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**1. Identification**

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- A. Product name : HIQ CLEARCOAT HC-5500 HS  
○ Usage category : Oil paint
- B. Recommended Use and Restriction on Use  
○ General use : automotive refinish  
○ 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

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**2. Hazard identification**

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- A. GHS Classification  
Flammable liquids Category 3  
Acute toxicity (inhalation: vapor) 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(Repeated exposure) Category 2  
Skin sensitization Category 1  
Skin corrosion/irritation Category 2  
Acute toxicity (oral) Category 5  
Acute toxicity (dermal) Category 5

- B. GHS label elements  
○ Hazard symbols



- Signal words : DANGER
- Hazard statements :
- H226 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
  - 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
  - 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.
    - P272 Contaminated work clothing should not be allowed out of the workplace.
  - 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.

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.

- Storage

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

P405 Save by locking.

- Disposal

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

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

Chemical Name	NFPA grade	Health	Flammability	Reactivity	GHS Classification
S1(Trade secrets)		NO DATA	NO DATA	NO DATA	NO DATA
n-Butyl acetate		2	3	0	H226, H303, H313
3-Ethoxypropanoic acid ethyl ester		3	2	0	H226, H303, H313
S1(Trade secrets)		NO DATA	NO DATA	NO DATA	NO DATA
Dimethyl carbonate		1	3	1	H226, H303, H313
Trade secret		NO DATA	NO DATA	NO DATA	NO DATA
2-Heptanone		1	2	0	H226, H303, H313, H315, H319, H332
Xylene		NO DATA	NO DATA	NO DATA	H226, H303, H313, H315, H319, H332, H373
Propylene glycol methyl ether acetate		1	2	0	H226, H303, H313
Ethylbenzene		2	3	0	H226, H303, H313, H315, H319, H332
Solvent naphtha (petroleum), light arom.		1	2	0	H226, H303, H313, H340, H350, H412

### 3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content(%)
S1(Trade secrets)	Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanooate(C=3-10)-initiated		30~40
n-Butyl acetate	n-Butyl acetate	123-86-4	11~21
3-Ethoxypropanoic acid ethyl ester	3-Ethoxypropanoic acid ethyl ester	763-69-9	8~18
S1(Trade secrets)	Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle		8~18
Dimethyl carbonate	Dimethyl carbonate	616-38-6	5~15
Trade secret		-	5~15
2-Heptanone	2-Heptanone	110-43-0	4~14
Xylene	Xylene	1330-20-7	2~12
Propylene glycol methyl ether acetate	Propylene glycol methyl ether acetate	108-65-6	1~10
Ethylbenzene	Ethylbenzene	100-41-4	1~10
Solvent naphtha (petroleum), light arom.	Solvent naphtha (petroleum), light arom.	64742-95-6	1~10

### 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.

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## 5. Fire-fighting measures

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- 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

- Alkenyl carbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl) carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanate(C=3-10)-initiated
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- n-Butyl acetate
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- 3-Ethoxypropanoic acid ethyl ester
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)ic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Dimethyl carbonate
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Trade secret
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- 2-Heptanone
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Xylene
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Propylene glycol methyl ether acetate
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Ethylbenzene
  - ACGIH : NO DATA
  - Biological exposure indices : NO DATA
- Solvent naphtha (petroleum), light arom.
  - 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 safety 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 : transparent liquid
- B. Odor : solvent odor
- C. Odor threshold : NO DATA
- D. PH : NO DATA
- E. Melting point/Freezing point(°C) : NO DATA
- F. Initial Boiling Point/Boiling Ranges(°C) : 90~172.8
- G. Flash point(°C) : 36
- H. Evaporating Rate : NO DATA
- I. Flammability(solid, gas)(°C) : NON Flammable
- J. Upper/Lower Flammability or explosive limits : NO DATA
- K. Vapour pressure : NO DATA
- L. Solubility : NO DATA
- M. Vapour density : higher than air
- N. Specific gravity : 0.9~1.1
- O. Partition coefficient of n-octanol/water : NO DATA
- P. Autoignition temperature(°C) : 354
- Q. Decomposition temperature(°C) : NO DATA
- R. Viscosity : NO DATA
- S. Molecular weight : NO DATA

