salts irritable, toxic gases

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
titanium dioxide	Corrosive/toxic fumes
titanium dioxide	irritable, corrosive, toxic gases
Styrene	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
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
Phthalic acid anhydride	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
copper phthalocyanine	No data
C.I. pigment red 48:4	No data

glycerol	Corrosive/toxic fumes
glycerol	irritable, corrosive, toxic gases
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Corrosive/toxic fumes
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data

11. Information on toxicity

A. Information on most likely exposure routes

2–butanone oxime	"Could cause irritation, drowsiness and blood disorders.
titanium dioxide	It can cause irritation, nausea, vomiting, drowsiness, and blood disorders.
Styrene	Possibly fatal during skin contact, irritation, and allergic reactions.
xylene	It can cause irritation (sometimes severe)."
ethylbenzene	No data
Phthalic acid anhydride	Substances that can be absorbed into the mucous membrane, eyes, and skin and cause systemic effects (Notification of Employment No. 2018–24; skin)
copper phthalocyanine	No data
copper phthalocyanine	No data
copper phthalocyanine	Substances that can be absorbed into mucous membranes, eyes, and skin and cause systemic effects (ACGIH, Ministry of Employment No. 2018–24; skin)
copper phthalocyanine	Can be absorbed by the body by inhalation
copper phthalocyanine	Inhalation and absorption by fire extinguishers
C.I. pigment red 48:4	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
C.I. pigment red 48:4	Can be absorbed by the body by the inhalation of steam
C.I. pigment red 48:4	Inhalation, skin, and body absorption by digestive organs
C.I. pigment red 48:4	Can be absorbed by the body by inhalation
C.I. pigment red 48:4	Inhalation and absorption by fire extinguishers

glycerol	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
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	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	"Could cause irritation to the respiratory tract
2–ethylhexane, rare earth salts	"Could cause irritation by contacting the eyes"
2–ethylhexane, rare earth salts	Can be absorbed by the body by inhalation
Fatty acids, (c=6–19)–branched, manganese salts	Inhalation and absorption by fire extinguishers
Fatty acids, (c=6–19)–branched, manganese salts	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
Fatty acids, (c=6–19)–branched, manganese salts	Can be absorbed by the body by the inhalation of steam
Fatty acids, (c=6–19)–branched, manganese salts	Inhalation, skin, and body absorption by digestive organs
Fatty acids, (c=6–19)–branched, manganese salts	Can be absorbed by the body by inhalation
B. Health hazard information	Inhalation and absorption by fire extinguishers

acute toxicity	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
an oral form	Can be absorbed by the body by the inhalation of steam
2–butanone oxime	Inhalation, skin, and body absorption by digestive organs
titanium dioxide	

Styrene	
xylene	
ethylbenzene	: =: 9
Phthalic acid anhydride	: ::: 9 2 > : 3
copper phthalocyanine	LD50 5000 mg/kg Rat (ca. (approx.))
copper phthalocyanine	: = = 9 2 ; 3
C.I. pigment red 48:4	: = :: 9
C.I. pigment red 48:4	: ; =: 9
glycerol	: @>: 9

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... : ::: 9

2–ethylhexane, rare earth salts No data

Fatty acids, (c=6–19)–branched, manganese salts : A: :: 9

transdermal skin No data

2–butanone oxime : ::: 9

titanium dioxide No data

Styrene No data

xylene

ethylbenzene : ; 9

Phthalic acid anhydride No data

copper phthalocyanine : ::: 9

copper phthalocyanine LD50 1100 mg/kg (Converted Acute Toxicity Estimate (EU CLP Harmonization Classification: Classification 4)

