1. Identification

A. Product name : HIQ PRIMER SEALER PS-810
B. Recommended Use and Restriction on Use
  1) General use : Automotive refinish
  2) Restriction on use : Recommendations for purposes other use restrictions.
C. Manufacturer / Supplier / distributor information
  1) Company name : NOROO Paint & Coatings Co., Ltd.
  2) Address : 351, Bakdal-ro, Manan-gu, Anyang-si, Gyeonggi-do, Korea
  3) Emergency telephone number : +82-31-467-6114

2. Hazard identification

A. GHS Classification : Flammable liquids Category 3 ▷Acute toxicity (dermal) Category 4 ▷Acute toxicity (inhalation: vapor) Category 3 ▷Carcinogenicity Category 1A ▷Serious eye damage/irritation Category 2A ▷Specific target organ toxicity(Single exposure) Category 1 ▷Specific target organ toxicity(Single exposure) Category 2 ▷Specific target organ toxicity(Single exposure) Category 3 ▷Skin corrosion/irritation Category 2

B. GHS label elements

1)Hazard symbols :

2)Signal words : DANGER

3)Hazard statements : H226 Flammable liquid and vapour ▷H312 Harmful in contact with skin ▷H331 Toxic if inhaled ▷H350 May cause cancer ▷H319 Causes serious eye irritation ▷H370 Causes damage to organs(Refer Section SDS 11) ▷H371 May cause damage to organs (Refer Section SDS 11) ▷H335+H336 May cause respiratory irritation, May cause drowsiness and dizziness. ▷H315 Causes skin irritation

4)Precautionary statements

- Prevention : P210 Keep away from heat/sparks/open flames/hot surfaces. ? No smoking. ▷P233 Keep container tightly closed. ▷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. ▷P260 Do not breathe 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. ▷P281 Use personal protective equipment as required. ▷P264 Wash hands thoroughly after handling. ▷P270 Do not eat, drink or smoke when using this product. ▷P261 Avoid breathing 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). ▷P302+P352 IF ON SKIN: Wash with plenty of soap and water. ▷P312 Call a POISON CENTER or doctor/physician if you feel unwell. ▷P322 Specific measures ▷P363 Wash contaminated clothing before reuse. ▷P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. ▷P311 Call a POISON CENTER or doctor/physician. ▷P321 Specific treatment ▷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 advice/attention. ▷P307+P311 If exposed: Call a POISON CENTER or doctor/physician. ▷P309+P311 If exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. ▷P332+P313 If skin irritation occurs: Get medical advice/attention. ▷P362

Take off contaminated clothing and wash before reuse.

- Storage : P403+P235 Store in a well-ventilated place. Keep cool. ▷P403+P233 Store in a well-ventilated place. Keep container tightly closed. ▷P405 Store locked up.
- Disposal :P501 Dispose of contents/container in accordance with local/regional/national/international regulation

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

Chemical Name	NFPA grade		
	Health	Flammability	Reactivity
n-Butyl acetate	2	3	0
2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	NO DATA	NO DATA	NO DATA
Barium sulfate, natural	1	0	0
Talc (Not containing asbestos)	1	0	0
Propylene glycol methyl ether acetate	1	2	0
Rutile(TiO2)	1	0	0
Xylene	NO DATA	NO DATA	NO DATA
Soybean oil polymer with phthalic anhydride and trimethylolpropane	NO DATA	NO DATA	NO DATA
2-Butoxyethanol	3	2	0
4-Methyl-2-pentanone	1	3	0
Ethylbenzene	2	3	0
Ethanol	2	3	0

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content(%)
n-Butyl acetate	n-Butyl acetate	123-86-4	17
2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	-	-	18.0
Barium sulfate, natural	Barium sulfate, natural	7727-43-7	13.0
Talc (Not containing asbestos)	Talc	14807-96-6	11.0
Propylene glycol methyl ether acetate	Propylene glycol methyl ether acetate	108-65-6	10.0
Rutile(TiO2)	Rutile(TiO2)	1317-80-2	10.0
Xylene	Xylene	1330-20-7	10.0
Soybean oil polymer with phthalic anhydride and trimethylolpropane	-	-	5.0
2-Butoxyethanol	2-Butoxyethanol	111-76-2	3.0
4-Methyl-2-pentanone	4-Methyl-2-pentanone	108-10-1	2.0
Ethylbenzene	Ethylbenzene	100-41-4	0.9
Ethanol	Ethanol	64-17-5	0.1

4. First-aid measures

A.Eye Contact : If irritation, pain, swelling, and tears or glaring may occur, immediately take a doctor's treatment Rinse exposed eyes with plenty of water for at least 15minutes.

