

물질안전보건자료

(Material Safety Data Sheet)

Name of the product

KUT370(A)-RAL6011

1. Information about chemicals and companies

A. Product name

KUT370(A)-RAL6011

B. Recommended use of the product and restrictions on its

Recommended use of the product

general industrial paint

Product usage restrictions

Do not use anything other than the intended use.

C. Supplier information (in case of imported goods, enter information of domestic suppliers that can be contacted urgently)

Corporate name

Geumgang Paint Industrial Co., Ltd.

Address

454-2 Yongjeon-ri, Gokyeong-myeon, Yeongcheon-si, Gyeongsangbuk-do

Emergency phone number

054 338 7722

2. Harmful and dangerous

A. Hazard classification and risk classification

A. Hazardous/Danger classification Flammable liquids: Classification 2

Self-heating substances and mixtures: Classification 1

Acute Toxicity (Inhalation: Vapor): Classification 4

Skin Corrosive/Skin irritability: Classification 2

Severe eye damage/eye irritation: Category 2

Carcinogenicity: Classification 2

Reproductive toxicity: Classification 2

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

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

Specific target organ toxicity (repeated exposure): Category 2

Specific target organ toxicity (repeated exposure): Category 1

Aspiration hazard: Classification 1

Chronic aquatic environmental hazards: Classification 3

B. Warning signs including preventive measures

Picture text



a sign language

Dangers

H225 High Resilient Liquid and Steam

H251 Self-heating: May cause fire

H304 Swallowing into the airways can be fatal

H315 Causes irritation to the skin

H319 Severe irritation to the eyes

H332 Inhalation is harmful

H335 May cause respiratory irritation

Hazardous and dangerous phrases

H336 May cause drowsiness or dizziness

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)
H360DF May cause damage to the unborn child (Specify all organs known to be affected)
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.)

Hazardous and dangerous phrases

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

	H412 Hazardous to aquatic life due to long-term effects
Preventive measures statement	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. P235 Keep it at low temperature. Ground P240 containers and containers.
Prevention	P241 Explosion Proof Type [Electric/Ventilation/Lightning/...]...Use the equipment. Use a P242 spark-free tool. P243 Take antistatic measures. Do not inhale P260 dust/fume/gas/mist/steam/spray. 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. Do not discharge into the P273 environment. P280 Wear protective gloves/protective glasses/facial protection. If P301+P310 swallowed: immediate medical institution/doctor/...See a doctor. P302+P352 on skin: plenty of water/...Wash with (e). P303+P361+P353 If you get it on your skin (or hair): Take off all contaminated clothing immediately. Wash your skin with water (or shower). 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.
Response	P308+P313 If exposed or concerned about exposure: seek medical action/advice. P312 If you feel uncomfortable, medical institutions/doctors/...See a doctor. P314 Get medical action/advice if you feel uncomfortable. P321 ...Take care of it. P331 Don't make me vomit. P332+P313 When skin irritation appears: seek medical action/advice. P337+P313 If eye irritation persists: seek medical action/advice. P362+P364 Take off contaminated clothing and wash it before use again. P370+P378 In case of fire: To extinguish the fire...Use B. 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.
Storage	P407 Keep the gap between loads or pallets. P410 Avoid direct sunlight. P413 Since it is a highly reactive material...If you store more than kg...Do not exceed °C. Keep P420 isolated.
Disposal	Dispose of contents/containers in accordance with P501 waste-related laws and regulations

3. Name and content of components

Material name	Nomenclature (tolerance)	CAS number	content (%)
carbon black		1333-86-4	0.1 ~ 1
titanium dioxide		13463-67-7	5 ~ 10
butyl acetate	n-butyl acetate	123-86-4	1 ~ 5
	Normal-butyl acetate		
xylene	Xylene(o,m,p-isomers)	1330-20-7	25 ~ 35
	Xylene, o,m,p-isomers		
	디메틸벤젠(오쏘,메타,파라-이성체)		
	크실렌(오르토, 메타, 파라이성체)		

ethylbenzene	Ethyl benzene	100-41-4	1 ~ 5
	Ethyl benzene		
iron oxide		1309-37-1	0.1 ~ 1
propylene glycol monomethyl ether acetic acid	1-메톡시-2-프로판올 아세트산(1-METHOXY-2-PROPANOL ACETATE);	108-65-6	3 ~ 10
구리 폴리클로로프탈로시아닌 녹색(COPPER POLYCHLOROPHTHALOCYANINE GREEN)	폴리클로로 구리 프탈로시아닌(POLYCHLORO COPPER PHTHALOCYANINE);	1328-53-6	1 ~ 5
C.I. 색소 오렌지 34(C.I. PIGMENT ORANGE 34)	3H-피라졸-3-온, 4,4-((3,3-디클로로(1,1-비페닐)-4,4-디일)비스	15793-73-4	0.1 ~ 1
4차 암모늄 화합물, 비스(수소산 수지 알킬) 다이메틸, 벤 토나이트와 의 염(QUATERNARY AMMONIUM...	친유기성 점토(ORGANOPHILIC CLAY);	68953-58-2	0.1 ~ 1
dyrolytic acid dibutylin	디뷰틸비스((1-옥소도데킬)옥시)주석 (DIBUTYLBIS((1- OXODODECYL)OXY)STANNANE);	77-58-7	0.01 ~ 0.1
2-Ethylhexanoic acid zinc salt		136-53-8	0.1 ~ 1
Styrene, 2-hydroxyethyl methacrylate,n-butylacrylate, n-butyl methacrylate,2-ethylhexyl acrylate,methylmethacrylate copolymer		190524-90-4	26-35

4. First aid measures

A. When you get in the eye,	If it gets on your eyes: Wash carefully with water for a few minutes. Remove contact lenses if possible. Keep washing. If eye irritation persists: seek medical action/advice.
B. When you come into contact with your skin,	When it gets on your skin (or hair): remove all contaminated clothing immediately. Wash your skin with water (or shower). When skin irritation appears: seek medical attention/advice. Remove contaminated clothes and shoes and isolate contaminated areas 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
C. When you inhale it.	If you are exposed or concerned about exposure: seek medical action/advice. Don't make me vomit. Remove with clean air if exposed to excess dust or fumes and take medical action if you have cough or other symptoms.
D. When you eat.	If you swallowed: immediately a medical institution/doctor/...See a doctor. Don't make me vomit. If you eat or inhale substances, do not ventilate using mouth-to-mouth mouth exercise and use appropriate respiratory equipment
E. Other medical precautions	Contact the medical staff in case of exposure and take special emergency measures such as follow-up. Ensure that medical personnel are aware of the substance and take protective measures

5. How to deal with explosions and fires

a. Proper (inappropriate) digestive medicine an appropriate (inappropriate) digestive medicine	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	Highly flammable liquids and vapors Unstable at room temperature Intense polymerization can cause fire and explosion Steam can be transferred to ignition source and ignited
a specific hazard arising from a chemical substance	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion Can form explosive mixtures at or above flashpoints Containers may explode when heated High Mars: easily ignited by heat, spark, and flame Leaks are at risk of fire/explosion

	Can be reignited after digestion Can ignite in contact with moisture Risk of steam explosion indoors, outdoors, and sewers flammable/combustible substances Some substances can burn quickly with flashes Some may burn but do not ignite easily Steam can form an explosive mixture with air Some may explode in case of fire or heating Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
C. Protective equipment and preventive measures to be worn in case of fire extinguishing	
carbon black	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Be careful as it may melt to a temperature above the flashpoint and be transported 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 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
butyl acetate	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
xylene	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
xylene	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces If it's not dangerous, move the container out of the fire area In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing

ethylbenzene

In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration

In the event of a tank fire, step back from the tank engulfed in flames

In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn

Rescuers should wear appropriate protective gear.

Digest away from the area and keep a safe distance

Most of them are lighter than water, so be careful

Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces

In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment

iron oxide

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

Digest away from the area and keep a safe distance

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

propylene glycol monomethyl ether acetic acid

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

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

Do not directly inject into exposed sources or safeguards as they may freeze in case of tank fire

In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment

구리 폴리클로로프탈로시아닌 녹색(COPPER POLYCHLOROPHTHALOCYANINE GREEN)

In case of tank fire, cool the container with plenty of water even after extinguishing

In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration

In the event of a tank fire, step back from the tank engulfed in flames

In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn

If it's not dangerous, move the container out of the fire area

Some may be transported to high temperatures

Leaks may cause contamination

Contact can cause burns to the skin and eyes

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

C.I. 색소 오렌지 34(C.I. PIGMENT ORANGE 34)

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

4차 암모늄 화합물, 비스(수소산 수지 알킬) 다이
메틸, 벤 토나이트와의 염(QUATERNARY AMMONIUM...

dyrolytic acid dibutylin

2-Ethylhexanoic acid zinc salt

Dig a ditch for the disposal of the digester so that the material does not scatter
If it's not dangerous, move the container out of the fire area

In case of tank fire, cool the container with plenty of water even after extinguishing
In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
In the event of a tank fire, step back from the tank engulfed in flames
Rescuers should wear appropriate protective gear.
Digest away from the area and keep a safe distance
Please be careful as it may melt and be transported

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
Rescuers should wear appropriate protective gear.
Digest away from the area and keep a safe distance

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
Do not allow water to enter the container

In case of tank fire, cool the container with plenty of water even after extinguishing
In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration
In the event of a tank fire, step back from the tank engulfed in flames
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

6. How to deal with leakage accidents

A. Measures and protective equipment necessary to protect the human body

Avoid inhalation of dust/fume/gas/mist/steam/spray.
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.

