

## 1. Identification

- A. Product name : Hilac Plus Silver (NZ)  
 Usage category : Oil paint
- B. Recommended Use and Restriction on Use  
 General use : 칠재/목재용 락카  
 Restriction on use : Restricted to use other than recommended use
- C. Manufacturer / Supplier / distributor information  
 Company name : NOROO Paint & Coatings Co., Ltd.  
 Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea  
 Emergency telephone number : +82-31-467-6114

## 2. Hazard identification

- A. GHS Classification  
 Flammable liquids Category 2  
 Acute toxicity (inhalation: vapor) Category 4  
 Acute Toxicity (Inhalation: dust / mist) Category 4  
 Carcinogenicity Category 1B  
 Germ cell mutagenicity Category 1B  
 Chronic aquatic toxicity Category 3  
 Serious eye damage/irritation Category 2A  
 Specific target organ toxicity(Single exposure) Category 2  
 Specific target organ toxicity(Single exposure) Category 3 (respiratory irritation)  
 Specific target organ toxicity(Repeated exposure) Category 1  
 Specific target organ toxicity(Repeated exposure) Category 2  
 Skin sensitization Category 1  
 Skin corrosion/irritation Category 2  
 Respiratory sensitization Category 1  
 Aspiration hazard Category 1  
 Ozone Layer Hazards  
 Acute toxicity (oral) Category 5  
 Acute toxicity (dermal) Category 5

B. GHS label elements

- Hazard symbols



- Signal words : DANGER

- Hazard statements :

- H225 Highly flammable liquid and vapour  
 H332 Harmful if inhaled  
 H350 May cause cancer  
 H340 May cause genetic defects  
 H412 Harmful to aquatic life with long lasting effects  
 H319 Causes serious eye irritation  
 H371 Causes damage to the immune system and kidneys in the body. (Refer Section SDS 11)  
 H335+H336 May cause respiratory irritation, May cause drowsiness and dizziness.  
 H372 Prolonged or repeated exposure may cause lung damage to the body (Refer Section SDS 11)  
 H373 Prolonged or repeated exposure may cause damage to the liver, testes, skin, respiratory system, blood and central nervous system of the body (Refer Section SDS 11)  
 H317 May cause an allergic skin reaction  
 H315 Causes skin irritation  
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H304 May be fatal if swallowed and enters airways  
 H420 It destroys the upper layer of the ozone layer and is harmful to public health and environment.  
 H303 May be harmful if swallowed.  
 H313 May be harmful in contact with skin.

- Precautionary statements

- Prevention

- P210 Keep away from heat, hot surfaces, sparks, open flames and other sources of ignition. no smoking  
 P223 Do not contact with water  
 P240 Ground container and receiving equipment  
 P241 Use explosion-proof equipment (electricity, ventilation, lighting, etc.)  
 P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3  
 P243 Take precautionary measures against static discharge.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.  
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
 P271 Use only outdoors or in a well-ventilated area.  
 P201 Obtain special instructions before use.

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

P273 Avoid release to the environment.

P264 Wash hands and contact areas thoroughly after handling.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P284 (In case of poor ventilation) Wear respiratory protection.

- Response

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P308+P313 If exposed or concerned: Get medical advice / attention.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists, get medical attention / attention.

P308+P311 If exposed or concerned: Get medical advice / attention.

P314 Get medical advice/attention if you feel unwell.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P321 Specific treatment

P362+P364 Take off contaminated clothing and wash before reuse.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P342+P311 If respiratory symptoms occur, get medical attention.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P331 Do NOT induce vomiting.

- Storage

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store by locking.

P403+P233 Store in a well-ventilated place. Keep container tightly closed

- Disposal

P501 Dispose of the contents and containers in accordance with waste-related laws.

P502 Please refer to the information on (recycling/recycling) provided by (manufacturer/supplier).

C. Other hazards which do not result in classification : (NFPA Classification)

Chemical Name	NFPA grade	Health	Flammability	Reactivity	GHS Classification
Dimethyl carbonate		1	3	1	H225, H303, H313
Toluene		2	3	0	H225, H303, H304, H313, H315, H319, H373
Xylene		NO DATA	NO DATA	NO DATA	H225, H303, H304, H313, H315, H319, H332, H335+H336, H372
S1(Trade secrets)		NO DATA	NO DATA	NO DATA	NO DATA
4-Methyl-2-pentanone		1	3	0	H225, H303, H313, H332
Nitrocellulose		1	3	3	H303, H317
Acetic acid ethyl ester		1	3	0	H225, H303, H313, H335+H336
S1(Trade secrets)		NO DATA	NO DATA	NO DATA	NO DATA
n-Butyl acetate		2	3	0	H225, H303, H313, H335+H336
Hydrogenated hydrocarbons (C=6-20) polymers		1	1	0	NO DATA
Acetone		1	3	0	H225, H303, H313, H335+H336
Ethylbenzene		2	3	0	H225, H303, H304, H313, H315, H319, H332, H335+H336, H373, H420
Aluminium		0	3	1	H303, H373, H412
Methyl Ethyl Ketone		1	3	0	H225, H303, H313, H315, H319, H335+H336, H371, H372
Gum rosin		4	1	0	H303, H313, H317, H332, H334, H412
Solvent naphtha (petroleum), light arom.		1	2	0	H225, H303, H304, H313, H340, H350, H412
Naphtha (petroleum), hydrotreated heavy		1	3	0	H225, H303, H304, H313, H340, H350, H373, H412