B.Skin Contact : Immediately wash off with soap and water for at least 15 minutes. If irritation or pain may occur, take a doctor’s examination on exposed area. Discard clothing, and then wash off exposed area with soap and water.
C.Inhalation : Take an emergency medical examination by a doctor Discard contaminated clothing and shoes, and keep personal away. If breathing is difficult, administer oxygen Perform the artificial respiration using the pocket mask installed the one way valves, or other inhaled medical devices. If inhaled or swallowed, do not perform the inhalation phase of breathing If the cessation of breathing may occur, perform the artificial respiration Avoid from source of exposure, and then moved into an area with fresh air
D.Ingestion Contact : It is need to be considered that early removal of some ingested material by cautious gastric lavage must be weighed against potential complications of bleeding or perforation Take an appropriate medical treatment depending on the symptoms. Get a doctor's attention immediately if ingestion of large amounts of materials. Do not induce vomiting, and then if vomiting occurs, keep head below hips to prevent aspiration into lungs. Induce vomiting
E.Notes to Physician : There is no specific antidote and take an appropriate medical treatment.

5.Fire-fighting measures

A.Suitable (Unsuitable) extinguishing media
1) Suitable extinguishing media : Extinguished agent as powder foam or Gas-based fire extinguishing agent, and regular foam
2) (Unsuitable) extinguishing media : Water is not an appropriate extinguished agent
3) Case of big fire : Use an appropriate protect device depend on the fire scenario Evacuate more than 800m if an explosion hazard may occur. Spread a large amount of the extinguished agent as a mist form with staying upwind
B.Specific hazards arising from the chemical
1) Pyrolysate : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
2) Fire and Explosion danger : Vapor may be released to the ignition source and ignited. Water (Exclude water-soluble products) products do not present a fire or explosion hazard. Intermediate levels of fire hazard.
C.Special protective actions for fire-fighters
1) Personal Precautions, protective equipment : Respirator or air respirator, heat resistant clothing, heat resistant hat, heat resistant gloves, heat resistant boots
2) Emergency procedures : Keep unauthorized personnel out except the fire-suppression personnel Cool containers with water until well after fire is out. If there is no risk, move to move containers from fire area. Perform a fire fighting using an appropriate extinguished agent.

6.Accidental release measures

A.Personal Precautions, protective equipment and emergency procedures
1) Personal Precautions, protective equipment : Respirator for organic gases other appropriate protective equipment / protection / protective gloves
2) Emergency procedures : Do not contact with the skin Do work with the personal protected devices such as respirator for organic gases other appropriate protective equipment / protection / protective gloves Spread water for reducing the suppression of generated steam Take an action if there is no risk
B.Environmental precautions
1) Atmosphere : Stay upwind and keep out of low areas. Spread water for reducing the suppression of generated steam
2) 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.
3) Under water : Collect spilled material with mechanic devices Use absorbent to collect the appropriate container.
C.Methods and materials for containment and cleaning up
1) Small spill : Appropriate container for disposal of spilled material collected. Absorb for use sand or other non-combustible material.
2) Large spill : Notification to central government, local government. When emissions at least of the standard amount Keep unnecessary people away, isolate hazard area and deny entry.

7.Handling and storage

A.Precautions for safe handling : Use local ventilations and a full ventilation system when handling Close 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 : Storage temperature: 25 ~ 35 ℃ Storage temperature: 15

~ 25 ℃ Storage temperature: 5 ~ 15 ℃ Stored in an isolated place, freezing Caution, hot body care Avoid strong oxidizing agents, acid and contacts. Storage temperature: 5 ~ 35 ℃ Storage outdoors is to avoid direct sunlight. Because evaporation and contamination concerns Keep container tightly closed in a good ventilation to the building.

8.Exposure controls/personal protection

A.Exposure Limits

1) n-Butyl acetate
   1-1.ACGIH : NO DATA
   1-2.Biological exposure indices : NO DATA

2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
   2-1.ACGIH : NO DATA
   2-2.Biological exposure indices : NO DATA

3) Barium sulfate, natural
   3-1.ACGIH : NO DATA
   3-2.Biological exposure indices : NO DATA

4) Talc (Not containing asbestos)
   4-1.ACGIH : NO DATA
   4-2.Biological exposure indices : NO DATA

5) Propylene glycol methyl ether acetate
   5-1.ACGIH : NO DATA
   5-2.Biological exposure indices : NO DATA

6) Rutile(TiO2)
   6-1.ACGIH : NO DATA
   6-2.Biological exposure indices : NO DATA