C.I. pigment red 48:4 : :::: 9 2 >: 3

C.I. pigment red 48:4 : =; @ 9

glycerol : ::: 9

glycerol No data

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) : ::: 9

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... No data

2–ethylhexane, rare earth salts : > 9

Fatty acids, (c=6–19)–branched, manganese salts No data

Inhale No data

2–butanone oxime No data

titanium dioxide No data

Styrene No data

xylene

ethylbenzene : : 9 >

Phthalic acid anhydride Dust LC50> 6.82 mg/L Rat (OECD TG 403, No Death)

copper phthalocyanine Steam LC50 11.8 mg/L 4 hr Rat

copper phthalocyanine Steam LC50 5922 ppm 4 hr Rat (25.713 mg/LEPA OPP 81–3, GLP;1330–20–7; EU CLP Harmonization Classification: Classification 4)

C.I. pigment red 48:4 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)

C.I. pigment red 48:4 : 8 > 9 > 2 >: =6 3

glycerol Gas LD50> 5000 mg/kg Rabbit

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... Gas LD50> 2500 mg/kg Rat

2–ethylhexane, rare earth salts No data

Fatty acids, (c=6–19)–branched, manganese salts Steam LC50> 2.75 mg/L 4 hr Rat

Corrosive or irritable skin	No data
2-butanone oxime	: ; 8@ 9 > 2 3
titanium dioxide	No data
Styrene	No data
xylene	
ethylbenzene	Non-polar (rabbit)
Phthalic acid anhydride	The results of skin corrosion/stimulation test using rabbits showed no irritation, erythema index = 0, OECD TG 404
copper phthalocyanine	Moderate irritation such as blisters and hair loss on the skin
C.I. pigment red 48:4	A skin irritation test using rabbits. EU Method B.4 results show that the primary skin irritation index 3 is intermediate irritation
glycerol	The results of the skin irritation test using rabbits show moderate irritation
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	"Skin Corrosion/Stimulus Test Results in Rabbits, No Stimulus Index: 0
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Skin Corrosion/Stimulating Test Results in Rabbits: Mild Stimulating PDII: 1.5"
2-ethylhexane, rare earth salts	Edema score: 0.1/4, fully recovered: 7 days, no irritation, Rabbit, 16 CFR 1500.42
Fatty acids, (c=6-19)-branched, manganese salts	Edema score: 0/4, not applicable to GHS classification criteria
Severe eye damage or irritation	No irritation as a result of skin corrosiveness/stimulation experiments using rabbits
2-butanone oxime	No data
titanium dioxide	No irritation to the skin
Styrene	No data
xylene	No data
ethylbenzene	
Phthalic acid anhydride	Severe stimulation (100ul, rabbit)
copper phthalocyanine	No irritation, Rabbit, Corneal Confusion (0.3), iris (0.1), conjunctival congestion (0.1), conjunctival edema (0.1), completely reversible within 72 hours, 16 CFR 1500.41
C.I. pigment red 48:4	Not applicable to GHS classification criteria, Rabbit, Corneal Confusion (0), iris (0), conjunctival congestion (0.3), conjunctival edema (0), OECD TG 405
glycerol	No irritation, Rabbit, totally reversible
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Moderate eye irritation observed in animal experiments
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
respiratory sensitivity	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	"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."
copper phthalocyanine	Respiratory hypersensitivity tests in guinea pigs have found serological analysis that causes respiratory allergies."
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data

Fatty acids, (c=6–19)–branched, manganese salts	No data
skin sensitivity	No data
2–butanone oxime	
titanium dioxide	No data
Styrene	Skin sensitivity test using guinea pigs does not cause skin sensitivity, OECD TG 403
xylene	Maximization test results with guinea pig insensitivity
ethylbenzene	Mice Localized Lymph node test OECD TG 429 Non–hypersensitivity
Phthalic acid anhydride	No data
copper phthalocyanine	"Dermatosensitivity Test Results in Mice, Hypersensitivity Index at 2.5–10% Concentrations: 26–20.9 OECD TG 429
C.I. pigment red 48:4	Skin hypersensitivity test for guinea pigs for 12–14 days after 48 hours of exposure found hypersensitivity in 90% guinea pigs OECD TG 406"
glycerol	No hypersensitivity, Mouse, GLP, Female, Localized Lymph node Trial (LLNA): DPM, OECD TG 429
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not classified according to GHS criteria (no hypersensitivity), Mouse, Localized Lymph node trial (LLNA), GLP, female, OECD TG 429
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	Does not cause skin sensitivity
carcinogenicity	No data
Occupational Safety and Health Act	No data
2–butanone oxime	
titanium dioxide	
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data
Ministry of Employment and Labor Examination	No data
2–butanone oxime	No data
titanium dioxide	
Styrene	No data
xylene	2
ethylbenzene	2
Phthalic acid anhydride	No data
copper phthalocyanine	2
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data
IARC	No data