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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
  - Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanooate(C=3-10)-initiated
    - 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
- 3-Ethoxypropanoic acid ethyl ester
  - Acute toxicity
    - Oral : LD50 = 3200 mg/kg Rat
    - Dermal : LD50 = 10000 mg/kg rabbit
    - Inhalation : LD50 = 10000 mg/kg rabbit
  - Skin corrosion/irritation : Causes weak stimulus in guinea pigs
  - Serious eye damage/irritation : Mild irritation in rabbits
  - Respiratory sensitization : NO DATA
  - Skin sensitization : Reported no skin sensitization guinea pig
  - Carcinogenicity
    - IARC : NO DATA
    - OSHA : NO DATA
    - ACGIH : NO DATA
    - NTP : NO DATA
    - EU CLP : NO DATA
  - Germ cell mutagenicity : In vitro Ames microbialtest : Negative
  - Reproductive toxicity : In vitro Ames microbialtest : Negative
  - STOT-single exposure : NO DATA
  - STOT-repeated exposure : NO DATA
  - Aspiration hazard : NO DATA
- Vinyl-carbomocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomocycle
  - 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
- 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
- Trade secret
  - 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
- 2-Heptanone
  - Acute toxicity
    - Oral : LD50 = 1670 mg/kg Rat
    - Dermal : LD50 = 10300 mg/kg Rabbit
    - Inhalation : LD50 = 10300 mg/kg Rabbit
  - Skin corrosion/irritation : (using rabbit) skin Irritation test result - middle Irritation
  - Serious eye damage/irritation : Using the rabbit eye irritation test results - Mild irritant
  - 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 : Repeated exposure tests using rats divided in two, check the reference range is not toxic.
  - Aspiration hazard : Ketones less than 13 carbon atoms
- 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.
- Propylene glycol methyl ether acetate
  - Acute toxicity
    - Oral : LD50 = 8532 mg/kg Rat





- Fish : LC50 = 88 mg/ℓ 96 hr Pimephales promelas
  - Crustaceans : LC50 = 970 mg/ℓ 48 hr Daphnia magna
  - Algae : NO DATA
  - Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
    - Fish : NO DATA
    - Crustaceans : NO DATA
    - Algae : NO DATA
  - Dimethyl carbonate
    - Fish : NO DATA
    - Crustaceans : NO DATA
    - Algae : NO DATA
  - Trade secret
    - Fish : NO DATA
    - Crustaceans : NO DATA
    - Algae : NO DATA
  - 2-Heptanone
    - Fish : LC50 = 131 mg/ℓ 96 hr
    - Crustaceans : NO DATA
    - Algae : NO DATA
  - Xylene
    - Fish : NO DATA
    - Crustaceans : NO DATA
    - Algae : NO DATA
  - Propylene glycol methyl ether acetate
    - Fish : LC50 ≥ 100 mg/ℓ 96 hr Oryzias latipes
    - Crustaceans : EC50 = 373 mg/ℓ 48 hr Daphnia magna
    - Algae : EC50 ≥ 1000 mg/ℓ 72 hr Selenastrum capricornutum
  - Ethylbenzene
    - Fish : LC50 = 9.09 mg/ℓ 96 hr
    - Crustaceans : LC50 = 0.4 mg/ℓ 96 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
- B. Persistence and degradability
- Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanoate(C=3-10)-initiated
    - Persistence : NO DATA
    - Degradability : NO DATA
  - n-Butyl acetate
    - Persistence : log Kow = 1.78
    - Degradability : NO DATA
  - 3-Ethoxypropanoic acid ethyl ester
    - Persistence : log Kow = 1.35
    - Degradability : BOD5/COD = 0.17
  - Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Dimethyl carbonate
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Trade secret
    - Persistence : NO DATA
    - Degradability : NO DATA
  - 2-Heptanone
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Xylene
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Propylene glycol methyl ether acetate
    - Persistence : log Kow = 0.43
    - Degradability : NO DATA
  - Ethylbenzene
    - Persistence : NO DATA
    - Degradability : NO DATA
  - Solvent naphtha (petroleum), light arom.
    - Persistence : log Kow = 2.1 ~ 6 (Estimates)
    - Degradability : BOD5/COD = 0.43
- C. Bioaccumulative potential
- Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanoate(C=3-10)-initiated
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - n-Butyl acetate