### 3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content (%)
Dimethyl carbonate	Dimethyl carbonate	616-38-6	13~23
Toluene	Toluene	108-88-3	15~25
Xylene	Xylene	1330-20-7	11~21
S1(Trade secrets)	Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil		11~21
4-Methyl-2-pentanone	4-Methyl-2-pentanone	108-10-1	4~14
Nitrocellulose	Nitrocellulose	9004-70-0	6~16
Acetic acid ethyl ester	Acetic acid ethyl ester	141-78-6	4~14
S1(Trade secrets)	C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)		2~12
n-Butyl acetate	n-Butyl acetate	123-86-4	1~10
Hydrogenated hydrocarbons (C=6-20) polymers	Hydrogenated hydrocarbons (C=6-20) polymers	69430-35-9	1~10
Acetone	Acetone	67-64-1	1~10
Ethylbenzene	Ethylbenzene	100-41-4	1~10
Aluminium	Aluminium	7429-90-5	1~10
Methyl Ethyl Ketone	Methyl Ethyl Ketone	78-93-3	1~10
Gum rosin	Gum rosin	8050-09-7	1~10
Naphtha (petroleum), hydrotreated heavy	Naphtha (petroleum), hydrotreated heavy	64742-48-9	0.1~4
Solvent naphtha (petroleum), light arom.	Solvent naphtha (petroleum), light arom.	64742-95-6	0.1~4

### 4. First-aid measures

- A. Eye Contact : Flush exposed eyes with plenty of water for more than 15minutes.  
If irritation, pain, swelling, tears or glaring happens, take medical assistant immediately  
Do not rub your eyes.  
If you wear a contact lenses, remove them first.
- B. Skin Contact : Remove exposed clothing, and wash off exposed area with soap and water.  
If symptoms like irritation or pain occurs, take medical assistant immediately.  
Wash off with soap and water for more than 15 minutes. And take medical assistant immediately.  
If symptoms like redness or irritation occurs, take medical assistant immediately.  
Wash carefully after handling.  
Wear gloves while washing the patient and avoid contact with exposed clothes.
- C. Inhalation : Avoid from exposure, and move into an area with fresh air.  
If not breathing, perform the artificial respiration.  
If inhaled or swallowed, do not perform the inhalation phase of breathing  
Perform the artificial respiration, using the pocket mask with one way valves or other respiratory medical devices.  
If hard to breathe, administering oxygen  
Remove contaminated clothing and shoes, and isolate it.  
Take a medical assistant immediately.
- D. Ingestion Contact : Inducing vomit.  
If unconscious, do not induce vomiting. In case of vomiting, keep head down under hip to prevent lung inhalation.  
If ingested large quantity, take medical assistant.  
Take proper medical assistant by symptoms.  
It is need to be considered that early removal of some ingested material by gastric lavage must be weighed against potential complications of bleeding or perforation  
Flush mouth with water immediately.
- E. Notes to Physician : There is no specific antidote and take an appropriate medical treatment.

### 5. Fire-fighting measures

- A. Suitable (Unsuitable) extinguishing media
- Suitable extinguishing media : Powder extinguishing agent, gaseous Extinguishing Agent, and regular foam.
  - (Unsuitable) extinguishing media : Avoid digestion using direct water.  
Avoid use waterjet as fire extinguishing agent.  
Avoid extinguishing fire with halogenting agent.
  - Case of big fire : Spread large amount of the extinguishing agent as a mist form with staying against wind.  
Stay away more than 800m to avoid tank explosion.  
Use appropriate protective device depend on the situation.
- B. Specific hazards arising from the chemical
- Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds  
Irritating and highly toxic gases may produced during the combustion by pyrolysis or combustion itself.
  - Fire and Explosion danger : Risk of medium-sized fire.

Aqueous (Exclude water-soluble one) products does not have risk of fire or explosion hazard by itself.  
Vapor may be released to the ignition source and ignited.  
May form explosive mixture at or above ignition point  
Container may explode when heating  
Leakages may fire / explosion hazard and could be easily ignited by heat, sparks or flames.  
Vapors may explode indoors, outdoors, and in drains

C. Special protective actions for fire-fighters

- Personal Precautions, protective equipment : Gas mask or air respirator, heat resistant clothing, heat resistant helmet, heat resistant gloves, heat resistant boots
- Emergency procedures : Use appropriate extinguishing agents to catch fire.  
If there is no risk, moving containers away from fire.  
Cooling containers with water long time after extinguish fire.  
Block the area except for the fire-suppression personnel.  
Protect others from access and prohibit access to dangerous areas.  
Tell the fire department, location of the fire and the hazardous features.  
Use an unmanned fire extinguishing device, in case of large-sized fire. If not, leave it to burn.  
Avoid inhalation of the substance or combustion products.  
Do not approach if the tank is on fire.

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## 6. Accidental release measures

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A. Personal Precautions, protective equipment and emergency procedures

- Personal Precautions, protective equipment : Gas mask for organic gases, other appropriate protective device / clothing / gloves.
- Emergency procedures : Take an action to block the leakage if there is no risk.  
Spray water to reduce amount of steam.  
Do work with the personal protected devices such as gas mask for organic gases other appropriate protective devices / clothing / gloves.  
Do not contact on the bare skin

B. Environmental precautions

- Atmosphere : Do install the local ventilations and full ventilation system  
Using local ventilation to Minimize the exposure to worker.
- Soil : Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.  
Use absorbent to collect the appropriate container.
- Under water : Use absorbent to collect the appropriate container.  
Collect spilled material with mechanic devices

C. Methods and materials for containment and cleaning up

- Small spill : Absorb for use sand or other non-combustible material.  
Move to appropriate container for disposal of spilled material collected.
- Large spill : Prohibit access of unnecessary people, isolate hazard area to secure.  
Notify to central and local government, when emissions are above regulation.