2-butanone oxime	No data
titanium dioxide	
Styrene	No data
xylene	2B
ethylbenzene	2B
Phthalic acid anhydride	3
copper phthalocyanine	2B
C.I. pigment red 48:4	No data
glycerol	No data

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
OSHA	No data
2-butanone oxime	No data
titanium dioxide	
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
ACGIH	No data
2-butanone oxime	No data
titanium dioxide	
Styrene	No data
xylene	A4
ethylbenzene	A4
Phthalic acid anhydride	A4
copper phthalocyanine	A3
C.I. pigment red 48:4	A4
glycerol	No data

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
NTP	No data
2-butanone oxime	No data
titanium dioxide	
Styrene	No data
xylene	No data
ethylbenzene	R
Phthalic acid anhydride	No data

copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data
EU CLP	No data
2–butanone oxime	No data
titanium dioxide	2 (limited to powder form containing 1% or more of particles with an aerodynamic ; : 3
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2–ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data
germ cell mutagenicity	
2–butanone oxime	No data
titanium dioxide	The results of the return mutation test using microorganisms in vitro OECD TG 471, mammalian cell genetic mutation test OECD TG 476, chromosomal aberration test OECD TG 473 are negative regardless of metabolic activity, chromosomal aberration test in vivo, and color fading test are negative
Styrene	Returning mutation test using bacteria in vitro OECD TG 471 results positive, sister chromosome exchange test using mammalian cells in vitro OECD TG 479 results positive, sister chromosome exchange test using mice in vivo, DNA adduct formed in rats and mice exposed to inhalation of C14–styrene quantitative test results positive, and cytogenic test using rodents exposed to inhalation of styrene
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
Phthalic acid anhydride	Micronuclear test results using mouse bone marrow cells negative, Unscheduled DNA synthesis using mammalian hepatocytes; UDS test results negative, OECD TG474, OECD TG486, GLP"
copper phthalocyanine	"Return mutation test results with in vitro microorganisms, negative OECD TG 471
C.I. pigment red 48:4	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
glycerol	DNA damage test through sister chromatid analysis of mammals in vitro negative with or without metabolism
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Chromosomal aberration test using mammalian cells in vitro, negative with or without metabolic activity"
alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	"in vivo – genetic mutation test with mammalian germ cells: negative (mouse, female/male), OECD TG 484
2–ethylhexane, rare earth salts	in vitro – reversible mutation test with bacteria: negative (S. typhimurium TA1535, TA1537, TA98, TA100, regardless of metabolism), OECD TG 471, GLP"
Fatty acids, (c=6–19)–branched, manganese salts	"Return mutation test using in vitro microorganisms resulted in negative (OECD TG 471, GLP) regardless of the presence or absence of metabolic activity system