- Bioaccumulative potential : NO DATA
  - Biodegradation : Biodegradability = 98 (%)
  - 3-Ethoxypropanoic acid ethyl ester
    - Bioaccumulative potential : BCF = 3
    - Biodegradation : Biodegradability = 43 (%) 28 day (GLP data)
  - Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Dimethyl carbonate
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Trade secret
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - 2-Heptanone
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Xylene
    - Bioaccumulative potential : NO DATA
    - Biodegradation : 39 (%)
  - Propylene glycol methyl ether acetate
    - Bioaccumulative potential : NO DATA
    - Biodegradation : Biodegradability > 60 (%) 28 day
  - Ethylbenzene
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
  - Solvent naphtha (petroleum), light arom.
    - Bioaccumulative potential : NO DATA
    - Biodegradation : NO DATA
- D. Mobility in soil
- Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanoate(C=3-10)-initiated
    - ▷ NO DATA
  - n-Butyl acetate
    - ▷ NO DATA
  - 3-Ethoxypropanoic acid ethyl ester
    - ▷ NO DATA
  - Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
    - ▷ NO DATA
  - Dimethyl carbonate
    - ▷ NO DATA
  - Trade secret
    - ▷ NO DATA
  - 2-Heptanone
    - ▷ NO DATA
  - Xylene
    - ▷ log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
  - Propylene glycol methyl ether acetate
    - ▷ NO DATA
  - Ethylbenzene
    - ▷ log Kow = 3.15 (11)
  - Solvent naphtha (petroleum), light arom.
    - ▷ NO DATA
- E. Other adverse effects
- Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanoate(C=3-10)-initiated
    - ▷ NO DATA
  - n-Butyl acetate
    - ▷ NO DATA
  - 3-Ethoxypropanoic acid ethyl ester
    - ▷ Shellfish - NOEC : 9.5 mg/ℓ /48hours
  - Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
    - ▷ NO DATA
  - Dimethyl carbonate
    - ▷ NO DATA
  - Trade secret
    - ▷ NO DATA
  - 2-Heptanone
    - ▷ NO DATA
  - Xylene
    - ▷ NO DATA
  - Propylene glycol methyl ether acetate
    - ▷ NO DATA
  - Ethylbenzene
    - ▷ NO DATA

- Solvent naphtha (petroleum), light arom.
- ▷ NO DATA

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### 13. Disposal considerations

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- A. Disposal methods : Disposal material should keep in the airtight container, and consign according to Waste Material 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 : III
- 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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- Alkenylcarbomonocycle polymer with alkyl(C=2-8) methacrylate, substituted-alkyl methacrylate, methacrylic acid and (alkyl(C=1-7)alkenyl)carbomonocycle, dimer, alkyl(C=2-8) peroxyalkyl alkanate(C=3-10)-initiated
  - 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
- 3-Ethoxypropanoic 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) : 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
- Vinyl-carbomonocycle polymer with methyl-alken(C=3-7)oic acid methyl ester, furandione, methyl-alkane(C=3-7)ol, neodecanoic acid epoxyalkyl(C=3-7) ester, substituted-ethyl methacrylate and (methyl-methylene-alkane(C=3-7)yl)bis-carbomonocycle
  - 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
- 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
- Trade secret
  - 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
- 2-Heptanone
  - 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
- 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
- Propylene glycol methyl ether 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) : 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
- 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
- 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

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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 : 2021-01-13

C. Revision number and Last date revised : 1. 2021-01-13

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