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## 7. Handling and storage

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A. Precautions for safe handling : Keep or handle followed by Dangerous goods Safety Management Act

Ground for preventing the static discharge  
Seal the container for minimizing the petroleum steam  
Use local ventilations and a full ventilation system when handling  
Wash carefully after handling.  
Avoid contact with prohibited materials in mixture.  
Do not handle until read and understood all safety precautions.  
Do not inhale vapor for long-term or repeatedly.  
Avoid contact with heat, sparks, flames or other sources of ignition.  
Do not take contaminated clothings away from the work area.  
Storing with combustible substances such as stained clothes or paper may cause fire by spontaneous ignition. Thus do not stack it, and keep it in a non-flammable container with cap filled with water and dispose it.

B. Conditions for safe storage, including any incompatibilities : Because of evaporation and contamination concerns, airtight the container and store in a well-ventilated building.

Avoid direct sunlight while storing outdoor.  
Storage temperature: 5 ~ 35 °C  
Avoid strong oxidizing agents, acid.  
Stored in an isolated place, freezing caution, high temperature body caution.  
Storage temperature: 5 ~ 15 °C  
Storage temperature: 15 ~ 25 °C  
Storage temperature: 25 ~ 35 °C  
Store in a cool, dry, well-ventilated area.  
Check periodically for leaks  
Store in accordance with all current law and regulations.  
Store in original container only.  
Prevent static electricity and do not store near heat sources.  
Collect in an airtight container to dispose.  
Store away from waterworks and sewers.

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## 8. Exposure controls/personal protection

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A. Exposure Limits

- Dimethyl carbonate  
- ACGIH : NO DATA

- Biological exposure indices : NO DATA
- Toluene
  - ACGIH : NO DATA
  - Biological exposure indices : 血液中 Toluene : 0.02 mg/L(工作前), 尿中 Toluene : 0.03 mg/L(工作后), 尿中(with hydrolysis) o-Cresol : 0.3 mg/g creatinine(工作后)
- Xylene
  - ACGIH : NO DATA
  - Biological exposure indices : 尿中 Methylhippuric acids : 1.5 g/g creatinine(工作后)
- Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- 4-Methyl-2-pentanone
  - ACGIH : TWA, 20 ppm (82 mg/m<sup>3</sup>) STEL 75 ppm (307 mg/m<sup>3</sup>)
  - Biological exposure indices : 尿中 Methyl isobutyl ketone : 1 mg/L (工作后)
- Nitrocellulose
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Acetic acid ethyl ester
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- n-Butyl acetate
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Hydrogenated hydrocarbons (C=6-20) polymers
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Acetone
  - ACGIH : NO DATA
  - Biological exposure indices : 尿中 Acetone : 50 mg/g (工作后)
- Ethylbenzene
  - ACGIH : NO DATA
  - Biological exposure indices : 尿中 (Mandelic acid, Phenylglyoxylic acids 合计) : 0.15 g/g creatinine(工作后)
- Aluminium
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Methyl Ethyl Ketone
  - ACGIH : NO DATA
  - Biological exposure indices : 尿中 Methyl ethyl ketone : 2 mg/L (工作后)
- Gum rosin
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Solvent naphtha (petroleum), light arom.
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Naphtha (petroleum), hydrotreated heavy
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA

B. Engineering Controls :

- ▷ Do install the local ventilations and full ventilation system
- ▷ Using local ventilation to Minimize the exposure to worker.
- ▷ NO DATA
- ▷ NO DATA

C. Personal Protective Equipment

- Respiratory protection : Respirators should be authorized by Korea Occupational Safety and Health Agency  
Use the personal protect respirator for organic solvent or higher level of capacity when workers are supposed to be exposed under unsuitable respiratory working condition, or longer period exposure than standard level.  
Consider warning properties before use.  
Respiratory protection may be needed, while frequent use or heavy exposure.  
Respiratory protection is ranked in order from minimum to maximum  
If there is possibility of direct contact or exposure to these substances should wear a authorized dust-proof mask or respirator for organic compounds
- Eye protection : Use the respirator for organic solvent or higher level.  
Install washing facilities and an emergency washing facilities close to workplace.  
Let workers do wear the safety glasses in case hazard caused by mist may be expected.  
If there is possibility of direct contact or exposure to these substances should wear authorized safty glasses or mask.
- Hand protection : Do the workers wear the impermeable protective gloves made from rubber/PVC due to skin irritation may be supposed by chronicle and long period exposure.  
Wear the chemical protective gloves  
Wear appropriate protective gloves  
If there is possibility of direct contact or exposure to these substances should wear authorized safety gloves for

chemicals.

○ Skin protection : Work after wearing the impermeable protective apron made by rubber/PVC in case hazard caused by exposure or spill, wear the impermeable whole body protective clothing if needed.

Wear appropriate chemical protective clothing.

Wear cleanroom garment or appropriate protective clothing to prevent contamination

If there is a possibility of direct contact or exposure to the substance Wear protective clothing for chemical substances

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## 9. Physical and chemical properties

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- A. Appearance : 점성의 액체
- B. Odor : 특취
- C. Odor threshold : 자료없음
- D. PH : 자료없음
- E. Melting point/Freezing point(℃) : 자료없음
- F. Initial Boiling Point/Boiling Ranges(℃) : 자료없음
- G. Flash point(℃) : 10
- H. Evaporating Rate : 자료없음
- I. Flammability(solid, gas)(℃) : 자료없음
- J. Upper/Lower Flammability or explosive limits : 자료없음
- K. Vapour pressure : 자료없음
- L. Solubility : 물 불용성
- M. Vapour density : 자료없음
- N. Specific gravity : 1.2 ± 0.3
- O. Partition coefficient of n-octanol/water : 자료없음
- P. Autoignition temperature(℃) : 자료없음
- Q. Decomposition temperature(℃) : 자료없음
- R. Viscosity : 95~105KU
- S. Molecular weight : 자료없음

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## 10. Stability and reactivity

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- A. Chemical stability : NO DATA
- B. Possibility of hazardous reactions : Do not contact with heat, spark, flame or other flammable sources  
Avoid contaminants and friction
- C. Conditions to avoid : Oxidation agent, metal and combustable materials
- D. Hazardous decomposition products : Thermal decomposition products (carbon etc..)