A. Measures and protective equipment necessary to protect the human body

B. Measures necessary to protect the environment

C. Methods of purification or removal

Remove all ignition sources

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

Wear full protective vapor protective clothing in case of non-fire leaks

Cover with plastic sheet to stop diffusion

Avoid dust formation

Pay attention to substances and conditions that should be avoided

Do not discharge into the environment.

Prevent inflows into waterways, sewers, cellars, and enclosed spaces

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

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 METHOD

A. Safety instructions

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

explosion proof type [electric/ventilation/lighting/...Use the equipment.

Use a non-sparking tool.

Take antistatic measures.

Avoid inhalation of dust/fume/gas/mist/steam/spray.

After handling...Wash thoroughly.

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

Only handle outdoors or in well ventilated areas.

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.

Be sure to ground all equipment when handling substances

Pay attention to substances and conditions that should be avoided

Watch out for high temperatures

Watch out for heat

B. A safe way to store

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

Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking

Keep it at a low temperature.

Store in a well-ventilated place. Seal the container tightly.

Keep it in a well-ventilated place. Keep it low.

Maintain a gap between loads or pallets.

It's a highly reactive material, so...If you store more than kg...Do not exceed °C.

Keep it in isolation.

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.

B. A safe way to store

8. Exposure Prevention and Personal Protection

A. Chemical exposure standards, biological exposure standards, etc

domestic regulations

carbon black	TWA – 3.5 mg/m ³ carcinogenicity 2, inhalation (No. 2020–48)
titanium dioxide	TWA – 10mg/m ³ Carcinogenic 2
butyl acetate	TWA – 150ppm STEL – 200ppm
xylene	TWA – 100ppm STEL – 150ppm
ethylbenzene	TWA – 100ppm STEL – 125ppm
iron oxide	TWA – 5mg/m ³
propylene glycol monomethyl ether acetic acid	

No data

COPPER POLYCHLOROPHALOCYANE GREEN

No data

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

No data

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

No data

dyrolytic acid dibutylin

TWA – 0.1 mg/m³ tin (organic compounds)

2–Ethylhexanoic acid zinc salt

No data

ACGIH regulations

carbon black	TWA 3 mg/m ³
titanium dioxide	TWA 10 mg/m ³
butyl acetate	TWA 50 ppm
butyl acetate	STEL 150 ppm
xylene	STEL 150 ppm
xylene	TWA 100 ppm
ethylbenzene	TWA 20 ppm
iron oxide	TWA 5 mg/m ³
propylene glycol monomethyl ether acetic acid	

No data

COPPER POLYCHLOROPHALOCYANE GREEN

TWA 1 mg/m³

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

No data

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

No data

dyrolytic acid dibutylin

STEL 0.2 mg/m³

dyrolytic acid dibutylin

TWA 0.1 mg/m³

2–Ethylhexanoic acid zinc salt

No data

biological exposure standards

carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	0.15 g/g creatinine Medium: urine Time: end of shift Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific)
iron oxide	No data

propylene glycol monomethyl ether acetic acid	
	No data
COPPER POLYCHLOROPHALOCYANE GREEN	
	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	
	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
Other exposure criteria	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	
	No data
COPPER POLYCHLOROPHALOCYANE GREEN	
	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	
	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
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	
carbon black	Carcinogenic 2, inhalable (No. 2020-48)
carbon black	
	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
carbon black	If the exposure concentration is lower than 35mg/m3, wear the appropriate type of filter while wearing a type of respirator
carbon black	If the exposure concentration is lower than 87.5 mg/m3, wear a loose-fitting hood/helmet electric respirator or continuous flow dust mask with the appropriate type of filter
carbon black	
	If the exposure concentration is lower than 175 mg/m3, wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
carbon black	If the exposure concentration is lower than 3500 mg/m3, wear a front or helmet/hood type with appropriate filter, pressure-required air mask
carbon black	If the exposure concentration is lower than 35,000 mg/m3, wear a self-aiing (SCBA) or pressure-required self-aiing (SCBA) respirator with appropriate filters
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/m ³ , 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/m ³ , wear a front or helmet/hood type with appropriate filter, pressure-required air mask
titanium dioxide	If the exposure concentration is lower than 100000 mg/m ³ , wear a self-aiding (SCBA) or pressure-required self-aiding (SCBA) respirator with appropriate filters
butyl acetate	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
butyl acetate	If the exposure concentration is lower than 1500 ppm, wear an appropriate filter or purifier while wearing a type of respirator
butyl acetate	If the exposure concentration is lower than 3750ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
butyl acetate	If the exposure concentration is lower than 7500 ppm, wear a front or electric continuous flow/pressure requirement type respirator with appropriate filter or septic tank
butyl acetate	If the exposure concentration is lower than 1500 ppm, wear a front or helmet/hood type with appropriate filter or purification tank, pressure-required air mask
butyl acetate	If the exposure concentration is lower than 1500000 ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
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
xylene	If the exposure concentration is lower than 1000000ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
ethylbenzene	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
ethylbenzene	If the exposure concentration is less than 1000 ppm, wear an appropriate filter or purifier while wearing a type of respirator
ethylbenzene	If the exposure concentration is lower than 2500 ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
ethylbenzene	If the exposure concentration is lower than 5000 ppm, wear a front or electric half-flow/pressure-requiring continuous flow/pressure-requiring half-breathing device with appropriate filters or septic tanks
ethylbenzene	If the exposure concentration is lower than 100000 ppm, wear a front or helmet/hood type, pressure-required air mask with appropriate filters or septic tanks
ethylbenzene	If the exposure concentration is lower than 1000000ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
iron oxide	Wear respirators certified by the Korea Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
iron oxide	The exposure concentration is greater than 50 mg/m ³
iron oxide	If the exposure concentration is lower than 125mg/m ³ , wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask with the appropriate type of filter
iron oxide	If the exposure concentration is lower than 250 mg/m ³ , wear a front or electric or air-supplied continuous flow/pressure requirement type respirator with appropriate filter
iron oxide	If the exposure concentration is lower than 5000 mg/m ³ , wear a front or helmet/hood type with appropriate filter, pressure-required air mask
iron oxide	If the exposure concentration is lower than 50000 mg/m ³ , wear a self-aiding (SCBA) or pressure-required self-aiding (SCBA) respirator with appropriate filters

propylene glycol monomethyl ether acetic acid	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
propylene glycol monomethyl ether acetic acid	For gas/liquid substances, the following respirator is recommended ♪ –Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask
propylene glycol monomethyl ether acetic acid	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
COPPER POLYCHLOROPHALOCYANE GREEN	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
COPPER POLYCHLOROPHALOCYANE GREEN	For particulate matter, the following respiratory protection is recommended♪ – Filtered face mask or air-filtered dust mask (high-efficiency particulate filter) or electric fan-attached dust mask (dust, mist, fume filter) "
COPPER POLYCHLOROPHALOCYANE GREEN	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	For particulate matter, the following respiratory protection is recommended♪ – 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 Orange 34 (C.I. PIGMENT ORANGE 34)	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed particulate matter
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	For particulate matter, the following respiratory protection is recommended♪ – Filtered face mask or air-filtered dust mask (high-efficiency particulate filter) or electric fan-attached dust mask (dust, mist, fume filter) "
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	If oxygen is low (<19.6%), wear a ventilation mask or self-contained respirator
dyrolytic acid dibutylin	Tin (organic compound)
dyrolytic acid dibutylin	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
dyrolytic acid dibutylin	If the exposure concentration is less than 1 mg/m3, wear a suitable filter or a septic while wearing a type of respirator
dyrolytic acid dibutylin	If the exposure concentration is lower than 2.5 mg/m3, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask (the dust mask is only for liquid aerosols)
dyrolytic acid dibutylin	If the exposure concentration is lower than 5 mg/m3, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter or septic tank
dyrolytic acid dibutylin	If the exposure concentration is less than 100mg/m3, wear a front or helmet/hood type with appropriate filter or purification tank, pressure-required air mask
dyrolytic acid dibutylin	If the exposure concentration is lower than 1000mg/m3, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator with appropriate filter or purification tank
2-Ethylhexanoic acid zinc salt	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
2-Ethylhexanoic acid zinc salt	For gas/liquid substances, the following respirator is recommended ♪ –Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask
2-Ethylhexanoic acid zinc salt	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator

9. PHYSICAL CHEMICAL CHARACTERISTICS

A. Appearance

character	Liquid
Color	Colored

I. The smell	the smell of solvent
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	No data
I. Flammable (solid, gas)	No data
J. Upper/lower limits on the range of flammables or	No data
J. Steam pressure	No data
T. Solubility	No data
F. Steam density	No data
Ha. Specific gravity	1.0 ~ 1.2
G. N-octanol/water distribution coefficient (Kow)	No data
You. Natural firing temperature	No data
More. Decomposition temperature	No data
R. Viscosity	60 ~ 80KU
M. molecular weight	No data

