

1. Identification

- A. Product name : HiQ Hybrid Primer Surfacr PS-990(BLACK)
- B. Recommended Use and Restriction on Use
 - General use : Automotive refinsh
 - 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 3
 - Acute toxicity (inhalation: vapor) Category 4
 - Carcinogenicity Category 1B
 - Germ cell mutagenicity Category 1B
 - Specific target organ toxicity(Single exposure) Category 3
 - Specific target organ toxicity(Repeated exposure) Category 2
 - Ozone Layer Hazards

- 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
 - H335+H336 May cause respiratory irritation, May cause drowsiness and dizziness.
 - 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)
 - H420 It destroys the upper layer of the ozone layer and is harmful to public health and environment.
- Precautionary statements
 - Prevention
 - P210 Keep away from heat/sparks/open flames/hot surfaces. ? No smoking.
 - P223 Avoid contact with water.
 - P240 Ground/bond container and receiving equipment.
 - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 - 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.
 - P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 - 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.
 - P314 Get medical advice/attention if you feel unwell.
 - Storage
 - P403+P235 Store in a well-ventilated place. Keep cool.
 - P405 Store in a locked place.
 - P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 - Disposal
 - P501 Dispose of contents/container in accordance with local/regional/national/international regulation
 - P502 Please refer to the information provided by the manufacturer / supplier on recycling and recycling examples.

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

Chemical Name	NFPA grade	Health	Flammability	Reactivity

Barium sulfate, natural	1	0	0
n-Butyl acetate	2	3	0
S1(Trade secrets)	NO DATA	NO DATA	NO DATA
Talc (Asbestos-free)	1	0	0
S2(Trade secrets)	NO DATA	NO DATA	NO DATA
Propylene glycol methyl ether acetate	1	2	0
3-Ethoxypropanoic acid ethyl ester	3	2	0
Xylene	NO DATA	NO DATA	NO DATA
Propylene glycol methyl ether	0	3	0
Dimethyl carbonate	1	3	1
Carbon black	1	1	0
Rutile(TiO2)	1	0	0
Solvent naphtha (petroleum), light arom.	1	2	0
Trade secret	NO DATA	NO DATA	NO DATA
Ethylbenzene	2	3	0

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content(%)
Barium sulfate, natural	Barium sulfate, natural	7727-43-7	24~34
n-Butyl acetate	n-Butyl acetate	123-86-4	17~27
S1(Trade secrets)	-	-	11~21
Talc (Asbestos-free)	Talc(Asbestos-free)	14807-96-6	8~18
Propylene glycol methyl ether acetate	Propylene glycol methyl ether acetate	108-65-6	3~13
S2(Trade secrets)	-	-	1~11
3-Ethoxypropanoic acid ethyl ester	3-Ethoxypropanoic acid ethyl ester	763-69-9	4~14
Xylene	Xylene	1330-20-7	1~10
Propylene glycol methyl ether	Propylene glycol methyl ether	107-98-2	1~10
Dimethyl carbonate	Dimethyl carbonate	616-38-6	1~10
Carbon black	Carbon black	1333-86-4	1~10
Rutile(TiO2)	Rutile(TiO2)	1317-80-2	1~10
Solvent naphtha (petroleum), light arom.	Solvent naphtha (petroleum), light arom.	64742-95-6	1~10
Trade secret	-	-	1~10
Ethylbenzene	Ethylbenzene	100-41-4	0.1~4