7) Xylene
   7-1.ACGIH : NO DATA
   7-2.Biological exposure indices : NO DATA

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
   8-1.ACGIH : NO DATA
   8-2.Biological exposure indices : NO DATA

9) 2-Butoxyethanol
   9-1.ACGIH : NO DATA
   9-2.Biological exposure indices : NO DATA

10)4-Methyl-2-pentanone
   10-1.ACGIH : NO DATA
   10-2.Biological exposure indices : NO DATA

11)Ethylbenzene
   11-1.ACGIH : NO DATA
   11-2.Biological exposure indices : NO DATA

12)Ethanol
   12-1.ACGIH : NO DATA
   12-2.Biological exposure indices : NO DATA

B.Engineering Controls : ▷ Spread water for reducing the suppression of generated steam ▷ Stay upwind and keep out of low areas.. ▷ NO DATA. ▷ NO DATA.

C.Personal Protective Equipment

1) Respiratory protection : Respiratory protection is ranked in order from minimum to maximum Under conditions of frequent use or heavy exposure, respiratory protection may be needed Consider warning properties before use will be If there is a possibility of direct contact or exposure to these substances should wear a dust mask or respirator for organic compounds 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. Wear respirator should be authorized by Korea Occupational Safety and Health Agency
2) Eye protection : If there is a possibility of direct contact or exposure to these substances should wear goggles or a face protection Let workers do wear the safety glasses in case hazard caused by mist may be expected. Cleansing Organization (saline) or install washing facilities and an emergency washing facilities in the place close to workplace. Use the protect respirator for organic solvent or higher level of capacity.
3) Hand protection : Wear appropriate protective gloves If there is a possibility of direct contact or exposure to these substances should wear safety gloves for chemicals Wear the chemical protection of gloves Do the workers wear the impermeable protective gloves made from rubber/PVC due to skin irritation may be supposed by chronicle/long period exposure.
4) Skin protection : Wear 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 Wear appropriate chemical protective clothing. Work after wearing the impermeable protective apron made by rubber/PVC in case hazard caused by exposure or spill, if needed wear the impermeable whole body protective clothing.

9.Physical and chemical properties

A.Appearance : GRAY
B.Odor : solvent odor
C.Odor threshold : NO DATA
D.PH : NO DATA
E.Melting point/Freezing point : NO DATA
F.Initial Boiling Point/Boiling Ranges : 112~150℃
G.Flash point : 38.36
H.Evaporating Rate : NO DATA
I.Flammability(solid, gas) : 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 : 354℃
Q.Decomposition temperature : 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 combustable materials
D.Hazardous decomposition products : Thermal decomposition products (carbon etc.,)

11.Toxicological information

A.Information on the likely routes of exposure
1) Respiratory tracts : Adverse lung effects, Dyspnoea, Hypothermia, Vomitting
2) Oral : Vomitting, Diarrhea, Stomach pain, Irregular heartbeat
3) Skin : Irritation, Burn, Adverse nerve effects
4) Eye : Irritation, eye damage
B.Delayed and immediate effects and also chronic effects from short and long term exposure
1) n-Butyl acetate
1-1. Acute toxicity
a. Oral : LD50 = 14130 mg/kg Rat
b. Dermal : LD50 = 17600 mg/kg Rabbit
c. Inhalation : LD50 = 17600 mg/kg Rabbit

1-2. Skin corrosion/irritation : Causes a weak stimulus person.
1-3. Serious eye damage/irritation : Non-irritating to rabbit eye irritation
1-4. Respiratory sensitization : NO DATA
1-5. Skin sensitization : Not a skin sensitizer
1-6. Carcinogenicity
6-1. IARC : NO DATA
6-2. OSHA : NO DATA
6-3. ACGIH : NO DATA
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA
1-7. Germ cell mutagenicity : NO DATA
1-8. Reproductive toxicity : NO DATA
1-9. STOT-single exposure : Central nervous system disorders who, pulmonary edema, respiratory irritation.
1-10. STOT-repeated exposure : NO DATA
1-11. Aspiration hazard : NO DATA

2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
2-1. Acute toxicity
a. Oral : NO DATA
b. Dermal : NO DATA
c. Inhalation : NO DATA
2-2. Skin corrosion/irritation : NO DATA
2-3. Serious eye damage/irritation : NO DATA
2-4. Respiratory sensitization : NO DATA
2-5. Skin sensitization : NO DATA
2-6. Carcinogenicity
6-1. IARC : NO DATA
6-2. OSHA : NO DATA
6-3. ACGIH : NO DATA
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA
2-7. Germ cell mutagenicity : NO DATA
2-8. Reproductive toxicity : NO DATA
2-9. STOT-single exposure : NO DATA
2-10. STOT-repeated exposure : NO DATA
2-11. Aspiration hazard : NO DATA