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## 11. Toxicological information

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- A. Information on the likely routes of exposure
  - Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomitting
  - Oral : Vomitting, Diarrhea, Stomach pain, Irregular heartbeat
  - Skin : Irritation, Burn, Adverse nerve effects
  - Eye : Irritation, eye damage
- B. Delayed and immediate effects and also chronic effects from short and long term exposure
  - Dimethyl carbonate
    - Acute toxicity
      - Oral : LD50 = 13000 mg/kg Rat
      - Dermal : LD50 = 5000 mg/kg Rabbit
      - Inhalation : LD50 = 5000 mg/kg Rabbit
    - Skin corrosion/irritation : non-irritating(rabbit)
    - Serious eye damage/irritation : Mild irritant(rabbit)
    - Respiratory sensitization : NO DATA
    - Skin sensitization : NO DATA
    - Carcinogenicity
      - IARC : NO DATA
      - OSHA : NO DATA
      - ACGIH : NO DATA
      - NTP : NO DATA
      - EU CLP : NO DATA
    - Germ cell mutagenicity : NO DATA
    - Reproductive toxicity : NO DATA
    - STOT-single exposure : NO DATA
    - STOT-repeated exposure : NO DATA
    - Aspiration hazard : NO DATA
  - Toluene
    - Acute toxicity

- Oral : rat LD50=2600 mg/kg
- Dermal : rabbit LD50=12,000 mg/kg
- Inhalation : rabbit LD50=12,000 mg/kg
- Skin corrosion/irritation : Rabbit skin irritation test using the results of the Causes moderate irritation.
- Serious eye damage/irritation : Eyes irritant test using a rabbit raised for 6 days reversible irritation.
- Respiratory sensitization : NO DATA
- Skin sensitization : Tests with negative results Guinea
- Carcinogenicity
  - IARC : Group 3
  - OSHA : NO DATA
  - ACGIH : A4
  - NTP : NO DATA
  - EU CLP : NO DATA
- Germ cell mutagenicity : Dominant lethal test negative, positive micronucleus test, chromosome aberration test positive
- Reproductive toxicity : Dominant lethal test negative, positive micronucleus test, chromosome aberration test positive
- STOT-single exposure : Causes acts on the central nervous system in humans, fatigue, drowsiness, dizziness, respiratory irritation, agitation, vomiting, central nervous system depression, confusion, gait abnormalities. Eyes, nose, causing irritation of the throat. In experimental animals
- STOT-repeated exposure : Headaches accompanied by people from hearing loss or visual field constriction, or nystagmus, tremor, ataxia, loss of memory, such as chronic central nervous system disorder that appears. Noewichuk is observed. It appears kidney dysfunction such as hematuria or pro
- Aspiration hazard : NO DATA
- Xylene
  - Acute toxicity
    - Oral : LD50=3550 mg/kg rat
    - Dermal : LD50 4350 mg/kg Rabbit
    - Inhalation : LD50 4350 mg/kg Rabbit
  - Skin corrosion/irritation : Skin irritation test in rabbits Causes moderate irritation.
  - Serious eye damage/irritation : Skin irritation test in rabbits Causes moderate irritation.
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : Group 3
    - OSHA : NO DATA
    - ACGIH : A4
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : If three people a voice dynamics, somatic cell mutagenicity tests in vivo (micronucleus test, chromosome test) Voice
  - Reproductive toxicity : If three people a voice dynamics, somatic cell mutagenicity tests in vivo (micronucleus test, chromosome test) Voice
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : In the liquid can cause chemical pneumonia if swallowed.
- Carbomonoicyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
  - Acute toxicity
    - Oral : NO DATA
    - Dermal : NO DATA
    - Inhalation : NO DATA
  - Skin corrosion/irritation : NO DATA
  - Serious eye damage/irritation : NO DATA
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : NO DATA
  - Reproductive toxicity : NO DATA
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : NO DATA
- 4-Methyl-2-pentanone
  - Acute toxicity
    - Oral : LD50 2080 mg/kg Rat (NITE, ECHA)
    - Dermal : LD50 >16,000 mg/kg rabbit (NITE)
    - Inhalation : vapor LC50 8.2 ~ 16.4 mg/ℓ 4h Rat (ECHA)
  - Skin corrosion/irritation : Skin corrosion/irritation test results in rabbits, no irritation observed OECD TG 404 (ECHA)
  - Serious eye damage/irritation : As a result of severe eye damage/irritation test using rabbits, a weak irritation corneal index of 0.08, iris of 0, and congestion of 0.8 were observed OECD TG 405 (ECHA)
  - Respiratory sensitization : NO DATA
  - Skin sensitization : Skin sensitization test on guinea pigs, did not cause sensitization (ECHA)
  - Carcinogenicity
    - IARC : Group 2B
    - OSHA : NO DATA
    - ACGIH : A3
    - NTP : NO DATA

EU CLP : NO DATA

- Germ cell mutagenicity : Bacterial reversion mutation test results using in vitro microorganisms OECD TG 476, mammalian chromosome abnormality test results OECD TG 473, negative in the absence of metabolic activity system, micronucleus test results using mammalian red blood cells in vivo, negative OECD TG 474, GLP (ECHA)
- Reproductive toxicity : As a result of developmental toxicity/teratogenicity test using rats, kidney weight increase, fetal weight loss, and ossification delay were observed, but no evidence of anomaly was observed (NOAEL 1 000 ppm) (ECHA)
- STOT-single exposure : salam-eseo gido · jeommag jageugseong, dutong · hyeongijeung · guto deung-ui machwi jag-yong-eul subanhaneun jungchu singyeong jeungsang-i natanam, dongmul silheom-eseo machwi jag-yong-i natanam. (NITE)82/5000In humans, symptoms of central nervous system accompanied by anesthetic action such as airway/mucosal irritation, headache, dizziness, and vomiting appear. Anesthesia is shown in animal experiments. (NITE)
- STOT-repeated exposure : 90-day oral repeat toxicity test OECD TG408 results NOAEL 250 mg/kg bw/day (ECHA) due to increase in kidney weight
- Aspiration hazard : NO DATA