4. First-aid measures

- A. Eye Contact : If you wear a contact lenses, remove them first. Do not rub your eyes. If irritation, pain, swelling, tears or glaring happens, take medical assistant immediately Flush exposed eyes with plenty of water for more than 15minutes.
- B. Skin Contact : Wear gloves while washing the patient and avoid contact with exposed clothes. Wash carefully after handling. If symptoms like redness or irritation occurs, take medical assistant immediately. Wash off with soap and water for more than 15 minutes. And take medical assistant immediately. If symptoms like irritation or pain occurs, take medical assistant immediately. Remove exposed clothing, and wash off exposed area with soap and water.
- C. Inhalation : Take a medical assistant immediately. Remove contaminated clothing and shoes, and isolate it. If hard to breathe, administering oxygen Perform the artificial respiration, using the pocket mask with one way valves or other respiratory medical devices. If inhaled or swallowed, do not perform the inhalation phase of breathing If not breathing, perform the artificial respiration. Avoid from exposure, and move into an area with fresh air.
- D. Ingestion Contact : Flush mouth with water immediately. 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 Take proper medical assistant by symptoms. If ingested large quantity, take medical assistant. Do not try to induce vomiting, if occurs, keep head below hips to prevent swallow into lungs. Inducing vomit.
- 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 use waterjet as fire extinguishing agent. Water is not appropriate extinguishing agent
 - Case of big fire : Use appropriate protective device depend on the situation. Stay away more than 800m to avoid tank explosion. Spread large amount of the extinguishing agent as a mist form with staying against wind.
- B. Specific hazards arising from the chemical
- Pyrolysate : Irritating and highly toxic gases may produced during the combustion by pyrolysis or combustion itself. Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
 - Fire and Explosion danger : Vapors may explode indoors, outdoors, and in drains Leakages may fire / explosion hazard and could be easily ignited by heat, sparks or flames. Container may explode when heating May form explosive mixture at or above ignition point Vapor may be released to the ignition source and ignited. Aqueous (Exclude water-soluble one) products does not have risk of fire or explosion hazard by itself. Risk of medium-sized fire.
- 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 : Do not approach if the tank is on fire. Avoid inhalation of the substance or combustion

products. Use an unmanned fire extinguishing device, in case of large-sized fire. If not, leave it to burn. Tell the fire department, location of the fire and the hazardous features. Protect others from access and prohibit access to dangerous areas. Block the area except for the fire-suppression personnel. Cooling containers with water long time after extinguish fire. If there is no risk, moving containers away from fire. Use appropriate extinguishing agents to catch fire.

6. Accidental release measures

- 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 : Do not contact on the bare skin Do work with the personal protected devices such as gas mask for organic gases other appropriate protective devices / clothing / gloves. Spray water to reduce amount of steam. Take an action to block the leakage if there is no risk.
- B. Environmental precautions
- Atmosphere : Using local ventilation to Minimize the exposure to worker. Do install the local ventilations and full ventilation system
 - Soil : Use absorbent to collect the appropriate container. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.
 - Under water : Collect spilled material with mechanic devices Use absorbent to collect the appropriate container.
- C. Methods and materials for containment and cleaning up
- Small spill : Move to appropriate container for disposal of spilled material collected. Absorb for use sand or other non-combustible material.
 - Large spill : Notify to central and local government, when emissions are above regulation. Prohibit access of unnecessary people, isolate hazard area to secure.

7. Handling and storage

A. Precautions for safe handling : 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. Do not take contaminated clothings away from the work area. Avoid contact with heat, sparks, flames or other sources of ignition. Do not inhale vapor for long-term or repeatedly. Do not handle until read and understood all safety precautions. Avoid contact with prohibited materials in mixture. Wash carefully after handling. Use local ventilations and a full ventilation system when handling Seal the container for minimizing the petroleum steam Ground for preventing the static discharge Keep or handle followed by Dangerous goods Safety Management Act

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

8. Exposure controls/personal protection

- A. Exposure Limits
- Barium sulfate, natural
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - n-Butyl acetate
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - S1 (Trade secrets)
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Talc (Asbestos-free)
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - S2 (Trade secrets)
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Propylene glycol methyl ether acetate
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - 3-Ethoxypropanoic acid ethyl ester
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Xylene
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Propylene glycol methyl ether
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Dimethyl carbonate
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Carbon black

- ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Rutile(TiO2)
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Solvent naphtha (petroleum), light arom.
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Trade secret
 - ACGIH : NO DATA
 - Biological exposure indices : NO DATA
 - Ethylbenzene
 - 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 : If there is possibility of direct contact or exposure to these substances should wear a authorized dust-proof mask or respirator for organic compounds Respiratory protection is ranked in order from minimum to maximum Respiratory protection may be needed, while frequent use or heavy exposure. Consider warning properties before use. 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. Respirators should be authorized by Korea Occupational Safety and Health Agency
 - Eye protection : If there is possibility of direct contact or exposure to these substances should wear authorized safty glasses or mask. Let workers do wear the safety glasses in case hazard caused by mist may be expected. Install washing facilities and an emergency washing facilities close to workplace. Use the respirator for organic solvent or higher level.
 - Hand protection : If there is possibility of direct contact or exposure to these substances should wear authorized safety gloves for chemicals. Wear appropriate protective gloves Wear the chemical protective gloves 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.
 - Skin protection : If there is a possibility of direct contact or exposure to the substance Wear protective clothing for chemical substances Wear cleanroom garment or appropriate protective clothing to prevent contamination Wear appropriate chemical protective clothing. 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.