3) Barium sulfate, natural
3-1. Acute toxicity
a. Oral : LD50 > 3000 mg/kg Rat
b. Dermal : NO DATA
c. Inhalation : NO DATA
3-2. Skin corrosion/irritation : Non-irritating to human
3-3. Serious eye damage/irritation : e irritation have been reported in humans.
3-4. Respiratory sensitization : NO DATA
3-5. Skin sensitization : NO DATA
3-6. Carcinogenicity
6-1. IARC : NO DATA
6-2. OSHA : NO DATA
6-3. ACGIH : NO DATA
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA
3-7. Germ cell mutagenicity : NO DATA
3-8. Reproductive toxicity : NO DATA
3-9. STOT-single exposure : NO DATA
3-10. STOT-repeated exposure : NO DATA
3-11. Aspiration hazard : NO DATA

4) Talc (Not containing asbestos)
   4-1. Acute toxicity
      a. Oral : NO DATA
      b. Dermal : NO DATA
      c. Inhalation : NO DATA
   4-2. Skin corrosion/irritation : 300㎍/3day(human) : weak stimulus
   4-3. Serious eye damage/irritation : NO DATA
   4-4. Respiratory sensitization : NO DATA
   4-5. Skin sensitization : NO DATA
   4-6. Carcinogenicity
      6-1. IARC : Group 2B
      6-2. OSHA : NO DATA
      6-3. ACGIH : A4
      6-4. NTP : NO DATA
      6-5. EU CLP : NO DATA
   4-7. Germ cell mutagenicity : Salmonella species / Negative
   4-8. Reproductive toxicity : Salmonella species / Negative
   4-9. STOT-single exposure : NO DATA
   4-10. STOT-repeated exposure : NO DATA
   4-11. Aspiration hazard : NO DATA
5) Propylene glycol methyl ether acetate
   5-1. Acute toxicity
      a. Oral : LD50 = 8532 mg/kg Rat
      b. Dermal : LD50 > 5000 mg/kg Rabbit
      c. Inhalation : LD50 > 5000 mg/kg Rabbit
   5-2. Skin corrosion/irritation : rabbit: non-Irritation
   5-3. Serious eye damage/irritation : Rabbit: mild irritant
   5-4. Respiratory sensitization : NO DATA
   5-5. Skin sensitization : Guinea pig / maximization test (GLP): No sensitization
   5-6. Carcinogenicity
      6-1. IARC : NO DATA
      6-2. OSHA : NO DATA
      6-3. ACGIH : NO DATA
      6-4. NTP : NO DATA
      6-5. EU CLP : NO DATA
   5-7. 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
   5-8. Reproductive toxicity : In vitro - Salmonella typhimurium/TA98, TA100, TA1535, TA1537 (복귀돌연변이시험, GLP): 대사활성계 유무와 상관없이 Negative(음성), CHL Cells/염색체이상시험 (GLP): 대사활성계 유무와 상관없이 Negative(음성), 래트 간세포/UDS 시험 (GLP): 대사활성계 비존재시 Negative(음성
   5-9. 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.)
   5-10. STOT-repeated exposure : Reported affect the kidneys, liver, central nervous system in humans. (PATTY 5th)
   5-11. Aspiration hazard : NO DATA
6) Rutile(TiO2)
   6-1. Acute toxicity
      a. Oral : LD50 > 24000 mg/kg Rat
      b. Dermal : NO DATA
      c. Inhalation : NO DATA
   6-2. Skin corrosion/irritation : NO DATA
   6-3. Serious eye damage/irritation : NO DATA
   6-4. Respiratory sensitization : NO DATA
   6-5. Skin sensitization : NO DATA
   6-6. Carcinogenicity

6-1. IARC : NO DATA
6-2. OSHA : NO DATA
6-3. ACGIH : NO DATA
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA

6-7. Germ cell mutagenicity : NO DATA
6-8. Reproductive toxicity : NO DATA
6-9. STOT-single exposure : NO DATA
6-10. STOT-repeated exposure : This risk may be increased by exposure to a case : Respiratory disorders
6-11. Aspiration hazard : NO DATA

7) Xylene

7-1. Acute toxicity
a. Oral : LD50=3550 mg/kg rat
b. Dermal : LD50 4350 ㎎/㎏ Rabbit
c. Inhalation : LD50 4350 ㎎/㎏ Rabbit