10. Stability and Reactivity

a. Chemical stability and possibility of adverse reactions

carbon black	Can decompose at high temperatures to produce toxic gases
carbon black	Unstable at room temperature
carbon black	Can be ignited by friction, heat, spark, flame
carbon black	Powder, dust, crumbs, perforation, shelves, cutting, etc. can explode or burn explosively
carbon black	Can be reignited after digestion
carbon black	flammable/combustible substances
carbon black	Some substances can burn quickly with flashes
carbon black	Contact with molten materials can cause serious burns to the skin and eyes
carbon black	Contact can cause burns to the skin and eyes
carbon black	In case of fire, irritable and toxic gases can be generated
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
butyl acetate	Flammable liquids and vapors
butyl acetate	Intense polymerization can cause fire and explosion
butyl acetate	Can form explosive mixtures at or above flashpoints
butyl acetate	Containers may explode when heated
butyl acetate	High Mars: easily ignited by heat, spark, and flame
butyl acetate	Leaks are at risk of fire/explosion
butyl acetate	Risk of steam explosion indoors, outdoors, and sewers
butyl acetate	Steam can form an explosive mixture with air
butyl acetate	Steam can travel to ignition source and flash back
butyl acetate	Fire can cause irritable, corrosive, and toxic gases
butyl acetate	Inhalation and skin absorption may be toxic
xylene	No data
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
iron oxide	Containers may explode when heated
iron oxide	Leaks are at risk of fire/explosion
iron oxide	Can be reignited after digestion
iron oxide	Can ignite in contact with moisture
iron oxide	flammable/combustible substances
iron oxide	Some substances can burn quickly with flashes
iron oxide	Some react violently with water
iron oxide	Some may explode in case of fire or heating
iron oxide	Inhalation of degradation products can result in serious injury or death
iron oxide	Contact can cause severe burns to the skin and eyes
iron oxide	Fire can cause irritable, corrosive, and toxic gases
propylene glycol monomethyl ether acetic acid	Flammable liquids and vapors
propylene glycol monomethyl ether acetic acid	Intense polymerization can cause fire and explosion
propylene glycol monomethyl ether acetic acid	Can form explosive mixtures at or above flashpoints
propylene glycol monomethyl ether acetic acid	Containers may explode when heated
propylene glycol monomethyl ether acetic acid	High Mars: easily ignited by heat, spark, and flame
propylene glycol monomethyl ether acetic acid	Leaks are at risk of fire/explosion
propylene glycol monomethyl ether acetic acid	Risk of steam explosion indoors, outdoors, and sewers
propylene glycol monomethyl ether acetic acid	Steam can form an explosive mixture with air
propylene glycol monomethyl ether acetic acid	Steam can travel to ignition source and flash back
propylene glycol monomethyl ether acetic acid	Steam can cause dizziness or suffocation without awareness
propylene glycol monomethyl ether acetic acid	Fire can cause irritable, corrosive, and toxic gases
propylene glycol monomethyl ether acetic acid	Inhalation and contact irritates or burns skin and eyes
COPPER POLYCHLOROPHALOCYANE GREEN	Stable at room temperature and pressure
COPPER POLYCHLOROPHALOCYANE GREEN	Containers may explode when heated
COPPER POLYCHLOROPHALOCYANE GREEN	Some may burn but do not ignite easily
COPPER POLYCHLOROPHALOCYANE GREEN	In case of fire, irritable and toxic gases can be generated
COPPER POLYCHLOROPHALOCYANE GREEN	Inhalation of substances can be harmful
COPPER POLYCHLOROPHALOCYANE GREEN	Some liquids may cause dizziness and vapor that causes suffocation
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Stable at room temperature and pressure
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Containers may explode when heated
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Some may burn but do not ignite easily
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	In case of fire, irritable and toxic gases can be generated
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Inhalation of substances can be harmful
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	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
dyrolytic acid dibutylin	Can decompose at high temperatures to produce toxic gases
dyrolytic acid dibutylin	Containers may explode when heated
dyrolytic acid dibutylin	Some may produce combustible hydrogen gas when in contact with metal
dyrolytic acid dibutylin	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
dyrolytic acid dibutylin	Some may ignite combustible materials with oxidizing agents
dyrolytic acid dibutylin	Toxic: Inhalation, ingestion, and skin contact can result in serious injury and death
dyrolytic acid dibutylin	Contact with molten materials can cause serious burns to the skin and eyes
2-Ethylhexanoic acid zinc salt	Can decompose at high temperatures to produce toxic gases
2-Ethylhexanoic acid zinc salt	Containers may explode when heated
2-Ethylhexanoic acid zinc salt	Some may burn but do not ignite easily
2-Ethylhexanoic acid zinc salt	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
B. Conditions to avoid	
carbon black	Friction, Heat, Spark, Flame
carbon black	Ignition sources such as heat, spark, flame, etc
carbon black	Produce dust and debris such as drilling, shelving, cutting, etc
titanium dioxide	Ignition sources such as heat, spark, flame, etc
butyl acetate	Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking
xylene	No data
ethylbenzene	Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking
iron oxide	Moisture
iron oxide	Ignition sources such as heat, spark, flame, etc
propylene glycol monomethyl ether acetic acid	Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking
COPPER POLYCHLOROPHALOCYANE GREEN	Ignition sources such as heat, spark, flame, etc
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	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
dyrolytic acid dibutylin	Heat
2-Ethylhexanoic acid zinc salt	Ignition sources such as heat, spark, flame, etc
C. Substances that should be avoided	
carbon black	No data
titanium dioxide	combustible substances
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	Water
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	combustible material
COPPER POLYCHLOROPHALOCYANE GREEN	irritable, toxic gases

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	combustible material
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	irritable, toxic gases
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	combustible substances
dyrolytic acid dibutylin	combustible substances
dyrolytic acid dibutylin	Metal
2-Ethylhexanoic acid zinc salt	combustible substances
D. Hazardous substances produced during decomposition	
carbon black	irritable, toxic gases
titanium dioxide	Corrosive/toxic fumes
titanium dioxide	irritable, corrosive, toxic gases
butyl acetate	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
iron oxide	irritable, corrosive, toxic gases
propylene glycol monomethyl ether acetic acid	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, and salt with bentonite (QUAT)	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
dyrolytic acid dibutylin	Corrosive/toxic fumes
dyrolytic acid dibutylin	irritable, corrosive, toxic gases
2-Ethylhexanoic acid zinc salt	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
2-Ethylhexanoic acid zinc salt	Corrosive/toxic fumes
2-Ethylhexanoic acid zinc salt	irritable, toxic gases

11. Information about toxicity

A. Information on most likely exposure routes

carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	Can be absorbed by the body by inhalation
COPPER POLYCHLOROPHALOCYANE GREEN	Inhalation and absorption by fire extinguishers
COPPER POLYCHLOROPHALOCYANE GREEN	Can be absorbed by the body by inhalation of aerosols through the skin, digestive system
COPPER POLYCHLOROPHALOCYANE GREEN	Can be absorbed by the body by the inhalation of steam
COPPER POLYCHLOROPHALOCYANE GREEN	Inhalation, skin, and body absorption by digestive organs

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	could cause
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
B. Health hazard information	
acute toxicity	
an oral form	
carbon black	LD50 > 8000 mg/kg Rat (no deaths, OECD Guideline 401)
titanium dioxide	LD50 > 2000 mg/kg Mouse (OECD TG 420)
butyl acetate	LD50 3200 mL/kg Rat (OECD TG 423)
xylene	LD50 3523 mg/kg Rat (EU Method B1)
ethylbenzene	LD50 3500 mg/kg Rat
iron oxide	LD50 > 10000 mg/kg Rat (EU Method B.1; No disability observed)
propylene glycol monomethyl ether acetic acid	LD50 8532 mg/kg Rat
COPPER POLYCHLOROPHALOCYANE GREEN	LD50 > 6400 mg/kg Rat
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	LD50 > 15000 mg/kg Rat
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	LD50 > 5000 mg/kg Rat
dyrolytic acid dibutylin	LD50 2071 mg/kg Rat
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	LD50 > 2000 mg/kg Rat (no death)
transdermal skin	
carbon black	LD50 > 8000 mg/kg Rabbit
titanium dioxide	No data
butyl acetate	LD50 > 17600 mg/kg Rabbit (OECD TG 402)
xylene	No data
ethylbenzene	LD50 > 20000 mg/kg Rabbit (OECD Guideline 402 GLP)
iron oxide	No data
propylene glycol monomethyl ether acetic acid	LD50 > 5000 mg/kg Rabbit
COPPER POLYCHLOROPHALOCYANE GREEN	LD50 > 5000 mg/kg Rat
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	LD50 > 2000 mg/kg Rat
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	LD50 > 2000 mg/kg Rat (No Death Similar Substance: 149-57-5 OECD TG 402, GLP)
Inhale	
carbon black	Dust LC50> 4.6mg/m3 4hr Rat (no animals killed up to maximum concentration)
titanium dioxide	Dust LC50> 6.82 mg/L Rat (OECD TG 403, No Death)
butyl acetate	Steam LC50 1802 mg/L Rat
xylene	Gas LC50 6350 ppm 4 hr Rat (the corresponding value is NITE result, and the hazard review result also confirms LC50=6,700ppm figure)