9. Physical and chemical properties

- A. Appearance : LIGHT GRAY
- 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) : 75.5~172.8
- G. Flash point(°C) : 30.5
- 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 : 1.2~1.4
- 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

10. Stability and reactivity

- A. Chemical stability : NO DATA
- B. Possibility of hazardous reactions : Avoid contaminants and friction Do not contact with heat, spark, flame or other flammable sources

C. Conditions to avoid : Oxidation agent, metal and combustible materials

D. Hazardous decomposition products : Thermal decomposition products (carbon etc..)

11. Toxicological information

A. Information on the likely routes of exposure

- Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomiting
- Oral : Vomiting, 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

- Barium sulfate, natural
 - Acute toxicity
 - Oral : LD50 > 3000 mg/kg Rat
 - Dermal : NO DATA
 - Inhalation : NO DATA
 - Skin corrosion/irritation : Non-irritating to human
 - Serious eye damage/irritation : e irritation have been reported 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 : 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
- S1 (Trade secrets)
 - 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
- Talc (Asbestos-free)
 - Acute toxicity
 - Oral : NO DATA
 - Dermal : NO DATA
 - Inhalation : NO DATA
 - Skin corrosion/irritation : 300µg/3day(human) : weak stimulus
 - Serious eye damage/irritation : NO DATA
 - Respiratory sensitization : NO DATA
 - Skin sensitization : NO DATA

- Carcinogenicity
 - IARC : Group 2B
 - OSHA : NO DATA
 - ACGIH : A4
 - NTP : NO DATA
 - EU CLP : NO DATA
- Germ cell mutagenicity : Salmonella species / Negative
- Reproductive toxicity : Salmonella species / Negative
- STOT-single exposure : NO DATA
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA
- S2 (Trade secrets)
 - 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
- Propylene glycol methyl ether acetate
 - Acute toxicity
 - Oral : LD50 = 8532 mg/kg Rat
 - Dermal : LD50 > 5000 mg/kg Rabbit
 - Inhalation : LD50 > 5000 mg/kg Rabbit
 - Skin corrosion/irritation : rabbit: non-Irritation
 - Serious eye damage/irritation : Rabbit: mild irritant
 - Respiratory sensitization : NO DATA
 - Skin sensitization : Guinea pig / maximization test (GLP): No sensitization
 - Carcinogenicity
 - IARC : NO DATA
 - OSHA : NO DATA
 - ACGIH : NO DATA
 - NTP : NO DATA
 - EU CLP : NO DATA
 - Germ cell mutagenicity : In vitro - Salmonella typhimurium/TA98, TA100, TA1535, TA1537 (ames test, GLP): With and without metabolic activation system- Negative, CHL Cells/Chromosomal abnormalitiestest (GLP):With and without metabolic activation system- Negative, rat Hepatocyte/UDStest (GLP)
 - Reproductive toxicity : In vitro - Salmonella typhimurium/TA98, TA100, TA1535, TA1537 (Return mutation test, GLP): Negative (negative), CHL Cells / Chromosome aberration test (GLP): Negative (negative), rat hepatocyte / UDS test (GLP) : Negative in the absence of metabolic activation system
 - STOT-single exposure : Reported liver effects in humans. Rat Causes affect the spleen. In mice causes an effect on the central nervous system, and lung. That the anesthetic effect on the animal. Irritating to the prayers of people. (ACGIH, etc.)
 - STOT-repeated exposure : Reported affect the kidneys, liver, central nervous system in humans. (PATTY 5th)
 - 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
- 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
 - Acute toxicity
 - Oral : LD50 > 5000 mg/kg Rat
 - Dermal : LD50 = 13000 mg/kg Rabbit
 - Inhalation : LD50 = 13000 mg/kg Rabbit
 - Skin corrosion/irritation : The test is applied to rabbit skin appears extremely weak Irritation.
 - Serious eye damage/irritation : High concentrations of vapor is irritating to represent not strong.
 - Respiratory sensitization : NO DATA
 - Skin sensitization : Using guinea pig skin sensitization test results - negative
 - Carcinogenicity
 - IARC : NO DATA
 - OSHA : NO DATA
 - ACGIH : A4
 - NTP : NO DATA
 - EU CLP : NO DATA
 - Germ cell mutagenicity : Using mouse bone marrow erythrocytes in vivo Micronucleus test - Negative
 - Reproductive toxicity : Using mouse bone marrow erythrocytes in vivo Micronucleus test - Negative
 - STOT-single exposure : Rats, mice, rabbits, such as the loss of an external stimulus appears reflections.
 - STOT-repeated exposure : Rats, rabbits, mice, guinea pigs, monkeys and later only a weak reference to a Category 2 suppresses the central nervous system (really), the liver, the kidneys, the effects appear.
 - 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
- Carbon black
 - Acute toxicity
 - Oral : LD50 = 15400 mg/kg Rat
 - Dermal : LD50 = 3000 mg/kg rabbit
 - Inhalation : LD50 = 3000 mg/kg rabbit
 - Skin corrosion/irritation : NO DATA
 - Serious eye damage/irritation : NO DATA
 - 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 : NO DATA
 - Reproductive toxicity : NO DATA
 - STOT-single exposure : NO DATA
 - STOT-repeated exposure : NO DATA
 - Aspiration hazard : NO DATA
- Rutile(TiO2)
 - Acute toxicity
 - Oral : LD50 > 24000 mg/kg Rat