7-2. Skin corrosion/irritation : Skin irritation test in rabbits Causes moderate irritation.
7-3. Serious eye damage/irritation : Skin irritation test in rabbits Causes moderate irritation.
7-4. Respiratory sensitization : NO DATA
7-5. Skin sensitization : NO DATA
7-6. Carcinogenicity
6-1. IARC : Group 3
6-2. OSHA : NO DATA
6-3. ACGIH : A4
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA

7-7. Germ cell mutagenicity : If three people a voice dynamics, somatic cell mutagenicity tests in vivo (micronucleus test, chromosome test) Voice
7-8. Reproductive toxicity : If three people a voice dynamics, somatic cell mutagenicity tests in vivo (micronucleus test, chromosome test) Voice
7-9. STOT-single exposure : NO DATA
7-10. STOT-repeated exposure : NO DATA
7-11. Aspiration hazard : In the liquid can cause chemical pneumonia if swallowed.

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane

8-1. Acute toxicity
a. Oral : NO DATA
b. Dermal : NO DATA
c. Inhalation : NO DATA

8-2. Skin corrosion/irritation : NO DATA
8-3. Serious eye damage/irritation : NO DATA
8-4. Respiratory sensitization : NO DATA
8-5. Skin sensitization : NO DATA
8-6. Carcinogenicity
6-1. IARC : NO DATA
6-2. OSHA : NO DATA
6-3. ACGIH : NO DATA
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA

8-7. Germ cell mutagenicity : NO DATA
8-8. Reproductive toxicity : NO DATA
8-9. STOT-single exposure : NO DATA
8-10. STOT-repeated exposure : NO DATA
8-11. Aspiration hazard : NO DATA

9) 2-Butoxyethanol

9-1. Acute toxicity
a. Oral : LD50 = 1746 ㎎/㎏ Rat
b. Dermal : LD50 = 99 ㎎/㎏ Rabbit

c. Inhalation : LD50 = 99 mg/kg Rabbit

9-2. Skin corrosion/irritation : skin Irritation test result Irritation

9-3. Serious eye damage/irritation : Using the rabbit eye irritation test results - Severe irritation

9-4. Respiratory sensitization : NO DATA

9-5. Skin sensitization : Guinea pig test results negative, human patch test results in negative

9-6. Carcinogenicity

6-1. IARC : Group 3

6-2. OSHA : NO DATA

6-3. ACGIH : A3

6-4. NTP : NO DATA

6-5. EU CLP : NO DATA

9-7. Germ cell mutagenicity : (Using mouse and rat bone marrow cells) Micronucleustest Negative,

9-8. Reproductive toxicity : (Using mouse and rat bone marrow cells) Micronucleustest Negative,

9-9. STOT-single exposure : Throat irritation in humans are being observed. Appears neurotoxicity tests decreased activity decreased in rats and jerk reaction. Appears inhalation exposure test results suppress the central nervous system in rats and rabbits.

9-10. STOT-repeated exposure : The toxic effects appear in the blood (red blood cells) by inhalation exposure in animals.

9-11. Aspiration hazard : NO DATA

10) 4-Methyl-2-pentanone

10-1. Acute toxicity

a. Oral : LD50 = 2080 mg/kg Rat

b. Dermal : LD50 = 3000 mg/kg rabbit

c. Inhalation : LD50 = 3000 mg/kg rabbit

10-2. Skin corrosion/irritation : Using the rabbit and guinea pig Causes testresult weak stimulus

10-3. Serious eye damage/irritation : Non-irritating

10-4. Respiratory sensitization : NO DATA

10-5. Skin sensitization : negative test results using guinea pig

10-6. Carcinogenicity

6-1. IARC : Group 2B

6-2. OSHA : NO DATA

6-3. ACGIH : A3

6-4. NTP : NO DATA

6-5. EU CLP : NO DATA

10-7. Germ cell mutagenicity : Using mammalian erythrocytes Micronucleustest Negative

10-8. Reproductive toxicity : Rats were pregnant and inhalation toxicity test using mice results in decreased fetal body weight dose appears to be toxic to mother animals or the delayed ossification was seen was not teratogenic, reproductive toxicity have not been reported in humans

10-9. STOT-single exposure : Person, in prayer mucosal irritation, headache, dizziness, vomiting and other symptoms of central nervous system acting anesthetic appears to involve. Narcotic effects in animal experiments appears.

10-10. STOT-repeated exposure : It appears symptoms of exhaustion, feeling, headache, heartburn, stomach pain, vomiting, sore throat, etc. In the eyes of the people.