○ Nitrocellulose

- Acute toxicity
  - Oral : LD50 > 5000 mg/kg Rat
  - Dermal : NO DATA
  - Inhalation : NO DATA
- Skin corrosion/irritation : NO DATA
- Serious eye damage/irritation : NO DATA
- Respiratory sensitization : NO DATA
- Skin sensitization : NO DATA
- Carcinogenicity
  - IARC : NO DATA
  - OSHA : NO DATA
  - ACGIH : NO DATA
  - NTP : NO DATA
  - EU CLP : NO DATA
- Germ cell mutagenicity : NO DATA
- Reproductive toxicity : NO DATA
- STOT-single exposure : The high concentration of people and stimulate the neck, dizziness, that is likely to cause difficulty breathing and loss of consciousness
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

○ Acetic acid ethyl ester

- Acute toxicity
  - Oral : LD50 5620 mg/kg Rat
  - Dermal : LD50 > 18000 mg/kg Rabbit
  - Inhalation : LD50 > 18000 mg/kg Rabbit
- Skin corrosion/irritation : Unstimulated human and rabbit
- Serious eye damage/irritation : Since the stimulus is shown, but recovered within seven days from the eyes of rabbits nine minutes outside (nite).
- Respiratory sensitization : NO DATA
- Skin sensitization : Skin sensitization tests in humans and rabbits negative
- Carcinogenicity
  - IARC : NO DATA
  - OSHA : NO DATA
  - ACGIH : NO DATA
  - NTP : NO DATA
  - EU CLP : NO DATA
- Germ cell mutagenicity : In vivo micronucleus test negative
- Reproductive toxicity : In vivo micronucleus test negative
- STOT-single exposure : It causes upper respiratory tract irritation in humans. When exposed to near lethal levels of anesthesia and the concentration causing lung damage.
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

○ C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)

- Acute toxicity
  - Oral : NO DATA
  - Dermal : NO DATA
  - Inhalation : NO DATA
- Skin corrosion/irritation : NO DATA
- Serious eye damage/irritation : NO DATA
- Respiratory sensitization : NO DATA
- Skin sensitization : NO DATA
- Carcinogenicity
  - IARC : NO DATA
  - OSHA : NO DATA
  - ACGIH : NO DATA
  - NTP : NO DATA
  - EU CLP : NO DATA
- Germ cell mutagenicity : NO DATA
- Reproductive toxicity : NO DATA
- STOT-single exposure : NO DATA
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

○ n-Butyl acetate

- Acute toxicity



- Oral : LD50 = 14130 mg/kg Rat
- Dermal : LD50 = 17600 mg/kg Rabbit
- Inhalation : LD50 = 17600 mg/kg Rabbit
- Skin corrosion/irritation : Causes a weak stimulus person.
- Serious eye damage/irritation : Non-irritating to rabbit eye irritation
- Respiratory sensitization : NO DATA
- Skin sensitization : Not a skin sensitizer
- Carcinogenicity
  - IARC : NO DATA
  - OSHA : NO DATA
  - ACGIH : NO DATA
  - NTP : NO DATA
  - EU CLP : NO DATA
- Germ cell mutagenicity : NO DATA
- Reproductive toxicity : NO DATA
- STOT-single exposure : Central nervous system disorders who, pulmonary edema, respiratory irritation.
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA
- Hydrogenated hydrocarbons (C=6-20) polymers
  - Acute toxicity
    - Oral : NO DATA
    - Dermal : NO DATA
    - Inhalation : NO DATA
  - Skin corrosion/irritation : NO DATA
  - Serious eye damage/irritation : NO DATA
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : NO DATA
  - Reproductive toxicity : NO DATA
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : NO DATA
- Acetone
  - Acute toxicity
    - Oral : LD50 = 5280 mg/kg Rat (EHC(1990), SIDS(1997))
    - Dermal : LD50 = 12870 mg/kg rabbit (EHC(1990), PATTY(1994), SIDS(1997))
    - Inhalation : LD50 = 12870 mg/kg rabbit (EHC(1990), PATTY(1994), SIDS(1997))
  - Skin corrosion/irritation : (using rabbit) skin Irritation test result non-irritating
  - Serious eye damage/irritation : Irritating to eyes of the person vapor exposure is stopped, but not sustained stimulation. The destruction of the corneal epidermis Restored in 4-6 days.
  - Respiratory sensitization : NO DATA
  - Skin sensitization : negative test result mouse, guinea pig test results negative
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : A4
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : Micronucleustest Negative
  - Reproductive toxicity : Micronucleustest Negative
  - STOT-single exposure : People in the nose, airway, bronchial irritation, exposure to high concentrations headaches, dizziness, loss of strength of the leg, causing fainting.
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : Seongryul tie 0.426 mm<sup>2</sup> / s (calculated)
- Ethylbenzene
  - Acute toxicity
    - Oral : LD50 = 3500 mg/kg Rat
    - Dermal : LD50 = 15400 mg/kg Rabbit
    - Inhalation : Steam LC50 = 4000 ppm 4 hr Rat (Equivalents : 17.4 mg/L)
  - Skin corrosion/irritation : skin Irritation test result weak Irritation
  - Serious eye damage/irritation : Rabbit eye irritation test results in a slight conjunctival irritation, recoverable damage.
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : Group 2B
    - OSHA : NO DATA
    - ACGIH : A3
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : Micronucleustest Negative (7)
  - Reproductive toxicity : Micronucleustest Negative (7)
  - STOT-single exposure : It causes central nervous system effects in laboratory animals and airway irritation.
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : Hydrocarbons. Swallowing the liquid by aspiration may cause chemical pneumonia. Ties seongryul 0.74 mm<sup>2</sup> / s (25 °C)