reproductive toxicity	In vitro mammalian chromosomal aberration test results negative with or without metabolic activity (OECD TG 473, GLP)
2-butanone oxime	DNA damage and repair of mammalian (rat) cells in vitro, synthesis test results negative in the presence of metabolic activators (OECD TG 482, GLP) "
titanium dioxide	in vitro – reversible mutation test with bacteria: negative (S. typhimurium TA1535, TA1537, TA98, TA100, regardless of metabolism)
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	
C.I. pigment red 48:4	No data
glycerol	"The exposure time of glycerin to male and female rats by oral gavage over two generations showed no effect on growth, reproduction, and reproductive function through the second generation.
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	There was no effect on progeny developmental toxicity in female mice given glycerin, rat"
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6–19)–branched, manganese salts	No data
Specific target organ toxicity (one exposure)	No data
2-butanone oxime	
titanium dioxide	No data
Styrene	Acute oral toxicity test with rats showed no death, no weight changes and no significant lesions observed during autopsy. OECD TG 425
xylene	Respiratory System Stimulation, Central Nervous System Impact, Lung Stimulation Target Organ: Central Nervous System Giddiness has been reported in humans, significant arousal, progression, and anesthesia
ethylbenzene	causes weak irritation to the eyes and upper airways and slight effects on the central
Phthalic acid anhydride	It causes nervous system effects and airway stimulation such as dizziness in experimental animals.
copper phthalocyanine	"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
C.I. pigment red 48:4	Inhaling in humans causes fever in the upper airways
glycerol	a hunched position with intermittent breathing. Slight callous, hunched position and intermittent breathing were observed the following morning / No findings related to autopsy (Equal or similar guideline: OECD TG 401)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Percutaneous: no clinical symptoms observed / no gross abnormalities in autopsy (Ratt / Male / OECD TG 402)
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Inhalation: No clinical signs of toxicity were seen. / No substance-related findings were seen. In one animal, a chestnut-sized tumor with adenoid junctions was found in the skin and muscles."
2-ethylhexane, rare earth salts	"Expercussion: Red stool / No abnormalities found (Rats / Male/Female / Equal or similar guideline: OECD TG 401)
Fatty acids, (c=6–19)–branched, manganese salts	Percutaneous: no abnormal findings (equivalent or simulated to guideline: OECD TG 402)
Specific target organ toxicity (repeated exposure)	"Expercussion: pre-death muscle spasms and epileptic spasms, survivors normal within 2.5 hours of administration. / Hyperhematosis of the pylorus and small intestine; pulmonary congestion; pale zira; and hyperhematosis of meninges in 3 individuals.
2-butanone oxime	Percutaneous: After about 12 hours, the experimental animal (guinea pig) became accustomed to the limitation of bandages and performed feeding activities as usual. The experimental animal group to which a large amount of experimental substances was applied was dying of weakness due to a drop in body temperature. It does not seem to be affected by the amount of a small amount of experimental substances applied. In conclusion, skin irritation was not observed with the amount of experiment applied to this cotton pad.

	Inhalation: Acute toxicity (produced by passing air through a test substance heated to 100°C) : 3 ; 7 7 8
	Under the study conditions, acute inhalation exposure of rats for 2 hours to saturated vapor produced a 100% mortality, whereas no mortality was observed for a 1-hour exposure. The nominal concentration was 11.0 mg/L, and this study was a condensing aerosol. Therefore, the 1-hour LC50 based on the nominal concentration was >11.0 mg/L. It is possible to determine the 4-hour LC50 from 1-hour LC50 by dividing it into 4-hour according to OECD GHS guidelines. Therefore, the 4-hour LC50 calculated based on the nominal concentration was >2.75 mg/L. In addition, L(Ct) 50 was measured after exposure to 1100 mg/L. L(Ct) 50 of glycerin was 4655 mg min/L."
titanium dioxide	
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	
C.I. pigment red 48:4	Repeated exposure test results affect hematopoietic system
glycerol	NITE Classification 2
	"Repeated oral toxicity test results using mice showed effects on end bronchial epithelial cells in 3 animals at 100 mg/kg bw/day or higher, significantly increased frequency of s-phase cells in end bronchial tubes at 100 or 200 mg/kg group NOAEL=10 mg/kg bw/day."
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	
	13 Week Repeated Inhalation Toxicity Test Using Mice GLP, 5 males in 150 ppm group and 2 males in 200 ppm group showed liver histopathologic abnormalities, fibrosis and hepatocellular loss. In all exposed groups, abnormalities in the nasal cavity and lung at 100 ppm or more were observed. NOAEC=0.21 mg/L, 13 weeks of repeated inhalation Toxicity Test Using rats NOAEL=200 ppm"
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Cellular neurotoxicity
2-ethylhexane, rare earth salts	
Fatty acids, (c=6-19)-branched, manganese salts	No data
Harmful to aspiration	
2-butanone oxime	No data
titanium dioxide	No data
	Hydrocarbons. Swallowing liquids can cause chemical pneumonia by osmosis. kinematic viscosity : 8 @ 9
Styrene	
xylene	viscosity : 8 @ 9 : 2 3
	Hydrocarbons. Swallowing liquids can cause chemical pneumonia by osmosis. Tie viscosity : 8 @ 9
ethylbenzene	
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
Other Hazardous Effects	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data