ethylbenzene	Steam LC50 4000 ppm 4hr Rat (Rad LC50=4000 ppm 4hr conversion: 17.8 mg/L (ECHA, HSDB), RD50=1432 ppm 6.2 mg/L; EU CLP Harmonization Classification 4)
iron oxide	분진 LC50 5.05 mg/ℓ 4 hr Rat (OECD TG403, GLP)
propylene glycol monomethyl ether acetic acid	Steam LC0> 2000 ppm 3 hr Rat (no death observed at the corresponding concentration)
COPPER POLYCHLOROPHALOCYANE GREEN	Gas LD50> 5000 mg/kg Rat
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	분진 LC50> 12.6 mg/ℓ 4 hr Rat (GLP data)
dyrolytic acid dibutylin	Gas LD50> 2000 mg/kg Rat
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	Dust LC50> 5.7 mg/l 4 hr Rat (No Death Similar Substance: 1314-13-2 OECD TG 403)
Corrosive or irritable skin	
carbon black	No irritation occurs as a result of skin corrosiveness/stimulation test using rabbits (OECD Guideline 404)
titanium dioxide	The results of skin corrosion/stimulation test using rabbits showed no irritation, erythema index = 0, OECD TG 404
butyl acetate	Skin Corrosion/Stimulating Test Results in Rabbits Do Not Show Stimulus OECD TG 404
xylene	Skin irritation test using rabbits EU Method B.4 results with primary skin irritation index 3 intermediate irritation (ECHA)♪ ♪ Skin irritant (rabbit)♪ Skin, eyes and respiratory irritation are observed in people exposed to Xylene (Chemical Information Processing System: Hazard Analysis Results)
ethylbenzene	The results of the skin irritation test using rabbits show moderate irritation
iron oxide	Skin irritation test using rabbits OECD G404 result no irritation erythema and edema irritation index 0
propylene glycol monomethyl ether acetic acid	Rabbit: No irritation
COPPER POLYCHLOROPHALOCYANE GREEN	Edema score: 0.1/4, fully recovered: 7 days, no irritation, Rabbit, 16 CFR 1500.42
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No irritation to the skin
dyrolytic acid dibutylin	Corrosive, rat, OECD TG 402
2-Ethylhexanoic acid zinc salt	As a result of skin corrosiveness/stimulation test using Rabbit, irritability observed OECD TG 404, GLP-like substance CAS No. 85203-81-2
Severe eye damage or irritation	Severe eye damage/stimulation tests with rabbits resulted in no mild irritation (OECD Guideline 405)
carbon black	
titanium dioxide	Severe eye damage/stimulation test results with rabbits do not show irritation. Conjunctival redness index = 1-2, OECD TG 405, GLP
butyl acetate	Category 2B
xylene	Short term exposure criteria show eye and respiratory irritation effects on human beings exposed to mixed xylene at 100 ppm STEL♪ o- Conjunctive redness (vessels diffuse more above normal and crimson, individual vessels are not easily identified) was observed upon xylene infusion in rabbits, . Conjunctive chemo (swelling above normal) and conjunctival secretions (above normal) were observed in 5 rabbits at 1 hour after ophthalmology♪ (ECHA)♪ ♪ It's an eye irritating substance (rabbit) ♪ (Chemical Information Processing System)○○♪ As a result of the eye irritation test in rabbits, there was no mild irritation or corneal damage to the conjunctiva○○♪
ethylbenzene	As a result of the eye irritation test in rabbits, there was no mild irritation or corneal damage to the conjunctiva

iron oxide	Eye Corrosion/Stimulation Test Using Rabbits OECD G405, GLP Results No Stimulation Index 0
propylene glycol monomethyl ether acetic acid	
COPPER POLYCHLOROPHALOCYANE GREEN	Category 2B
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	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
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	Moderate eye irritation observed in animal experiments
2-Ethylhexanoic acid zinc salt	High irritability, Rabbit, completely reversible within 21 days, OECD TG 405
respiratory sensitivity	Severe eye damage/stimulation test results using a rabbit showed irritability (OECD TG 405, GLP) (similar substance CAS No. 85203-81-2)
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
skin sensitivity	
carbon black	Skin sensitivity test using guinea pigs does not result in skin sensitivity (OECD Guideline 406, GLP)
titanium dioxide	Skin sensitivity test using guinea pigs does not cause skin sensitivity, OECD TG 403
butyl acetate	Buehler test result with guinea pig non-hypersensitive OECD TG 406
xylene	Mice Localized Lymph node test OECD TG 429 Non-hypersensitivity
ethylbenzene	No data
iron oxide	Irritability test result using guinea pig
propylene glycol monomethyl ether acetic acid	Guinea pig/maximization test (GLP): No hypersensitivity
COPPER POLYCHLOROPHALOCYANE GREEN	No hypersensitivity, Mouse, Local Lymph node trial (LLNA), GLP, female, OECD TG 429
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Does not cause skin sensitivity
dyrolytic acid dibutylin	Irritable, Guinea pig, GLP, female/male, guinea pig maximization test (GMPT): Capacity level: 0.2 g paste at 10% test substance con., Reaction: 20/20, OECD TG 406
2-Ethylhexanoic acid zinc salt	As a result of the skin sensitivity test using guinea pigs, OECD TG 406, GLP-like substance CAS No. 1314-13-2 does not show hypersensitivity
carcinogenicity	
Occupational Safety and Health Act	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data

iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
Ministry of Employment and Labor Examination	
carbon black	2
titanium dioxide	2
butyl acetate	No data
xylene	No data
ethylbenzene	2
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
IARC	
carbon black	2B
titanium dioxide	2B
butyl acetate	No data
xylene	3
ethylbenzene	2B
iron oxide	3
propylene glycol monomethyl ether acetic acid	No data
with copper polycloth	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
OSHA	
carbon black	Applicable
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
ACGIH	
carbon black	A3
titanium dioxide	A4
butyl acetate	No data
xylene	A4
ethylbenzene	A3
iron oxide	A4
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
NTP	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
EU CLP	
carbon black	No data
titanium dioxide	2 (limited to powder form containing 1% or more of particles with an aerodynamic diameter of 10 µm or less)
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data

dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
Ministry of Environment	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
NITE	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
germ cell mutagenicity	
carbon black	Sister chromatid exchange assay test with mammal in vitro negative with or without metabolism (OECD Guideline 479)♪ The results of genetic mutation test using mammals in vitro are negative regardless of the presence or absence of metabolic activity (OECD Guideline 476)♪ Returned mutation test using in vitro microorganisms resulted in negative (OECD Guideline 471, GLP) with or without metabolism♪ Sexlink febrile lethality test results using fruit flies in vivo (OECD Guideline 477) "
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
butyl acetate	As a result of the in vitro bacterial return mutation test with microorganisms, negative OECD Guideline 471 with or without metabolism♪ In vivo mammalian erythrocyte micronuclear test results negative OECD Guideline 474
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

iron oxide	Micronuclear test results using mouse bone marrow cells negative, Unscheduled DNA synthesis using mammalian hepatocytes; UDS test results negative, OECD TG474, OECD TG486, GLP"
propylene glycol monomethyl ether acetic acid	Returning mutation test using in vitro microorganisms, chromosomal aberration test using mammalian Chinese hamster cells, OECD TG473, GLP result negative, comet assay result using rats in vivo CAS No. 1317-61-9
COPPER POLYCHLOROPHALOCYANE GREEN	In vitro – Salmonella typhimurium/TA98, TA100, TA1535, TA1537 (Retro-Mutant Test, GLP): Negative (negative), CHL Cells/Chromosomal Abnormal Test (GLP): Negative (negative), Rat hepatocyte/UDS Test (GLP): Negative (negative) in the absence of metabolic system
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	cancer/male), OECD TG 484, GLP in vitro – reversible mutation test with bacteria: negative (S. typhimurium TA1535, TA1537, TA98, TA100, regardless of metabolism), OECD TG 471, GLP No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutyltin	in vitro – reversible mutation test with bacteria: negative (S. typhimurium TA1535, TA1537, TA98, TA100, regardless of metabolism), OECD TG 471
2-Ethylhexanoic acid zinc salt	OECD TG 471, GLP, Mammal Chromosome Abnormalities, OECD TG 473, GLP, Mammal Chromosome Abnormalities, OECD TG 476, GLP Results, Negative Similar Substance CAS No. 149-57-57-5 with or without metabolic activity.
reproductive toxicity	In vivo mammalian erythrocyte micronuclear test OECD TG 474, GLP result negative similar substance CAS No. 1314-13-2"
carbon black	
titanium dioxide	No reproductive toxicity occurs as a result of the minimum formation/parent toxicity/developmental toxicity test using rats (OECD Guideline 414)
butyl acetate	As a result of the reproductive development toxicity test using rats, no effects such as clinical symptoms or weight change were observed. NOAEL= 1000 mg/kg bw/day (OECD TG 210)
xylene	The second generation of reproductive toxicity tests in rats showed weight, weight gain and food intake reduction at 1500 ppm to 2000 ppm (NOAEL systemic toxicity, adult rats=750 ppm (normal)) (OECD TG 416, GLP) In rats, fetal developmental toxicity tests showed weight loss, reduced baby size, and rib deformities, but maternal toxicity was found to be greater than developmental toxicity (NOAEL maternal toxicity=2.5 mg/liter (normal), NOAEL ratogenicity=10 mg/liter (normal)) (GLP, OECD Guideline 414).
ethylbenzene	Growth Toxicity: Classification 2 ① NOAEC (Development Toxicity, Inhalation) > 200 ppm (rat) ① NOAEC (Mother Toxicity, Inhalation) = 500ppm, NOAEC (Development Toxicity, Inhalation) = 100ppm, NOAEC (Mother Toxicity, Inhalation) = 2,000ppm (rat) ① NOAEC (Productive Toxicity, Inhalation) = 500 ppm (rat) NOAEC (Mother Toxic, Oral) = 100 ppm, NOAEC (Fetal Toxic, Oral) > 500 ppm (rat, ethylbenzene)
iron oxide	As a result of the second generation inhaled reproductive toxicity test (OECD TG416, GLP) with rats, no adverse effects related to reproduction or development were observed up to 500 ppm. NOEL for parental systemic toxicity is NOEL=100 ppm due to weight loss and liver weight gain. As a result of the inhalation development toxicity test (OECD TG414, GLP) using rats, no deformity effect was observed up to 2000 ppm. Neonatal weight loss at 1000 or 2000 ppm was weak. Maternal toxicity decreased weight and feed consumption at 1000 and 2000 ppm. NOAEL=2000ppm and NOAEL (Maternal/Development Toxicity)=500ppm are shown.
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	Rats/Expressions (0, 100, 300, 1000 mg/kg/day for 44D (M) and 41-45D(F)) (GLP): No toxic effects on reproductive variables Rat/Inhalation (500, 2000, 4000 ppm for 21D) (GLP): no malformation or other toxic effects.
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No reproductive toxicity, OECD TG 421, GLP Overall reproductive impact not observed, rat, OECD TG 421, GLP
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data