- Aluminium
  - Acute toxicity
    - Oral : NO DATA
    - Dermal : NO DATA
    - Inhalation : NO DATA
  - Skin corrosion/irritation : NO DATA
  - Serious eye damage/irritation : NO DATA
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : A4
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : NO DATA
  - Reproductive toxicity : NO DATA
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : NO DATA
- Methyl Ethyl Ketone
  - Acute toxicity
    - Oral : LD50 2737 mg/kg Rat
    - Dermal : LD50 6480 mg/kg rabbit
    - Inhalation : LD50 6480 mg/kg rabbit
  - Skin corrosion/irritation : Moderate irritation (Rabbit)
  - Serious eye damage/irritation : It appears not to be irritating by vapor exposure in humans.
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : Mammalian erythrocyte micronucleus test using Voice
  - Reproductive toxicity : Mammalian erythrocyte micronucleus test using Voice
  - STOT-single exposure : In the rat or mouse inhalation exposure test results appear in the relatively low concentration the effect on the central nervous system. It appears also affect the kidneys at concentrations in the rat courtyard. This prayer appears irritant by inhalation exposure
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : Ketones less than 13 carbon atoms
- Gum rosin
  - Acute toxicity
    - Oral : LD50 = 3 mg/kg Rat
    - Dermal : LD50 = 2500 mg/kg rabbit
    - Inhalation : LD50 = 2500 mg/kg rabbit
  - Skin corrosion/irritation : Using rat skin Irritation test result weak Irritation
  - Serious eye damage/irritation : Test results using rat low irritant not irritant
  - Respiratory sensitization : Also known as skin and respiratory sensitizer
  - Skin sensitization : Reported by contact between skin sensitization
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : NO DATA
  - Reproductive toxicity : NO DATA
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : NO DATA
- Solvent naphtha (petroleum), light arom.
  - Acute toxicity
    - Oral : LD50 = 8400 mg/kg Rat
    - Dermal : LD50 > 2000 mg/kg Rabbit
    - Inhalation : LD50 > 2000 mg/kg Rabbit
  - Skin corrosion/irritation : weakstimulus(rabbit)
  - Serious eye damage/irritation : Mild irritant(rabbit)
  - Respiratory sensitization : NO DATA
  - Skin sensitization : Non-sensitizer (Guinea pig)
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : Carc. 1B
  - Germ cell mutagenicity : EU CLP: 1B (case containing less than 0.1% of the benzene in a weight ratio of the material not applied to the present classification)
  - Reproductive toxicity : EU CLP: 1B (case containing less than 0.1% of the benzene in a weight ratio of the material not applied to the present classification)

- STOT-single exposure : Affecting the central nervous system. Inhalation of high concentrations vapors may cause loss of consciousness.
- STOT-repeated exposure : NO DATA
- Aspiration hazard : Harmful aspiration concerns
- Naphtha (petroleum), hydrotreated heavy
  - Acute toxicity
    - Oral : LD50 > 15000 mg/kg Rat
    - Dermal : LD50 > 3160 mg/kg Rabbit
    - Inhalation : LD50 > 3160 mg/kg Rabbit
  - Skin corrosion/irritation : non-irritating(rabbit)
  - Serious eye damage/irritation : Non-irritating(rabbit)
  - Respiratory sensitization : NO DATA
  - Skin sensitization : NO DATA
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : Carc. 1B
  - Germ cell mutagenicity : in vitro, in vivo Mutagenicresult Negative
  - Reproductive toxicity : in vitro, in vivo Mutagenicresult Negative
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : If swallowed, aspiration into the lungs with liquid may cause chemical pneumonitis.

## 12. Ecological information

### A. Ecotoxicity

- Dimethyl carbonate
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- Toluene
  - Fish : LC50 24 mg/ℓ 96 hr *Oncorhynchus mykiss*
  - Crustaceans : EC50 11.5 mg/ℓ 48 hr *Daphnia magna*
  - Algae : NO DATA
- Xylene
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- Carbomono-cyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- 4-Methyl-2-pentanone
  - Fish : ECHA LD50 >179 mg/ℓ 96 hr *Brachydanio rerio* (ECHA)
  - Crustaceans : ECHA EC50 >200 mg/ℓ 48 hr *Daphnia magna* (ECHA)
  - Algae : NO DATA
- Nitrocellulose
  - Fish : LC50 = 1000 mg/ℓ 96 hr
  - Crustaceans : NO DATA
  - Algae : EC50 = 579 mg/ℓ 96 hr
- Acetic acid ethyl ester
  - Fish : LC50 230 mg/ℓ 96 hr *Pimephales promelas*
  - Crustaceans : EC50 717 mg/ℓ 48 hr *Daphnia magna*
  - Algae : EC50 1800 ~ 3200 mg/ℓ 72 hr (*Selenastrum* sp.)
- C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- n-Butyl acetate
  - Fish : LC50 = 62 mg/ℓ 96 hr
  - Crustaceans : LC50 = 32 mg/ℓ 48 hr
  - Algae : NO DATA
- Hydrogenated hydrocarbons (C=6-20) polymers
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- Acetone
  - Fish : LC50 > 100 mg/ℓ 96 hr
  - Crustaceans : NO DATA
  - Algae : NO DATA
- Ethylbenzene
  - Fish : LC50 = 9.09 mg/ℓ 96 hr
  - Crustaceans : LC50 = 0.4 mg/ℓ 96 hr
  - Algae : NO DATA
- Aluminium
  - Fish : NO DATA
  - Crustaceans : NO DATA
  - Algae : NO DATA
- Methyl Ethyl Ketone