12. Environmental impact

a. Ecotoxicity	
Fish	
2-butanone oxime	: >= 9 @
titanium dioxide	: ;:: 9 @ 2 : =3
Styrene	: ;: 9 @ 2 : =8 3
xylene	: 8@ 9 @ 2 : =3
ethylbenzene	: 8 9 @
Phthalic acid anhydride	: 9 @ 2 6 : =6 3
copper phthalocyanine	;:: 9 @
copper phthalocyanine	(OECD TG 203, Exponential, Freshwater)
C.I. pigment red 48:4	: ;:: 9 @
C.I. pigment red 48:4	(Daniorio, exponential formula, OECD Guideline 203, GLP, similar substance CAS no.7023-61-2)
glycerol	: >:: 9 @
glycerol	(water index, freshwater, GLP)

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
crustaceans	
2-butanone oxime	No data
titanium dioxide	: : 9 >
Styrene	: >8A 9 > 2 : 6 3
xylene	: =8@ 9 > 2 : 3
ethylbenzene	: ;8 9 > 2 ; 8 9 2 8 @ 9 3
Phthalic acid anhydride	: A 9 2 : 6 3
copper phthalocyanine	: : 9 >
copper phthalocyanine	2 A 9 =; 9 6 6 3
C.I. pigment red 48:4	: ;:: 9 >
C.I. pigment red 48:4	(OECD TG 202; Exponential, Freshwater, GLP)
glycerol	: ; 9 >
glycerol	(water index, freshwater)

Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL) No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
bird	
2-butanone oxime	No data
titanium dioxide	: : 9 A
Styrene	: >8 9 A 2 A A8 : : 6 3
xylene	: ; 8- 9 > 2 : ; 6 3
ethylbenzene	: 8@ 9 @ 2 3
Phthalic acid anhydride	: @ 9 A 2 : ; 6 3
copper phthalocyanine	: ;:: 9 A

copper phthalocyanine	(OECD TG 201, Exponential, Freshwater, GLP)
C.I. pigment red 48:4	: ;:: 9 A
C.I. pigment red 48:4	2 6 6 :; 6 6 2 no.7023-61-2))
glycerol	= ;::: 9
glycerol	(water index, freshwater)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
B. Residual and degradable	
Residuality	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	log Kow 2.95
xylene	log Kow 3.15
ethylbenzene	log Kow 3.15
Phthalic acid anhydride	No data
copper phthalocyanine	log Kow 6.6 (predicted)
C.I. pigment red 48:4	01 -0.1 log Kow
C.I. pigment red 48:4	2 6 = 3
glycerol	01 -1.75 log Kow
glycerol	2 6 3
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	log Kow 2.64
Fatty acids, (c=6-19)-branched, manganese salts	No data
Degradable	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	BOD5/COD COD, TOC for 0 hours 0%, 0%, 2 hours 14%, 18%, 4 hours 32%, 38%, 24 hours: 92%, 93%, respectively
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
C. Bio-enriched	
Concentration	
2-butanone oxime	: 8 22 36 2 6 36 93
titanium dioxide	No data
Styrene	BCF 74
xylene	BCF 25.9 (Oncorhynchus mykiss)
ethylbenzene	BCF 1 (BCF)