10-11. Aspiration hazard : NO DATA

11) Ethylbenzene

11-1. Acute toxicity

a. Oral : LD50 = 3500 mg/kg Rat

b. Dermal : LD50 = 15400 mg/kg Rabbit

c. Inhalation : Steam LC50 = 4000 ppm 4 hr Rat (Equivalents : 17.4 mg/L)

11-2. Skin corrosion/irritation : skin Irritation test result weak Irritation

11-3. Serious eye damage/irritation : Rabbit eye irritation test results in a slight conjunctival irritation, recoverable damage.

11-4. Respiratory sensitization : NO DATA

11-5. Skin sensitization : NO DATA

11-6. Carcinogenicity

6-1. IARC : Group 2B

6-2. OSHA : NO DATA
6-3. ACGIH : A3
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA

11-7. Germ cell mutagenicity : Micronucleustest Negative (7)
11-8. Reproductive toxicity : Micronucleustest Negative (7)
11-9. STOT-single exposure : It causes central nervous system effects in laboratory animals and airway irritation.
11-10. STOT-repeated exposure : NO DATA
11-11. Aspiration hazard : Hydrocarbons. Swallowing the liquid by aspiration may cause chemical pneumonia. Ties seongryul 0.74 mm2 / s (25 ℃)

12) Ethanol
12-1. Acute toxicity
a. Oral : LD50 = 6200 mg/kg Rat
b. Dermal : NO DATA
c. Inhalation : NO DATA
12-2. Skin corrosion/irritation : non-irritating
12-3. Serious eye damage/irritation : Middle stimulus
12-4. Respiratory sensitization : NO DATA
12-5. Skin sensitization : NO DATA
12-6. Carcinogenicity
6-1. IARC : Group 1
6-2. OSHA : NO DATA
6-3. ACGIH : A3
6-4. NTP : NO DATA
6-5. EU CLP : NO DATA
12-7. Germ cell mutagenicity : Dominant lethal test in mice - negative (ECHA)
12-8. Reproductive toxicity : Dominant lethal test in mice - negative (ECHA)
12-9. STOT-single exposure : NO DATA
12-10. STOT-repeated exposure : NO DATA
12-11. Aspiration hazard : NO DATA

12.Ecological information

A.Ecotoxicity
1) n-Butyl acetate
1-1. Fish : LC50 = 62 ㎎/ℓ 96 hr
1-2. Crustaceans : LC50 = 32 ㎎/ℓ 48 hr
1-3. Algae : NO DATA
2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
2-1. Fish : NO DATA
2-2. Crustaceans : NO DATA
2-3. Algae : NO DATA
3) Barium sulfate, natural
3-1. Fish : NO DATA
3-2. Crustaceans : EC50 = 32 ㎎/ℓ 48 hr Daphnia magna
3-3. Algae : EC50 = 1890.263 ㎎/ℓ 96 hr
4) Talc (Not containing asbestos)
4-1. Fish : LC50 > 100000 ㎎/ℓ 24 hr Brachydanio rerio
4-2. Crustaceans : LC50 = 94983.781 ㎎/ℓ 48 hr
4-3. Algae : LC50 = 48545.539 ㎎/ℓ
5) Propylene glycol methyl ether acetate
5-1. Fish : LC50 ≥ 100 ㎎/ℓ 96 hr Oryzias latipes
5-2. Crustaceans : EC50 = 373 ㎎/ℓ 48 hr Daphnia magna
5-3. Algae : EC50 ≥ 1000 ㎎/ℓ 72 hr Selenastrum capricornutum
6) Rutile(TiO2)

6-1. Fish : LC50 = 35.988 ㎎/ℓ 96 hr
6-2. Crustaceans : LC50 = 39.180 ㎎/ℓ 48 hr
6-3. Algae : EC50 = 24.821 ㎎/ℓ 96 hr

7) Xylene
7-1. Fish : NO DATA
7-2. Crustaceans : NO DATA
7-3. Algae : NO DATA

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
8-1. Fish : NO DATA
8-2. Crustaceans : NO DATA
8-3. Algae : NO DATA

9) 2-Butoxyethanol
9-1. Fish : LC50 = 1250 ㎎/ℓ 96 hr
9-2. Crustaceans : LC50 = 5.4 ㎎/ℓ 96 hr
9-3. Algae : NO DATA

10) 4-Methyl-2-pentanone
10-1. Fish : LC50 = 540 ㎎/ℓ 96 hr
10-2. Crustaceans : EC50 = 170 ㎎/ℓ 48 hr
10-3. Algae : NO DATA