12. Ecological information

A. Ecotoxicity

- Barium sulfate, natural
 - Fish : NO DATA
 - Crustaceans : EC50 = 32 mg/ℓ 48 hr Daphnia magna
 - Algae : EC50 = 1890.263 mg/ℓ 96 hr
- n-Butyl acetate
 - Fish : LC50 = 62 mg/ℓ 96 hr
 - Crustaceans : LC50 = 32 mg/ℓ 48 hr
 - Algae : NO DATA
- S1 (Trade secrets)
 - Fish : NO DATA
 - Crustaceans : NO DATA
 - Algae : NO DATA
- Talc (Asbestos-free)
 - Fish : LC50 > 100000 mg/ℓ 24 hr Brachydanio rerio
 - Crustaceans : LC50 = 94983.781 mg/ℓ 48 hr
 - Algae : LC50 = 48545.539 mg/ℓ
- S2 (Trade secrets)
 - 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
- 3-Ethoxypropanoic acid ethyl ester
 - Fish : LC50 = 88 mg/ℓ 96 hr Pimephales promelas
 - Crustaceans : LC50 = 970 mg/ℓ 48 hr Daphnia magna
 - Algae : NO DATA
- Xylene
 - Fish : NO DATA
 - Crustaceans : NO DATA
 - Algae : NO DATA
- Propylene glycol methyl ether
 - Fish : NO DATA
 - Crustaceans : EC50 > 500 mg/ℓ 48 hr
 - Algae : NO DATA
- Dimethyl carbonate
 - Fish : NO DATA
 - Crustaceans : NO DATA
 - Algae : NO DATA
- Carbon black
 - Fish : NO DATA
 - Crustaceans : EC50 = 5600 mg/ℓ 24 hr
 - Algae : NO DATA
- Rutile(TiO2)
 - Fish : LC50 = 35.988 mg/ℓ 96 hr
 - Crustaceans : LC50 = 39.180 mg/ℓ 48 hr
 - Algae : EC50 = 24.821 mg/ℓ 96 hr
- 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
- Trade secret
 - Fish : NO DATA
 - 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

B. Persistence and degradability

- Barium sulfate, natural
 - Persistence : log Kow = 0.63
 - Degradability : NO DATA
- n-Butyl acetate
 - Persistence : log Kow = 1.78
 - Degradability : NO DATA
- S1 (Trade secrets)
 - Persistence : NO DATA
 - Degradability : NO DATA
- Talc (Asbestos-free)
 - Persistence : log Kow = -1.50
 - Degradability : NO DATA
- S2 (Trade secrets)
 - Persistence : NO DATA
 - Degradability : NO DATA
- Propylene glycol methyl ether acetate