Phthalic acid anhydride	No data
copper phthalocyanine	01< 3.6 BCF
copper phthalocyanine	(BCF)
C.I. pigment red 48:4	01< 6.9 BCF
C.I. pigment red 48:4	2 9 6 8 : 8 = 9 3
glycerol	01 3 BCF
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
biodegradable	
2-butanone oxime	24.7 (%) 28 days ((aerobic, activated sludge))
titanium dioxide	No data
Styrene	100% 28 day (ISODIS 9408 aerobic biodegradation test, GLP)
xylene	90% 28 days (Dissociable, OECD TG301F, GLP)
ethylbenzene	A : / 2 ; > = 6 3
Phthalic acid anhydride	No data
copper phthalocyanine	< 1 01 28 day
copper phthalocyanine	(O2 consumption)
C.I. pigment red 48:4	0 01 28 day
C.I. pigment red 48:4	(Non-degradable, OECD Guideline 301 B, GLP)
glycerol	60 01 2 hr
glycerol	(TOC removal)
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
D. Soil mobility	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	No data
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
E. Other harmful effects	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	Crustacea Daphnia magna: NOEC21d-proliferative = 1.01 mg/liter OECD TG 211, GLP
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"
Phthalic acid anhydride	6 @ =8 9 ; 6
copper phthalocyanine	, ;: 9 6 = 9 @
C.I. pigment red 48:4	;@ 9 ; ;; 6
glycerol	= 9 A ;; 6 ,
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data

13. Precautions for Disposal

A. Method of disposal	
2-butanone oxime	Dispose of contents and containers as stipulated in the Waste Management Act.
titanium dioxide	No data
Styrene	No data
xylene	"Take care of it in one of the following ways.
ethylbenzene	1. Incineration.
Phthalic acid anhydride	2. After treatment by evaporation and concentration, incinerate the residue.
copper phthalocyanine	3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.
C.I. pigment red 48:4	4. Use neutralization, oxidation, reduction, polymerization, and condensation reactions to treat.
glycerol	5. Incineration of residues, or after re-treatment by means of agglomeration, sedimentation, filtration, and dehydration, incinerate residues."
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	"Take care of it in one of the following ways.
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	1. After treatment using the reaction of neutralization, oxidation, and reduction, use the method of agglomeration, precipitation, filtration, and dehydration.
2-ethylhexane, rare earth salts	2. Treat by evaporation and concentration.
Fatty acids, (c=6-19)-branched, manganese salts	3. Refine by means of separation, distillation, extraction, and filtration."
B. Precautions for disposal	No data
2-butanone oxime	Dispose of contents and containers as stipulated in the Waste Management Act.
titanium dioxide	Dispose of contents and containers as stipulated in the Waste Management Act.
Styrene	Dispose of contents and containers as stipulated in the Waste Management Act.
xylene	Dispose of contents and containers as stipulated in the Waste Management Act.
ethylbenzene	Dispose of contents and containers as stipulated in the Waste Management Act.
Phthalic acid anhydride	No data
copper phthalocyanine	Dispose of contents and containers as stipulated in the Waste Management Act.
C.I. pigment red 48:4	
glycerol	Dispose of the contents containers (in accordance with the relevant laws and regulations).
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Dispose of contents/containers in accordance with waste-related laws and regulations
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Dispose of the contents containers (in accordance with the relevant laws and regulations).
2-ethylhexane, rare earth salts	Dispose of the contents containers (in accordance with the relevant laws and regulations).