- Fish : LC50 3220 mg/ℓ 96 hr Pimephales promelas
  - Crustaceans : EC50 5091 mg/ℓ 48 hr Daphnia magna
  - Algae : EC50 > 500 mg/ℓ 96 hr Skeletonema costatum
  - Gum rosin
    - Fish : NO DATA
    - Crustaceans : EC50 = 4.5 mg/ℓ 48 hr
    - Algae : NO DATA
  - Solvent naphtha (petroleum), light arom.
    - Fish : LC50 = 9.22 mg/ℓ 96 hr Oncorhynchus mykiss
    - Crustaceans : EC50 = 6.14 mg/ℓ 48 hr Daphnia magna
    - Algae : EC50 = 19 mg/ℓ 72 hr Selenastrum capricornutum
  - Naphtha (petroleum), hydrotreated heavy
    - Fish : LC50 = 2200 mg/ℓ 96 hr Pimephales promelas
    - Crustaceans : LC50 = 2.6 mg/ℓ 96 hr (Species: Chaetogammarus marinus)
    - Algae : NO DATA
- B. Persistence and degradability
- Dimethyl carbonate
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Toluene
    - Persistence : log Kow 2.73
    - Degradability : NO DATA
  - Xylene
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
    - Persistence : NO DATA
    - Degradability : NO DATA
  - 4-Methyl-2-pentanone
    - Persistence : log Kow 1.9 (ECHA)
    - Degradability : NO DATA
  - Nitrocellulose
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Acetic acid ethyl ester
    - Persistence : log Kow 0.73
    - Degradability : BOD5/COD 0.81
  - C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
    - Persistence : NO DATA
    - Degradability : NO DATA
  - n-Butyl acetate
    - Persistence : log Kow = 1.78
    - Degradability : NO DATA
  - Hydrogenated hydrocarbons (C=6-20) polymers
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Acetone
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Ethylbenzene
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Aluminium
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Methyl Ethyl Ketone
    - Persistence : log Kow 0.29
    - Degradability : NO DATA
  - Gum rosin
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Solvent naphtha (petroleum), light arom.
    - Persistence : log Kow = 2.1 ~ 6 (Estimates)
    - Degradability : BOD5/COD = 0.43
  - Naphtha (petroleum), hydrotreated heavy
    - Persistence : log Kow = 2.1 ~ 6 (Estimates)
    - Degradability : NO DATA
- C. Bioaccumulative potential
- Dimethyl carbonate
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Toluene
    - Bioaccumulative potential : NO DATA
    - Biodegradation : 86 (%) 20 day
  - Xylene
    - Bioaccumulative potential : NO DATA
    - Biodegradation : 39 (%)
  - Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
    - Bioaccumulative potential : NO DATA

- Biodegradation : NO DATA
  - 4-Methyl-2-pentanone
    - Bioaccumulative potential : NO DATA
    - Biodegradation : 83% 28 day (ECHA)
  - Nitrocellulose
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Acetic acid ethyl ester
    - Bioaccumulative potential : BCF 30
    - Biodegradation : 100 (%) 28 day
  - C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - n-Butyl acetate
    - Bioaccumulative potential : NO DATA
    - Biodegradation : Biodegradability = 98 (%)
  - Hydrogenated hydrocarbons (C=6-20) polymers
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Acetone
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Ethylbenzene
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Aluminium
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Methyl Ethyl Ketone
    - Bioaccumulative potential : NO DATA
    - Biodegradation : 89 (%) 20 day
  - Gum rosin
    - Bioaccumulative potential : NO DATA
    - Biodegradation : Biodegradability = 36 ~ 48 (%)
  - Solvent naphtha (petroleum), light arom.
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Naphtha (petroleum), hydrotreated heavy
    - Bioaccumulative potential : NO DATA
    - Biodegradation : Biodegradability = 10 (%) 28 day (Aerobic, Activated Sludge, Domestic wastewater, Does not decompose easily)
- D. Mobility in soil
- Dimethyl carbonate
    - ▷ NO DATA
  - Toluene
    - ▷ NO DATA
  - Xylene
    - ▷ log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
  - Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
    - ▷ NO DATA
  - 4-Methyl-2-pentanone
    - ▷ Koc 101.85 (Estimate)
  - Nitrocellulose
    - ▷ NO DATA
  - Acetic acid ethyl ester
    - ▷ NO DATA
  - C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
    - ▷ NO DATA
  - n-Butyl acetate
    - ▷ NO DATA
  - Hydrogenated hydrocarbons (C=6-20) polymers
    - ▷ NO DATA
  - Acetone
    - ▷ NO DATA
  - Ethylbenzene
    - ▷ log Kow = 3.15 (11)
  - Aluminium
    - ▷ NO DATA
  - Methyl Ethyl Ketone
    - ▷ NO DATA
  - Gum rosin
    - ▷ NO DATA
  - Solvent naphtha (petroleum), light arom.
    - ▷ NO DATA
  - Naphtha (petroleum), hydrotreated heavy
    - ▷ NO DATA
- E. Other adverse effects
- Dimethyl carbonate

- NO DATA
- Toluene
  - NO DATA
- Xylene
  - NO DATA
- Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3-7)triol and fatty acids, vegetable-oil
  - NO DATA
- 4-Methyl-2-pentanone
  - crustaceans(Daphnia magna) : NOEC 21 d=78 mg/L (ECHA)
- Nitrocellulose
  - NO DATA
- Acetic acid ethyl ester
  - NO DATA
- C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)
  - NO DATA
- n-Butyl acetate
  - NO DATA
- Hydrogenated hydrocarbons (C=6-20) polymers
  - NO DATA
- Acetone
  - NO DATA
- Ethylbenzene
  - NO DATA
- Aluminium
  - Shellfish: NOEC(Cyclops) 101 mg/L/48hr
- Methyl Ethyl Ketone
  - NO DATA
- Gum rosin
  - NO DATA
- Solvent naphtha (petroleum), light arom.
  - NO DATA
- Naphtha (petroleum), hydrotreated heavy
  - NO DATA