11) Ethylbenzene
11-1. Fish : LC50 = 9.09 ㎎/ℓ 96 hr
11-2. Crustaceans : LC50 = 0.4 ㎎/ℓ 96 hr
11-3. Algae : NO DATA

12) Ethanol
12-1. Fish : LC50 = 42 ㎎/ℓ 96 hr Oncorhynchus mykiss
12-2. Crustaceans : EC50 = 2 ㎎/ℓ 48 hr Daphnia magna
12-3. Algae : NO DATA

B.Persistence and degradability

1) n-Butyl acetate
1-1. Persistence : log Kow = 1.78
1-2. Degradability : NO DATA

2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
2-1. Persistence : NO DATA
2-2. Degradability : NO DATA

3) Barium sulfate, natural
3-1. Persistence : log Kow = 0.63
3-2. Degradability : NO DATA

4) Talc (Not containing asbestos)
4-1. Persistence : log Kow = -1.50
4-2. Degradability : NO DATA

5) Propylene glycol methyl ether acetate
5-1. Persistence : log Kow = 0.43
5-2. Degradability : NO DATA

6) Rutile(TiO2)
6-1. Persistence : NO DATA
6-2. Degradability : NO DATA

7) Xylene
7-1. Persistence : NO DATA
7-2. Degradability : NO DATA

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
8-1. Persistence : NO DATA
8-2. Degradability : NO DATA

9) 2-Butoxyethanol
9-1. Persistence : log Kow = 0.83
9-2. Degradability : NO DATA

10) 4-Methyl-2-pentanone
10-1. Persistence : log Kow = 1.38
10-2. Degradability : NO DATA
11) Ethylbenzene
11-1. Persistence : NO DATA
11-2. Degradability : NO DATA
12) Ethanol
12-1. Persistence : NO DATA
12-2. Degradability : BOD5/COD = 0.57

C.Bioaccumulative potential
1) n-Butyl acetate
1-1. Bioaccumulative potential : NO DATA
1-2. Biodegration : Biodegradability = 98 (%)
2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
2-1. Bioaccumulative potential : NO DATA
2-2. Biodegration : NO DATA
3) Barium sulfate, natural
3-1. Bioaccumulative potential : BCF = 3.162
3-2. Biodegration : NO DATA
4) Talc (Not containing asbestos)
4-1. Bioaccumulative potential : NO DATA
4-2. Biodegration : NO DATA
5) Propylene glycol methyl ether acetate
5-1. Bioaccumulative potential : NO DATA
5-2. Biodegration : Biodegradability > 60 (%) 28 day
6) Rutile(TiO2)
6-1. Bioaccumulative potential : BCF = 10.38
6-2. Biodegration : NO DATA
7) Xylene
7-1. Bioaccumulative potential : NO DATA
7-2. Biodegration : 39 (%)
8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
8-1. Bioaccumulative potential : NO DATA
8-2. Biodegration : NO DATA
9) 2-Butoxyethanol
9-1. Bioaccumulative potential : NO DATA
9-2. Biodegration : Biodegradability = 96 (%)
10) 4-Methyl-2-pentanone
10-1. Bioaccumulative potential : NO DATA
10-2. Biodegration : NO DATA
11) Ethylbenzene
11-1. Bioaccumulative potential : NO DATA
11-2. Biodegration : NO DATA
12) Ethanol
12-1. Bioaccumulative potential : NO DATA
12-2. Biodegration : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed)

D.Mobility in soil
1) n-Butyl acetate
▷ NO DATA
2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
▷ NO DATA
3) Barium sulfate, natural
▷ NO DATA
4) Talc (Not containing asbestos)

▷ NO DATA

5) Propylene glycol methyl ether acetate
▷ NO DATA

6) Rutile(TiO2)
▷ NO DATA

7) Xylene
▷ log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
▷ NO DATA

9) 2-Butoxyethanol
▷ NO DATA

10) 4-Methyl-2-pentanone
▷ NO DATA

11) Ethylbenzene
▷ log Kow = 3.15 (11)