Fatty acids, (c=6–19)–branched, manganese salts	Dispose of the contents containers (in accordance with the relevant laws and regulations).
14. Information required for transportation	
A. United Nations No	1263
B. Proper shipping name	Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base
D. Courage rating	II
E. Marine pollutants	No data
C. Risk rating in transportation	3
F. Special safety measures that users need or need to know about transportation or transportation	
In accordance with the Dangerous Goods Safety Control Act	
Packaging and transportation in accordance with DOT and of	
Types of emergency measures in case of fire	F–E
Types of emergency measures in case of spillage	S–F
15. Status of Legal Regulations	
A. Regulations under the Occupational Safety and Health Act	
2–butanone oxime	No data
titanium dioxide	Hazardous substances subject to management
titanium dioxide	Substances subject to work environment measurement (measurement cycle: 6 months)
titanium dioxide	Exposure criteria setting substances
Styrene	Substances subject to process safety report (PSM) submission
Styrene	Hazardous substances subject to management
Styrene	Substances subject to work environment measurement (measurement cycle: 6 months)
Styrene	Substances subject to special health examination (diagnostic cycle: 12 months)
Styrene	Exposure criteria setting substances
Styrene	Acceptance criteria setting substances
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
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
copper phthalocyanine	Hazardous substances subject to management
C.I. pigment red 48:4	No data
glycerol	Exposure criteria setting substances
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	No data

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	Hazardous substances subject to management
Fatty acids, (c=6-19)-branched, manganese salts	Substances subject to special health examination (diagnostic cycle: 12 months of substances subject to special health examination)
Fatty acids, (c=6-19)-branched, manganese salts	Exposure criteria setting substances
B. Regulations under the Chemical Substances Control Act	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	toxic substances
xylene	toxic substances
ethylbenzene	No data
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
C. Regulations under the Dangerous Goods Safety Management Act	
2-butanone oxime	1 000 L of the second petroleum water-insoluble liquid of the fourth class flammable liquid
titanium dioxide	No data
Styrene	4th class 2nd petroleum (non-water soluble) 1000L
xylene	4th class 2nd petroleum (non-water soluble) 1000L
ethylbenzene	4th class 1 petroleum (non-water soluble) 200L
Phthalic acid anhydride	No data
copper phthalocyanine	No data
C.I. pigment red 48:4	No data
glycerol	Class 4: 3 petroleum products (water-soluble) 4000 liters
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data
Fatty acids, (c=6-19)-branched, manganese salts	No data
D. Regulations under the Waste Management Act	
2-butanone oxime	No data
titanium dioxide	No data
Styrene	No data
xylene	designated waste
ethylbenzene	designated waste
Phthalic acid anhydride	No data
copper phthalocyanine	designated waste
C.I. pigment red 48:4	No data
glycerol	No data
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
2-ethylhexane, rare earth salts	No data

Fatty acids, (c=6–19)–branched, manganese salts	designated waste
E. Other regulations under domestic and foreign laws	
domestic regulation	
2–butanone oxime	
titanium dioxide	
Styrene	
xylene	
ethylbenzene	
Phthalic acid anhydride	
copper phthalocyanine	
C.I. pigment red 48:4	
glycerol	
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
2–ethylhexane, rare earth salts	
Fatty acids, (c=6–19)–branched, manganese salts	
Other domestic regulations	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
2–ethylhexane, rare earth salts	
Fatty acids, (c=6–19)–branched, manganese salts	
Foreign regulations	
US Administrative Information (OSHA Regulations)	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
2–ethylhexane, rare earth salts	
Fatty acids, (c=6–19)–branched, manganese salts	
US Management Information (CERCLA Regulations)	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable

Styrene	453.599kg 1000lb
xylene	45.3599kg 100lb
ethylbenzene	453.599kg 1000lb
Phthalic acid anhydride	2267.995kg 5000lb
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) Not applicable

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... Not applicable

2–ethylhexane, rare earth salts Not applicable

Fatty acids, (c=6–19)–branched, manganese salts Not applicable

US Management Information (EPCRA 302)

2–butanone oxime Not applicable

titanium dioxide Not applicable

Styrene Not applicable

xylene Not applicable

ethylbenzene Not applicable

Phthalic acid anhydride Not applicable

copper phthalocyanine Not applicable

C.I. pigment red 48:4 Not applicable

glycerol Not applicable

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) Not applicable

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... Not applicable

2–ethylhexane, rare earth salts Not applicable

Fatty acids, (c=6–19)–branched, manganese salts Not applicable

US Management Information (EPCRA 304)