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### 13. Disposal considerations

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- A. Disposal methods : Disposal material should keep in the airtighted container, and consign according to Waste Mateial Management Act  
 Pre-treat with oil-water separation method when it is available.  
 Recycle the recycleable materials, such as organic solvents, and then incinerate the residue at high temperature.  
 To prevent environmental pollution, dispose it to a licensed waste disposal company.
- B. Special precautions for disposal : Prohibit the unauthorized disposal and incineration due to adversely affect natural ecosystems  
 Discard it followed by appropriate regulations

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### 14. Transport information

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- A. UN number : 1263
- B. Proper shipping name : Paint (including paint, lacquer, enamel, colorants, shellac solutions, varnish, polish, liquid filler and liquid lacquer sealer) or related materials (including paint diluent and reductant).
- C. Hazard class : 3
- D. Packing group : II
- E. Marine pollutant : N/A
- F. Special precautions for user related to transport or transportation measures
- EmS FIRE SCHEDULE : F-E
  - EmS SPILLAGE SCHEDULE : S-E

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### 15. Regulatory information

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- Dimethyl carbonate
  - Information of EU Classification
    - Classification : NO DATA
    - Risk Phrases : NO DATA
    - Safety Phrase : NO DATA
  - U.S. Federal regulations
    - OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - CERCLA Section 103 (40CFR302.4) : notapplicable
    - EPCRA Section 302 (40CFR355.30) : notapplicable
    - EPCRA Section 304 (40CFR355.40) : notapplicable
    - EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Toluene
  - Information of EU Classification
    - Classification : NO DATA
    - Risk Phrases : NO DATA
    - Safety Phrase : NO DATA

- U.S. Federal regulations
  - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
  - ▷ CERCLA Section 103 (40CFR302.4) : 453.599 kg 1000 lb
  - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
  - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
  - ▷ EPCRA Section 313 (40CFR372.65) : pertinent
- Rotterdam Convention listed ingredients : NO DATA
- Stockholm Convention listed ingredients : NO DATA
- Montreal Protocol listed ingredients : NO DATA
- Xylene
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 45.3599 kg 100 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : pertinent
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Carbomonocyclic-dicarboxylic anhydride polymer with alkane(C=3~7)triol and fatty acids, vegetable-oil
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : NO DATA
    - ▷ CERCLA Section 103 (40CFR302.4) : NO DATA
    - ▷ EPCRA Section 302 (40CFR355.30) : NO DATA
    - ▷ EPCRA Section 304 (40CFR355.40) : NO DATA
    - ▷ EPCRA Section 313 (40CFR372.65) : NO DATA
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- 4-Methyl-2-pentanone
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : NO DATA
    - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : NO DATA
    - ▷ EPCRA Section 304 (40CFR355.40) : NO DATA
    - ▷ EPCRA Section 313 (40CFR372.65) : Applicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Nitrocellulose
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : pertinent
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Acetic acid ethyl ester
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- C(C=8-18) and C(C=10-18) unsaturated alkyl carboxylic acid, polymer with trihydroxyalkane and heteropolycycle anhydride (K5-3760)

- Information of EU Classification
  - ▷ Classification : NO DATA
  - ▷ Risk Phrases : NO DATA
  - ▷ Safety Phrase : NO DATA
- U.S. Federal regulations
  - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : NO DATA
  - ▷ CERCLA Section 103 (40CFR302.4) : NO DATA
  - ▷ EPCRA Section 302 (40CFR355.30) : NO DATA
  - ▷ EPCRA Section 304 (40CFR355.40) : NO DATA
  - ▷ EPCRA Section 313 (40CFR372.65) : NO DATA
- Rotterdam Convention listed ingredients : NO DATA
- Stockholm Convention listed ingredients : NO DATA
- Montreal Protocol listed ingredients : NO DATA
- n-Butyl acetate
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Hydrogenated hydrocarbons (C=6-20) polymers
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Acetone
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Ethylbenzene
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 453.599 kg 1000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : pertinent
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Aluminium
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : pertinent
  - Rotterdam Convention listed ingredients : NO DATA



- Stockholm Convention listed ingredients : NO DATA
- Montreal Protocol listed ingredients : NO DATA
- Methyl Ethyl Ketone
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : 2267.995 kg 5000 lb
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Gum rosin
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Solvent naphtha (petroleum), light arom.
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA
- Naphtha (petroleum), hydrotreated heavy
  - Information of EU Classification
    - ▷ Classification : NO DATA
    - ▷ Risk Phrases : NO DATA
    - ▷ Safety Phrase : NO DATA
  - U.S. Federal regulations
    - ▷ OSHA PROCESS SAFETY (29CFR1910.119) : notapplicable
    - ▷ CERCLA Section 103 (40CFR302.4) : notapplicable
    - ▷ EPCRA Section 302 (40CFR355.30) : notapplicable
    - ▷ EPCRA Section 304 (40CFR355.40) : notapplicable
    - ▷ EPCRA Section 313 (40CFR372.65) : notapplicable
  - Rotterdam Convention listed ingredients : NO DATA
  - Stockholm Convention listed ingredients : NO DATA
  - Montreal Protocol listed ingredients : NO DATA

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## 16. Other information

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### A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS,NLM, SIDS, IPCS

B. Issue date : 2020-04-03

C. Revision number and Last date revised : 2.(2022-07-29)

D. Other : " [WWW.NOROO.CO.KR](http://WWW.NOROO.CO.KR)"