12) Ethanol
▷ Koc = 1

E.Other adverse effects

1) n-Butyl acetate
▷ NO DATA

2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
▷ NO DATA

3) Barium sulfate, natural
▷ NO DATA

4) Talc (Not containing asbestos)
▷ NO DATA

5) Propylene glycol methyl ether acetate
▷ NO DATA

6) Rutile(TiO2)
▷ NO DATA

7) Xylene
▷ NO DATA

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane
▷ NO DATA

9) 2-Butoxyethanol
▷ NO DATA

10) 4-Methyl-2-pentanone
▷ NO DATA

11) Ethylbenzene
▷ NO DATA

12) Ethanol
▷ NO DATA

13.Disposal considerations

A.Disposal methods : Spilled material should keep in the airtighted container, and consign according to Waste Mateial 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, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)
C.Hazard class : 3
D.Packing group : III
E.Marine pollutant : N/A
F.Special precautions for user related to transport or transportation measures
1) EmS FIRE SCHEDULE : F-E
2) EmS SPILLAGE SCHEDULE : S-E

15. Regulatory information

1) n-Butyl acetate
1-1. Information of EU Classification
▷ Classification : NO DATA
▷ Risk Phrases : NO DATA
▷ Safety Phrase : NO DATA
1-2. 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
1-3. Rotterdam Convention listed ingredients : NO DATA
1-4. Stockholm Convention listed ingredients : NO DATA
1-5. Montreal Protocol listed ingredients : NO DATA
2) 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene, 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
2-1. Information of EU Classification
▷ Classification : NO DATA
▷ Risk Phrases : NO DATA
▷ Safety Phrase : NO DATA
2-2. 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
2-3. Rotterdam Convention listed ingredients : NO DATA
2-4. Stockholm Convention listed ingredients : NO DATA
2-5. Montreal Protocol listed ingredients : NO DATA
3) Barium sulfate, natural
3-1. Information of EU Classification
▷ Classification : NO DATA
▷ Risk Phrases : NO DATA
▷ Safety Phrase : NO DATA
3-2. 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
3-3. Rotterdam Convention listed ingredients : NO DATA
3-4. Stockholm Convention listed ingredients : NO DATA

3-5. Montreal Protocol listed ingredients : NO DATA

4) Talc (Not containing asbestos)

4-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

4-2. 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

4-3. Rotterdam Convention listed ingredients : NO DATA

4-4. Stockholm Convention listed ingredients : NO DATA

4-5. Montreal Protocol listed ingredients : NO DATA

5) Propylene glycol methyl ether acetate

5-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

5-2. 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

5-3. Rotterdam Convention listed ingredients : NO DATA

5-4. Stockholm Convention listed ingredients : NO DATA

5-5. Montreal Protocol listed ingredients : NO DATA

6) Rutile(TiO2)

6-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

6-2. 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

6-3. Rotterdam Convention listed ingredients : NO DATA

6-4. Stockholm Convention listed ingredients : NO DATA

6-5. Montreal Protocol listed ingredients : NO DATA

7) Xylene

7-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

7-2. 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

7-3. Rotterdam Convention listed ingredients : NO DATA

7-4. Stockholm Convention listed ingredients : NO DATA

7-5. Montreal Protocol listed ingredients : NO DATA

8) Soybean oil polymer with phthalic anhydride and trimethylolpropane

8-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

8-2. 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

8-3. Rotterdam Convention listed ingredients : NO DATA

8-4. Stockholm Convention listed ingredients : NO DATA

8-5. Montreal Protocol listed ingredients : NO DATA

9) 2-Butoxyethanol

9-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

9-2. 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

9-3. Rotterdam Convention listed ingredients : NO DATA

9-4. Stockholm Convention listed ingredients : NO DATA

9-5. Montreal Protocol listed ingredients : NO DATA

10)4-Methyl-2-pentanone

10-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

10-2. 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) : pertinent

10-3. Rotterdam Convention listed ingredients : NO DATA

10-4. Stockholm Convention listed ingredients : NO DATA

10-5. Montreal Protocol listed ingredients : NO DATA

11)Ethylbenzene

11-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

11-2. 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

11-3. Rotterdam Convention listed ingredients : NO DATA

11-4. Stockholm Convention listed ingredients : NO DATA

11-5. Montreal Protocol listed ingredients : NO DATA

12)Ethanol

12-1. Information of EU Classification

▷ Classification : NO DATA

▷ Risk Phrases : NO DATA

▷ Safety Phrase : NO DATA

12-2. 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

12-3. Rotterdam Convention listed ingredients : NO DATA

12-4. Stockholm Convention listed ingredients : NO DATA

12-5. Montreal Protocol listed ingredients : NO DATA

16.Other information

A.Reference : Occupational Health and Safety Act
Korea Industrial Safety Corporation Preparation of Material Safety Data Sheet
KOSHA CODE W-05-2007【The guideline for MSDS , 2012.】

B.Issue date : 2016-10-18 오후 3:49:45

C.Revision number and Last date revised : 1.(2016-10-18 오후 3:49:45)

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