2–butanone oxime Not applicable

titanium dioxide Not applicable

Styrene Not applicable

xylene Not applicable

ethylbenzene Not applicable

Phthalic acid anhydride Not applicable

copper phthalocyanine Not applicable

C.I. pigment red 48:4 Not applicable

glycerol Not applicable

Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL) Not applicable

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM... Not applicable

2–ethylhexane, rare earth salts Not applicable

Fatty acids, (c=6–19)–branched, manganese salts Not applicable

US Management Information (EPCRA 313)

2–butanone oxime Not applicable

titanium dioxide Not applicable

Styrene Applicable

xylene Applicable

ethylbenzene Applicable

Phthalic acid anhydride Applicable

copper phthalocyanine Not applicable

C.I. pigment red 48:4 Not applicable

glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable
Fatty acids, (c=6–19)–branched, manganese salts	Not applicable
US Management Information (Rotterdam Convention Material)	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable
Fatty acids, (c=6–19)–branched, manganese salts	Not applicable
US Management Information (Stockholm Convention Material)	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable
Fatty acids, (c=6–19)–branched, manganese salts	Not applicable
US Management Information (Montreal's emotional material)	
2–butanone oxime	Not applicable
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable

Fatty acids, (c=6–19)–branched, manganese salts	Not applicable
EU classification information (final classification results)	
2–butanone oxime	T; R48/22R43R52–53
titanium dioxide	Not applicable
	Flam. Liq. 3 Repr. 2 Acute Tox. 4 * STOT RE 1 Skin Irrit. 2 Eye Irrit. 2
Styrene	Flam. Liq. 3 Acute Tox. 4 * Acute Tox. 4 * Skin Irrit. 2
xylene	Flam. Liq. 2 Acute Tox. 4 * Asp. Tox. 1 STOT RE 2
ethylbenzene	Acute Tox. 4 * STOT SE 3 Skin Irrit. 2 Eye Dam. 1 Resp. Sens. 1 Skin Sens. 1
Phthalic acid anhydride	
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable
Fatty acids, (c=6–19)–branched, manganese salts	Not applicable
EU classification information (danger phrases)	
2–butanone oxime	R43, R48/25, R52/53
titanium dioxide	Not applicable
	H226 H361d H332 H372 (hearing organs) H315 H319
Styrene	H226 H332 H312 H315
xylene	H225 H332 H304 H373 (hearing organs)
ethylbenzene	H302 H335 H315 H318 H334 H317
Phthalic acid anhydride	
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable–oil (FATTY ACIDS, VEGETABLE–OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2–ethylhexane, rare earth salts	Not applicable

Fatty acids, (c=6-19)-branched, manganese salts	Not applicable
EU classification information (safety equipment)	
2-butanone oxime	S1/2, S25, S36/37, S45, S61
titanium dioxide	Not applicable
Styrene	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
Phthalic acid anhydride	Not applicable
copper phthalocyanine	Not applicable
C.I. pigment red 48:4	Not applicable
glycerol	Not applicable
Fatty acids, vegetable-oil (FATTY ACIDS, VEGETABLE-OIL)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
2-ethylhexane, rare earth salts	Not applicable
Fatty acids, (c=6-19)-branched, manganese salts	Not applicable

16. Other Notes

A. Source of data

-This MSDS is based on Article 110 of the Occupational Safety and Health Act and the Ministry of Employment and Labor Notice No. 2023-9 (Criteria for Chemical Classification* Indication and Material Safety Data)

Based on this, it is prepared in consideration of the current status of domestic regulatory laws and regulations.

-This MSDS was prepared based on KOSHA, NITE, ECHA, NLM, SIDS, LPCS, NCLS, etc.

B. Date of initial preparation 2026-03-17

C. Number of revisions and last revision date

Number of revisions

Last revision date

D. Other

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Agency

It's data."