dyrolytic acid dibutylin	Medium dose NOAEL= 30 mg/kg diet (1.9–2.3 mg/kg body weight/day), Low dose NOAEL= 5 mg/kg diet (1.9–2.3 mg/kg body weight/day), OECD TG 421, GLP In an oral (observed) atypical formation study in rats, the test substance was determined to have NOAEL of 1.0 mg/kg bw/day for maternal toxicity and 5.0 mg/kg bw/day for atypical formation. rat, OECD TG 414, GLP
2–Ethylhexanoic acid zinc salt	The second–generation oral reproductive toxicity test with rats (cancer/male) demonstrates a significant impact on fertility and viability in parents. NOAEL = 7.5 mg/kg bw/day (F1) (OECD TG 416) (Zinc Chloride, a similar substance)♪ Developmental toxicity/clinical formation test using rats shows that the clonestasis is achieved at a non–clinical dose. The main target is skeletal NOAEL=300 mg/kg bw/day (clonestasis), 100 mg/kg bw/day (clinical formation)
Specific target organ toxicity (one exposure)	
carbon black	No data
titanium dioxide	Acute oral toxicity test with rats showed no death, no weight changes and no significant lesions observed during autopsy. OECD TG 425
butyl acetate	Causes central nervous system disorders, pulmonary edema, and respiratory irritation in humans. Target organs: central nervous system, respiratory system
xylene	Classification 3 (Respirator, anesthesia)
ethylbenzene	It causes nervous system effects and airway stimulation such as dizziness in experimental animals.
iron oxide	causing respiratory irritation
propylene glycol monomethyl ether acetic acid	
COPPER POLYCHLOROPHALOCYANE GREEN	Rat (male, female)/oral (500, 1000, 2000, 4000, 6300, 100,000 mg/kg): lethargy, filoherence, watery eyes, anorexia, shallow breathing and salivations were observed. Executive: Green stools appear 24 hours after application al. Diarrhea immediately after treatment in the 1600 mg/kg bw dose group, recovered / no organ abnormalities found (Ratt / Male / Female / Equal or similar guideline: OECD TG 401)♪ Inhalation: There were no clinical signs of toxicity. / No substance–related findings were found. In one animal, a chestnut–sized tumor with an adenoid intersection was found in the skin and muscles.
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	individuals in all dose groups; mild ocular protrusion reported above 2500 mg/kg; sedation reported in individuals at 5000 mg/kg. Surviving individuals recovered within 11–14 days. / No total organ changes associated with the compound were observed (Equal or similar guideline: OECD TG 401)♪ Percutaneous: Signs of systemic toxicity noted in human–killed females were limb posture, standing hair, dehydration, and limb paralysis. Gaiting and bending posture were noted in the other two females. No signs of systemic toxicity were observed in the remaining females or in all males. A gas expansion of the stomach was observed during the study. Autopsies of deceased animals at the end of the study showed no abnormalities (Ratt / Male / Female / OECD TG 402/GLP)
2–Ethylhexanoic acid zinc salt	As a result of the acute inhalation toxicity test using rat water, a decrease in respiratory rate was observed. Similar substance CAS No. 1314–13–2
Specific target organ toxicity (repeated exposure)	
carbon black	Repeated exposure of the human body for more than 10 years leads to decreased airway resistance and expiratory flow, cough, phlegm, chronic bronchitis, lung dysfunction, pneumoconiosis, emphysema, pulmonary perfusion, obstructive gout, carcinogenic effects not applied to classification in this section
titanium dioxide	NITE Classification 2
butyl acetate	
xylene	As a result of the 90–day repeated administration oral toxicity test on rats, central nervous system abnormalities such as ataxia and decreased activity were observed in the 600 mg/kg concentration group within 1 hour. No other special effects were observed NOAEL=level:125 mg/kg bw/day normal EPA OTS 798.2650, GLP ① LOAEL(90일, oral)=150mg/kg bw/day(rat) ① NOAEL(2년, oral)=250mg/kg bw/day(rat) ① NOAEL(90일, inhalation>3.5mg/L(810ppm))(rat) ④ NOAEL(90일, inhalation)=50ppm, LOAEL(90일, inhalation)=100ppm(90일, inhalation)(rat) ④ LOAEL(90일, inhalation)=100ppm(rat) ④ LOAEL(90일, inhalation)=800ppm(rat) *동물시험결과 xylene에 노출 시 기억력 저하, 이독성 등이 관찰됨

ethylbenzene	hematologic changes indicating weak regenerative anemia, increased liver weight, and changes in central lobular hepatocyte hypertrophy, NOAEL=75 mg/kg bw/dayOECD TG408, GLP, ECHA As a result of the 13-week repeated inhalation toxicity test using mice, liver and kidney weight increased at 750 ppm3.55 mg/L or higher, but no other histopathologic findings or harmful effects were observed. NOAEC=1000 ppm4.74 mg/LOECD TG413, ECHA To identify inhaled neurotoxicity OECD TG424 using rats, repeated inhalation exposure at a concentration of 200–800 ppm for 4 weeks–13 weeks did not recover the hearing threshold even 8 weeks after stopping exposure at a concentration of 400 ppm or more. OHC losses of 200–800 ppm during the 8-week recovery period increased severely to 4% and 100%, respectively. LOAEL=200 ppm
iron oxide	Repeated mouth inhalation exposure in humans can cause respiratory effects (iron lung disease) and can kill metal fume fever work
propylene glycol monomethyl ether acetic acid	Rats/Expressions (0, 100, 300, 1000 mg/kg/day for 44D(M) and 41–55D(F)) (GLP): No toxic effects observed. Rat (male, female)/inhalation (300, 1000, 3000 ppm for 2W) (GLP): Slight olfactory epithelial damage seen, no other symptoms observed.
COPPER POLYCHLOROPHALOCYANE GREEN	External (Amanic): Oral exposure via rats does not materialize fatal effects, Rat, OECD TG 408 Inhalation (short-term repetition): Fatal effects observed, Rat, GLP
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	res ults of repe
dyrolytic acid dibutylin	Oral (Achronic): NOEL=40 ppm of di-n-butyltin dichloride in diet for 90 days in rats, very small changes at double this level, safe consumption for humans at the 0.02 mg/kg/day dose, and safe consumption for adults at the 1.2 mg/kg/day dose for adults at 60 kg, Rat, OECD TG 408
2-Ethylhexanoic acid zinc salt	As a result of the 90-day repetitive oral toxicity test using mice, growth was delayed, but no significant effect was observed. NOEL = 3000 ppm OECD TG 408-like substance CAS No. 7733-02-0
Harmful to aspiration	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	동점도: 0.86 mm ² /s @ 20degC (expolated calculation) Viscosity: 0.74 mPa·s (25°C) (Result of Hazardous Examination of Chemical Substance Information Processing System)
ethylbenzene	Hydrocarbons. Swallowing liquids can cause chemical pneumonia by osmosis. Tie probability 0.64 mm ² /s 25°C
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutyl	Viscosity 72 mPas (dynamic) 20°C molecular structure C32H64O4Sn, viscosity 72 mPas (dynamic) 20°C molecular structure C32H64O4Sn
2-Ethylhexanoic acid zinc salt	No data
Other Hazardous Effects	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	Application of classification of the National Institute of Environmental Research (Results of Hazardous Examination of Chemical Substances)
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data

COPPER POLYCHLOROPHALOCYANE GREEN	
	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	
	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data