- Persistence : log Kow = 0.43
 - Degradability : NO DATA
 - 3-Ethoxypropanoic acid ethyl ester
 - Persistence : log Kow = 1.35
 - Degradability : BOD5/COD = 0.17
 - Xylene
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Propylene glycol methyl ether
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Dimethyl carbonate
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Carbon black
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Rutile(TiO₂)
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Solvent naphtha (petroleum), light arom.
 - Persistence : log Kow = 2.1 ~ 6 (Estimates)
 - Degradability : BOD5/COD = 0.43
 - Trade secret
 - Persistence : NO DATA
 - Degradability : NO DATA
 - Ethylbenzene
 - Persistence : NO DATA
 - Degradability : NO DATA
- C. Bioaccumulative potential
- Barium sulfate, natural
 - Bioaccumulative potential : BCF = 3.162
 - Biodegradation : NO DATA
 - n-Butyl acetate
 - Bioaccumulative potential : NO DATA
 - Biodegradation : Biodegradability = 98 (%)
 - S1 (Trade secrets)
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Talc (Asbestos-free)
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - S2 (Trade secrets)
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Propylene glycol methyl ether acetate
 - Bioaccumulative potential : NO DATA
 - Biodegradation : Biodegradability > 60 (%) 28 day
 - 3-Ethoxypropanoic acid ethyl ester
 - Bioaccumulative potential : BCF = 3
 - Biodegradation : Biodegradability = 43 (%) 28 day (GLP data)
 - Xylene
 - Bioaccumulative potential : NO DATA
 - Biodegradation : 39 (%)
 - Propylene glycol methyl ether
 - Bioaccumulative potential : BCF = 2
 - Biodegradation : Biodegradability = 90 (%) 29 day (Aerobic, industrial sewage, Easily decomposed)
 - Dimethyl carbonate
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Carbon black
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Rutile(TiO₂)
 - Bioaccumulative potential : BCF = 10.38
 - Biodegradation : NO DATA
 - Solvent naphtha (petroleum), light arom.
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Trade secret
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
 - Ethylbenzene
 - Bioaccumulative potential : NO DATA
 - Biodegradation : NO DATA
- D. Mobility in soil
- Barium sulfate, natural
 - ▷ NO DATA
 - n-Butyl acetate
 - ▷ NO DATA

- S1 (Trade secrets)
 - ▷ NO DATA
 - Talc (Asbestos-free)
 - ▷ NO DATA
 - S2 (Trade secrets)
 - ▷ NO DATA
 - Propylene glycol methyl ether acetate
 - ▷ NO DATA
 - 3-Ethoxypropanoic acid ethyl ester
 - ▷ NO DATA
 - Xylene
 - ▷ log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
 - Propylene glycol methyl ether
 - ▷ NO DATA
 - Dimethyl carbonate
 - ▷ NO DATA
 - Carbon black
 - ▷ NO DATA
 - Rutile(TiO2)
 - ▷ NO DATA
 - Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA
 - Trade secret
 - ▷ NO DATA
 - Ethylbenzene
 - ▷ log Kow = 3.15 (11)
- E. Other adverse effects
- Barium sulfate, natural
 - ▷ NO DATA
 - n-Butyl acetate
 - ▷ NO DATA
 - S1 (Trade secrets)
 - ▷ NO DATA
 - Talc (Asbestos-free)
 - ▷ NO DATA
 - S2 (Trade secrets)
 - ▷ NO DATA
 - Propylene glycol methyl ether acetate
 - ▷ NO DATA
 - 3-Ethoxypropanoic acid ethyl ester
 - ▷ Shellfish - NOEC : 9.5 mg/ℓ /48hours
 - Xylene
 - ▷ NO DATA
 - Propylene glycol methyl ether
 - ▷ NO DATA
 - Dimethyl carbonate
 - ▷ NO DATA
 - Carbon black
 - ▷ NO DATA
 - Rutile(TiO2)
 - ▷ NO DATA
 - Solvent naphtha (petroleum), light arom.
 - ▷ NO DATA
 - Trade secret
 - ▷ NO DATA
 - Ethylbenzene
 - ▷ NO DATA

13. Disposal considerations

A. Disposal methods : To prevent environmental pollution, dispose it to a licensed waste disposal company. Recycle the recyclable materials, such as organic solvents, and then incinerate the residue at high temperature. Pre-treat with oil-water separation method when it is available. Disposal material should keep in the airtight container, and consign according to Waste Material Management Act

B. Special precautions for disposal : Discard it followed by appropriate regulations Prohibit the unauthorized disposal and incineration due to adversely affect natural ecosystems

14. Transport information

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

15. Regulatory information

- Barium sulfate, natural
 - 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
- 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
- S1 (Trade secrets)
 - 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
- Talc (Asbestos-free)
 - 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
- S2 (Trade secrets)
 - 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
- 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
- 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
- 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
 - 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
- 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
- Carbon black
 - 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
- Rutile(TiO2)
 - 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
- 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
- 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

16. Other information

A. Reference

This MSDS is based on 'Industrial safety and health' Act paragraph 41 and Proclamation of Ministry of Labor and Employment 2016-19, and considered domestic regulations.

This MSDS is based on KOSHA, NITE, ESIS, NLM, SIDS, IPCS, NCIS.

B. Issue date : 2018-07-24 오후 3:29:12

C. Revision number and Last date revised : 1.(2020-04-02)

D. Other : " WWW.NOROO.CO.KR"