12. Environmental impact

a. Ecotoxicity

Fish	
carbon black	LC50 > 1000 mg/ℓ 96 hr 기타 (Tribolodon hakonensis)
titanium dioxide	LC50 > 100 mg/ℓ 96 hr Carassius auratus (OECD Guideline 203)
butyl acetate	LC50 18 mg/ℓ 96 hr Pimephales promelas (유수식, OECD Guideline 203)
xylene	LC50 2.6 mg/ℓ 96 hr (OECD Guideline 203)
ethylbenzene	LC50 5.1 mg/ℓ 96 hr
iron oxide	LC0 ≥ 50000 mg/ℓ 96 hr 기타 (Danio rerio)
propylene glycol monomethyl ether acetic acid	LC50 ≥ 100 mg/ℓ 96 hr Oryzias latipes
COPPER POLYCHLOROPHALOCYANE GREEN	
	LC100 1000 mg/ℓ 96 hr Lepomis macrochirus
COPPER POLYCHLOROPHALOCYANE GREEN	
	(EPA-660/3-75-009, exponential, freshwater)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	
	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
	No data
dyrolytic acid dibutylin	LC50 262.89 mg/ℓ Lepomis cyanellus
dyrolytic acid dibutylin	(Danio rerio, OECD Guideline 203)
2-Ethylhexanoic acid zinc salt	LC50 100 mg/ℓ 96 hr Cyprinus carpio (유사물질 CAS No. 85203-81-2, OECD Guideline 203, GLP)
crustaceans	
carbon black	EC50 > 5600 mg/ℓ 24 hr Daphnia magna (OECD Guideline 202, GLP)
titanium dioxide	LC50 > 500 mg/ℓ 48 hr Daphnia magna
butyl acetate	EC50 44 mg/ℓ 48 hr Daphnia magna
xylene	LC50 3.6 mg/ℓ 24 hr (OECD TG202)
ethylbenzene	LC50 1.8 mg/ℓ 48 hr Daphnia magna (Ceriodaphnia dubia NOEC 1.0 mg/L (0.96mg/L) 7days)
iron oxide	EC50 > 100 mg/ℓ 48 hr
propylene glycol monomethyl ether acetic acid	EC50 373 mg/ℓ 48 hr Daphnia magna
COPPER POLYCHLOROPHALOCYANE GREEN	
	EC0 ≥ 500 mg/ℓ 24 hr Daphnia magna
COPPER POLYCHLOROPHALOCYANE GREEN	
	(EU Method C.2, exponential, freshwater)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	
	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	
	No data
dyrolytic acid dibutylin	EC50 1.7 ~ 3.4 mg/ℓ 48 hr Daphnia magna
dyrolytic acid dibutylin	(OECD TG 202, EC Guideline 92/69/EEC (2), Exponential, Freshwater)
2-Ethylhexanoic acid zinc salt	EC50 0.131 ~ 1.06 mg/ℓ 48 hr Daphnia magna (유사물질: 7733-02-0 OECD TG 202, GLP)
bird	
carbon black	
	ErC50 > 10000 mg/ℓ 72 hr 기타 (Desmodesmus subspicatus, OECD Guideline 201, GLP)
titanium dioxide	EC50 > 50 mg/ℓ 72 hr Selenastrum capricornutum

butyl acetate	EC50 335 mg/ℓ 72 hr Selenastrum capricornutum
xylene	EC50 1.3 mg/ℓ 48 hr (OECD TG201, GLP)
ethylbenzene	EC50 2.6 mg/ℓ 96 hr 7 타 (marine invertebrate)
iron oxide	No data
propylene glycol monomethyl ether acetic acid	EC50 ≥ 1000 mg/ℓ 72 hr Selenastrum capricornutum
COPPER POLYCHLOROPHALOCYANE GREEN	EC50 > 100 mg/ℓ 72 hr Desmodesmus subspicatus
COPPER POLYCHLOROPHALOCYANE GREEN	(OECD TG 201, Exponential, Freshwater, GLP)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	EC50 > 1 mg/ℓ 72 hr Desmodesmus subspicatus
dyrolytic acid dibutylin	(OECD TG 201, EU Method C.3 (Algal Inhibition test), 지수식, 답수)
2-Ethylhexanoic acid zinc salt	No data
B. Residual and degradable	
Residuality	
carbon black	No data
titanium dioxide	No data
butyl acetate	log Kow 1.78
xylene	log Kow 3.15
ethylbenzene	log Kow 3.15
iron oxide	No data
propylene glycol monomethyl ether acetic acid	log Kow 0.43
COPPER POLYCHLOROPHALOCYANE GREEN	01 약 -0.88 ~ -0.4 log Kow
COPPER POLYCHLOROPHALOCYANE GREEN	(log Pow, 23℃)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	log Kow 10.64 (estimated)
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	01 4.44 log Kow
dyrolytic acid dibutylin	(log Pow, 20.8℃)
2-Ethylhexanoic acid zinc salt	log Kow > 5.7 (OECD TG 107)
Degradable	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	78% within 14 days of BOD5/COD culture
2-Ethylhexanoic acid zinc salt	No data
C. Bio-enriched	
Concentration	

carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	BCF 25.9 (Oncorhynchus mykiss)
ethylbenzene	BCF 1 (BCF)
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	01< 2.1 BCF
COPPER POLYCHLOROPHALOCYANE GREEN	(BCF)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	BCF 10 (estimated)
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	05 1.49 log BCF
dyrolytic acid dibutylin	(Non-dimensional number)
2-Ethylhexanoic acid zinc salt	BCF 38 ~ 28960
biodegradable	
carbon black	No data
titanium dioxide	No data
butyl acetate	83 % 28 day (OECD TG 301D)
xylene	90% 28 days (Dissociable, OECD TG301F, GLP)
ethylbenzene	70 ~ 80 % 28 day (ISO 14593 CO2 headspace시험, GLP)
iron oxide	No data
propylene glycol monomethyl ether acetic acid	> 60 (%) 28 day
COPPER POLYCHLOROPHALOCYANE GREEN	< 1 01 28 day
COPPER POLYCHLOROPHALOCYANE GREEN	(O2 consumption)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	(Not degradable – highly likely to be accumulated in vivo due to non-degradable)
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	23 01 39 day
dyrolytic acid dibutylin	(O2 consumption)
2-Ethylhexanoic acid zinc salt	60 % 28 day (OECD TG 301D, GLP)
D. Soil mobility	
carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data

E. Other harmful effects	
carbon black	조류:Desmodesmus subspicatus: NOEC, 72h, > 10000 mg/L, OECD Guideline 201, GLP
titanium dioxide	No data
butyl acetate	No data
xylene	유기 nic toxic
ethylbenzene	조류 Selenastrum capricornutum, NOEC96h=3.4 mg/L 지수식 EPA 1985, GLP
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	Capsule Daphnia magna: NOEC21d = 0.048 to 0.156 mg/L semi-hydrated OECD TG 211 analogue CAS No. 7646-85-7 Bird Pseudokirchnerella subcapitata: NOEC72h = 0.05 – 0.093 mg/L exponential formula, growth rate OECD TG 201-like substance CAS No. 7646-85-7

13. Precautions for disposal

A. Method of disposal	
carbon black	No data
titanium dioxide	No data
butyl acetate	(1) Treat with neutralization, hydrolysis, oxidation, and reduction.
xylene	2) Burn at high temperature or melt at high temperature.
ethylbenzene	3) Solidify it."
iron oxide	Take care of it in one of the following ways.♪ 1. Incineration.♪ 2. After treatment by evaporation and concentration, incinerate the residue.♪ 3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.♪ 4. Use neutralization, oxidation, reduction, polymerization, and condensation reactions to treat.♪ 5. Incineration of residues, or after re-treatment by means of agglomeration, sedimentation, filtration, and dehydration, incinerate residues.
propylene glycol monomethyl ether acetic acid	Take care of it in one of the following ways.♪ 1. After treatment using the reaction of neutralization, oxidation, and reduction, use the method of agglomeration, precipitation, filtration, and dehydration.♪ 2. Treat by evaporation and concentration.♪ 3. Refine by means of separation, distillation, extraction, and filtration.
COPPER POLYCHLOROPHALOCYANE GREEN	(1) Treat with neutralization, hydrolysis, oxidation, and reduction.
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	2) Burn at high temperature or melt at high temperature. 3) Solidify it."
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	1) Pre-treatment of oil and water separation is done with oil and water separation method.
dyrolytic acid dibutylin	Dispose of contents and containers as stipulated in the Waste Management Act. (1) Use the reaction of neutralization, oxidation, and reduction and then use the method of agglomeration, precipitation, filtration, and dehydration. 2) Treat by evaporation and concentration. 3) Refine by separation, distillation, extraction, and filtration. 4) Reclamation shall not interfere with the performance of the cutoff facilities and leachate treatment facilities of the managed landfill facilities where designated wastes can be reclaimed."
	Dispose of contents and containers as stipulated in the Waste Management Act.

2-Ethylhexanoic acid zinc salt	Dispose of contents and containers as stipulated in the Waste Management Act.
B. Precautions for disposal	No data
carbon black	
titanium dioxide	Dispose the contents containers (in accordance with the relevant laws and regulations).♪ Dispose of contents/containers in accordance with waste laws and regulations
butyl acetate	
xylene	Dispose of contents/containers in accordance with waste-related laws and regulations
ethylbenzene	Dispose of contents/containers in accordance with waste-related laws and regulations
iron oxide	Dispose of contents/containers in accordance with waste-related laws and regulations
propylene glycol monomethyl ether acetic acid	Dispose of contents/containers in accordance with waste-related laws and regulations
COPPER POLYCHLOROPHALOCYANE GREEN	Dispose the contents containers (in accordance with the relevant laws and regulations).♪ Dispose of contents/containers in accordance with waste laws and regulations
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	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 contents/containers in accordance with waste-related laws and regulations
dyrolytic acid dibutylin	Dispose of contents/containers in accordance with waste-related laws and regulations
2-Ethylhexanoic acid zinc salt	Dispose the contents containers (in accordance with the relevant laws and regulations).♪ Dispose of contents/containers in accordance with waste 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 when transporting local areas	
Packaging and transportation in accordance with DOT and other regulations	
Types of emergency measures in case of fire	F-E
Types of emergency measures in case of spillage	S-E

15. Status of legal regulations

A. Regulations under the Occupational Safety and Health Act	
carbon black	Exposure criteria setting substances
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
butyl acetate	Substances subject to process safety report (PSM) submission
butyl acetate	Hazardous substances subject to management
butyl acetate	Substances subject to work environment measurement (measurement cycle: 6 months)

butyl acetate	Exposure 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
iron oxide	Hazardous substances subject to management
iron oxide	Substances subject to work environment measurement (measurement cycle: 6 months)
iron oxide	Substances subject to special health examination (diagnostic cycle: 12 months)
iron oxide	Exposure criteria setting substances
propylene glycol monomethyl ether acetic acid	Substances subject to process safety report (PSM) submission
COPPER POLYCHLOROPHALOCYANE GREEN	Hazardous substances subject to management (copper and its compounds)
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	Hazardous substances subject to management
dyrolytic acid dibutylin	Substances subject to work environment measurement (measurement cycle: 6 months)
dyrolytic acid dibutylin	Substances subject to special health examination (diagnostic cycle: 12 months)
dyrolytic acid dibutylin	Exposure criteria setting substances
2-Ethylhexanoic acid zinc salt	No data

B. Regulations under the Chemical Substances Control Act

carbon black	No data
titanium dioxide	No data
butyl acetate	No data
xylene	No data
ethylbenzene	No data
iron oxide	No data
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data

C. Regulation of the Act on the Registration and Evaluation of Chemical Substances

carbon black	Existing chemicals
titanium dioxide	Existing chemicals
butyl acetate	Existing chemicals
xylene	Existing chemicals
xylene	Critical Management Materials

ethylbenzene	Existing chemicals
iron oxide	Existing chemicals
propylene glycol monomethyl ether acetic acid	Existing chemicals
COPPER POLYCHLOROPHALOCYANE GREEN	Existing chemicals
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Existing chemicals
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Existing chemicals
dyrolytic acid dibutylin	Existing chemicals
2-Ethylhexanoic acid zinc salt	Existing chemicals
D. Regulations under the Dangerous Goods Safety Management Act	
carbon black	No data
titanium dioxide	No data
butyl acetate	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
iron oxide	No data
propylene glycol monomethyl ether acetic acid	4th class 2nd petroleum (non-water-soluble liquid) 1000ℓ
COPPER POLYCHLOROPHALOCYANE GREEN	No data
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	Class 4: 6000 liters of 4 petroleum products
2-Ethylhexanoic acid zinc salt	No data
E. Regulation under the Waste Management Act	
carbon black	No data
titanium dioxide	No data
butyl acetate	designated waste
xylene	designated waste
ethylbenzene	designated waste
iron oxide	designated waste
propylene glycol monomethyl ether acetic acid	No data
COPPER POLYCHLOROPHALOCYANE GREEN	designated waste
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	No data
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	No data
dyrolytic acid dibutylin	No data
2-Ethylhexanoic acid zinc salt	No data
F. Other regulations under domestic and foreign laws	
domestic regulation	
carbon black	
titanium dioxide	
butyl acetate	
xylene	
ethylbenzene	
iron oxide	
propylene glycol monomethyl ether acetic acid	

COPPER POLYCHLOROPHALOCYANE GREEN

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

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

dyrolytic acid dibutylin

2-Ethylhexanoic acid zinc salt

Other domestic regulations

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable

COPPER POLYCHLOROPHALOCYANE GREEN

Not applicable

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

Not applicable

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

Not applicable

dyrolytic acid dibutylin

Not applicable

2-Ethylhexanoic acid zinc salt

Not applicable

Foreign regulations

US Administrative Information (OSHA Regulations)

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable

COPPER POLYCHLOROPHALOCYANE GREEN

Not applicable

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

Not applicable

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

Not applicable

dyrolytic acid dibutylin

Not applicable

2-Ethylhexanoic acid zinc salt

Not applicable

US Management Information (CERCLA Regulations)

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	2267.995kg 5000lb
xylene	45.3599kg 100lb
ethylbenzene	453.599kg 1000lb
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable

COPPER POLYCHLOROPHALOCYANE GREEN

Not applicable

C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)

Not applicable

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Not applicable
2-Ethylhexanoic acid zinc salt	Not applicable
US Management Information (EPCRA 302)	
carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Not applicable
2-Ethylhexanoic acid zinc salt	Not applicable
US Management Information (EPCRA 304)	
carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Not applicable
2-Ethylhexanoic acid zinc salt	Not applicable
US Management Information (EPCRA 313)	
carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Applicable
ethylbenzene	Applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	Not applicable
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. 색소 오렌지 34(C.I. PIGMENT ORANGE 34)	Not applicable
4차 암모늄 화합물, 비스(수소산 수지 알킬) 다이 메틸, 벤 토나이트와의 염(QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Not applicable
2-Ethylhexanoic acid zinc salt	Not applicable

US Management Information (Rotterdam
Convention Material)

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable

propylene glycol monomethyl ether acetic acid	Not applicable
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COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
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C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
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Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
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dyrolytic acid dibutylin	Not applicable
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2-Ethylhexanoic acid zinc salt	Not applicable
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US Management Information (Stockholm
Convention Material)

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable

propylene glycol monomethyl ether acetic acid	Not applicable
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COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
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C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
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Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
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dyrolytic acid dibutylin	Not applicable
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2-Ethylhexanoic acid zinc salt	Not applicable
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US Management Information (Montreal's emotional
material)

carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable

propylene glycol monomethyl ether acetic acid	Not applicable
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COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
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C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
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Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
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dyrolytic acid dibutylin	Not applicable
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2-Ethylhexanoic acid zinc salt	Not applicable
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EU classification information (final classification
results)

carbon black	Not applicable
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titanium dioxide	Not applicable
butyl acetate	Liq. H314 H336
xylene	Liq. H314 H336
ethylbenzene	Liq. H314 H336
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	R10Xi; R36
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Muta. 2, Repr. 1B, STOT RE 1
2-Ethylhexanoic acid zinc salt	Not applicable
EU classification information (danger phrases)	
carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	H336 H336 H336
xylene	H336 H314 H336 H336
ethylbenzene	H336 H336 H30
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	R10, R36
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable
Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	H341, H360FD, H372 (immune system)
2-Ethylhexanoic acid zinc salt	Not applicable
EU classification information (safety equipment)	
carbon black	Not applicable
titanium dioxide	Not applicable
butyl acetate	Not applicable
xylene	Not applicable
ethylbenzene	Not applicable
iron oxide	Not applicable
propylene glycol monomethyl ether acetic acid	S2, S25
COPPER POLYCHLOROPHALOCYANE GREEN	Not applicable
C.I. Pigment Orange 34 (C.I. PIGMENT ORANGE 34)	Not applicable

Quaternary ammonium compounds, bis (hydrogenated resin alkyl) dimethyl, salt with bentonite (QUATERNARY AMMONIUM...	Not applicable
dyrolytic acid dibutylin	Not applicable
2-Ethylhexanoic	Not applicable

16. Other Notes

A. Source of data

carbon black

HSDB (Constitution)

HSDB (Color)

HSDB (B. Smell)

ECHA (Old)

ECHA (Percutaneous)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (Skin Sensitivity)

ECHA (Growth Cell Mutagenicity)

ECHA (Growth Toxic)

NITE (Certain Target Organ Toxicity (Repeated Exposure)

NITE (fish)

EHCA (algae)

ECHA (E. Other Hazardous Effects)

titanium dioxide

ECHA (Original)

ECHA (Color)

ECHA (B. Smell)

ECHA(라. pH)

ECHA (Melting Point/Frozen Point)

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

ECHA (Tar. Solubility)

ECHA (b. weight)

ChemIDPlus (Mer. Molecular Weight)

ECHA (Old)

ECHA (Inhalation)

OECD SIDS (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

OECD SIDS (Skin Sensitivity)

OECD SIDS (Growth Cell Mutagenicity)

OECD SIDS (Productive Toxicity)

OECD SIDS (Specific Target Organ Toxicity (One Exposure)

NITE (Certain Target Organ Toxicity (Repeated Exposure)

ECHA (crustacea)

ECHA (bird)

butyl acetate

ICSC (Original)

ICSC (Color)

ECHA Registered substances(나. 냄새)

ECHA(라. pH)

ICSC (E. Melting Point/Frozen Point)

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

ECHA Harmonized C&L

2 (H. Evaporation rate)

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

hSDB (K. Steam Pressure)

CHEMID PLUS (Tar. Solubility)
ICSC, hsdB (wave. vapor density)
HSDB (b. specific gravity)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
ICSC (you. natural ignition temperature)
ChemIDPlus (Mer. Molecular Weight)
ECHA (Old)
ECHA (Percutaneous)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA Harmonised C&L (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
NLM (specific target organ toxicity (1 exposure)
ECHA (Specific Target Organ Toxicity (Repeated Exposure)
(Hazard of inhalation)
ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
HSDB (Residual)
ECHA (biodegradable)

xylene

HSDB (Constitution)
HSDB (Color)
HSDB (B. Smell)
HSDB (C. Smell threshold)
HSDB (E. Melting Point/Frozen Point)
ICSC (F. Initial Boiling Point and Boiling Point Range)
ICSC (G. Flashpoint)
SRC (J. Upper/lower limits of Flame or Explosion Range)
SRC (Car. Steam Pressure)
HSDB (Tar. Solubility)
HSDB (wave vapor density)
ICSC (B. Percentage)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
SRC (you. spontaneous ignition temperature)
ECHA (R.Viscosity)
pubchem (Mer. molecular weight)
ECHA (Old)
NITE, chemical substance information processing system (inhalation)
ECHA, chemical substance information processing system (skin corrosiveness or irritation)
 ✳ECHA, regulations on the classification and labeling of chemicals in the Ministry of Environment (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
Chemical substance information processing system (hazardous screening results) (genotoxicity)
 Chemical substance information processing system (hazardous screening results) (specific target organ toxicity (one exposure)
Chemical substance information processing system (hazardous screening results) (specific target organ toxicity (repeated exposure)
ECHA, Chemical Substances Information Processing System (Hazardousness Examination Results) (Hazardousness of Absorption)
ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
HSDB (Residual)
ECHA (Concentrated)

ECHA (biodegradable)
ECHA (D. Soil Mobility)
ECHA (E. Other Hazardous Effects)

ethylbenzene

HSDB (Constitution)
HSDB (Color)
HSDB (B. Smell)
HSDB (C. Smell threshold)
ICSC (E. Melting Point/Frozen Point)
ICSC (F. Initial Boiling Point and Boiling Point Range)
ICSC (G. Flashpoint)
ICSC (J. Upper/lower limits on the range of flammability or explosion)
HSDB (K. Steam Pressure)
ICSC (Tar. Solubility)
HSDB (wave vapor density)
ECHA (b. weight)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
ICSC (you. natural ignition temperature)
HSDB (Roe. Viscosity)
HSDB (Mer. Molecular Weight)
ECHA, HSDB (Old)
ECHA (Percutaneous)
ECHA, EU CLP Harmonization Classification (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
HSDB (specific target organ toxicity (one exposure))
ECHA (Specific Target Organ Toxicity (Repeated Exposure))

Hydrocarbons. Swallowing liquids can cause chemical pneumonia by osmosis. Kinematic coherence rate 0.64 mm²/s 25 °C (absorption hazard)

ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
HSDB (Residual)
ECHA (Concentrated)
ECHA (biodegradable)
ECHA (D. Soil Mobility)
ECHA (E. Other Hazardous Effects)

iron oxide

ICSC (Original)
ICSC (Color)
ICSC (E. Melting Point/Frozen Point)
HSDB (I. Flammable (solid, gas))
HSDB (Tar. Solubility)
ICSC (B. Percentage)
ECHA (Old)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
(Growth Toxic)
ICSC (specific target organ toxicity (one exposure))
nite, osc, vestis (specific target organ toxicity (repeated exposure))

ECHA (Fish)

ECHA (crustacea)

propylene glycol monomethyl ether acetic acid

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(성상)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(색상)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(나. 냄새)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(마. 녹는점/어는점)

International Uniform Chemical Information Database (<http://ecb.jrc.it/esis>)(F) (Initial Boiling Point and Boiling Point Range)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(사. 인화점)

International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>)(J. Upper/lower limits of the range of flares or explosions)

National Institute of Technology and Evaluation(NITE)(http://www.safe.nite.go.jp/ghs/h18_bunrui.html)(카. 증기압)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(타. 용해도)

International Programme on Chemical Safety(IPCS INCHEM)(<http://www.inchem.org/>)(파. 증기밀도)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(하. 비중)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(거. n-옥탄올/물분배계수 (Kow))

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(너. 자연발화온도)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(머. 분자량)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(경구)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(경피)

ECHA (Inhalation)

OECD Screening Information Data Set (<http://cs3-hq.oecd.org/scripts/hpv/>)(Skin Corrosion or Irritation)

NITE (severe eye damage or irritation)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(피부과민성)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(피부과민성)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(생식세포변이원성)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(생식세포변이원성)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(생식독성)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(생식독성)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(특정 표적장기 독성 (1회 노출))

OECD Screening Information Data Set (<http://cs3-hq.oecd.org/scripts/hpv/>)(Specific Target Organ Toxicity (One Exposure)

International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>)(Specific Target Organ Toxicity (Repeated Exposure)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(특정 표적장기 독성 (반복 노출))

SIDS(어류)

SIDS(갑각류)

SIDS(조류)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(잔류성)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(생분해성)

구리 폴리클로로프탈로시아닌 녹색(COPPER POLYCHLOROPHTHALOCYANINE GREEN)

ECHA(성상)

ECHA(색상)

GESTIS(나. 냄새)

ECHA(자. 인화성(고체, 기체))

ECHA(카. 증기압)

ECHA(타. 용해도)

ECHA(파. 증기밀도)

ECHA(하. 비중)

ECHA(거. n-옥탄올/물분배계수 (Kow))

ECHA(너. 자연발화온도)

ECHA(머. 분자량)

ECHA(경구)

ECHA(경피)

ECHA(피부부식성 또는 자극성)
ECHA(심한 눈손상 또는 자극성)
ECHA(피부과민성)
ECHA(생식세포변이원성)
ECHA(생식독성)
ECHA(특정 표적장기 독성 (1회 노출))
ECHA(특정 표적장기 독성 (반복 노출))
ECHA(어류)
ECHA(갑각류)
ECHA(조류)
ECHA(잔류성)
ECHA(농축성)
ECHA(생분해성)

ECHA(성상)|ECHA(색상)|ECHA(냄새)|Chemicalbook(녹는점/어는점)|ECHA(인화성(고체, 기체))|ECHA(증기압)|ECHA(용해도)|ECHA(비중)|Chemicalbook(분자량)|ECHA(경구)|ECHA(경피)|ECHA(피부부식성 또는 자극성)|ECHA(심한 눈손상 또는 자극성)|ECHA(피부과민성)|ECHA(생식세포변이원성)|ECHA(생식독성)|ECHA, BASF-test(특정 표적장기 독성 (1회 노출))|ECHA(특정 표적장기 독성 (반복 노출))|ECHA(어류)|ECHA(갑각류)|ECHA(조류)|ECHA(잔류성)|ECHA(농축성)|ECHA(기타 유해 영향)|ECHA(생분해성)

C.I. 색소 오렌지 34(C.I. PIGMENT ORANGE 34)

EPISUITE(타. 용해도)
EPISUITE(거. n-옥탄올/물분배계수 (Kow))
NLM(머. 분자량)
Galaxie Chemicals(경구)
EPISUITE(잔류성)
EPISUITE(농축성)
EPISUITE(생분해성)
EPISUITE(라. 토양이동성)

4차 암모늄 화합물, 비스(수소산 수지 알킬) 다이메틸, 벤토나이트와의 염(QUATERNARY AMMONIUM...

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(성상)
International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(카. 증기압)
OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(가. 가능성이 높은 노출 경로에 관한 정보)
OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(경구)
International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(흡입)
SIDS(피부부식성 또는 자극성)
SIDS(심한 눈손상 또는 자극성)
SIDS(피부과민성)
SIDS(특정 표적장기 독성 (반복 노출))
Seton compliance resource center(<http://www.setonresourcecenter.com/MSDSs>)

디로린산 디뷰틸틴

ECHA(성상)
ECHA(색상)
ECHA(마. 녹는점/어는점)
ECHA(바. 초기 끓는점과 끓는점 범위)
ECHA(사. 인화점)
HSDB(자. 인화성(고체, 기체))
ECHA(카. 증기압)
ECHA(타. 용해도)
ECHA(파. 증기밀도)
ECHA(하. 비중)
ECHA(거. n-옥탄올/물분배계수 (Kow))
ECHA(너. 자연발화온도)
ECHA(러. 점도)
ECHA(머. 분자량)
ECHA(경구)
ECHA(경피)
ECHA(피부부식성 또는 자극성)

- ECHA(심한 눈손상 또는 자극성)
- ECHA(피부과민성)
- ECHA(생식세포변이원성)
- ECHA(생식독성)
- ECHA(특정 표적장기 독성 (1회 노출))
- ECHA(특정 표적장기 독성 (반복 노출))
- ECHA(어류)
- ECHA(갑각류)
- ECHA(조류)
- ECHA(잔류성)
- ECHA(분해성)
- ECHA(농축성)
- ECHA(생분해성)
- 2-Ethylhexanoic acid zinc salt
- ECHA(성상)

ECHA (Color)

- ECHA (Melting Point/Frozen Point)
- ECHA (F. Initial Boiling Point and Boiling Point Range)
- EPISUITE
- ECHA (Tar. Solubility)
- ECHA (b. weight)
- ECHA (Ger. n-octanol/water distribution coefficient (Kow))
- ECHA (Old)
- ECHA (Percutaneous)
- ECHA (Inhalation)
- ECHA (Skin Corrosion or Irritation)
- ECHA (severe eye damage or irritation)
- ECHA (Skin Sensitivity)
- ECHA (Growth Cell Mutagenicity)
- ECHA (Growth Toxic)
- ECHA (specific target organ toxicity (1 exposure)
- ECHA (Specific Target Organ Toxicity (Repeated Exposure)
- ECHA (Fish)
- ECHA (crustacea)
- ECHA (Residual)
- ECHA (Concentrated)
- ECHA (biodegradable)
- ECHA (D. Soil Mobility)
- ECHA (E. Other Hazardous Effects)

- B. Date of initial preparation2026-07-07
- C. Number of revisions and last revision date
 - Number of revisions
 - Last revision date
- D. Other

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