1. Identification

A. Product name : YEGREEENA COLORFLOOR TOP COATING(BASE)

B. Recommended Use and Restriction on Use
- ○ General use : For concrete
- ○ 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

D. AU Importer
- ○ Company name : Synergy Building Supplies
- ○ Address : 236 PLANET ST WELSHPOOL WA 6106
- ○ Emergency telephone number : 1300 655 853

2. Hazard identification

A. GHS Classification

Carcinogenicity Category 2
Germ cell mutagenicity Category 2
Chronic aquatic toxicity Category 2
Serious eye damage/irritation Category 2A
Specific target organ toxicity(Repeated exposure) Category 2
Skin sensitization Category 1
Skin corrosion/irritation Category 2

B. GHS label elements

○ Hazard symbols

○ Signal words : WARNING

○ Hazard statements :

H351 Suspected of causing cancer
H341 Suspected of causing genetic defects
H411 Toxic 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

○ Precautionary statements

- Prevention

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.
P273 Avoid release to the environment.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.

- Response

P308+P313 If exposed or concerned: Get medical advice/attention.
P391 Collect spillage.
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.
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
P363 Wash contaminated clothing before reuse.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.

- Storage

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)

NFPA grade / Chemical Name	Health	Flammability	Reactivity
4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane	2	1	0
Propylene glycol methyl ether	0	3	0
(Butoxymethyl)oxirane	3	2	1

3. Composition/information on ingredients

Chemical Name	Trade names and Synonyms	CAS-NO	Content(%)
4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane	4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane	25068-38-6	85~95
Propylene glycol methyl ether	Propylene glycol methyl ether	107-98-2	5~15
(Butoxymethyl)oxirane	(Butoxymethyl)oxirane	2426-08-6	3~13

4. First-aid measures

A. Eye Contact : 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 : 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 inhalated 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 : 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 symtoms. 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 : 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 : Carbon dioxide, toxic carbon compounds/Nitrogen compounds/sulfur compounds
- ○ Fire and Explosion danger : 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 : 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 : 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 : Stored in an isolated place, freezing caution, high temperature body caution. Avoid strong oxidizing agents, acid. Storage temperature: 5 ~ 35 ℃ 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

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- ACGIH : NO DATA
- Biological exposure indices : NO DATA

○ Propylene glycol methyl ether
- ACGIH : NO DATA
- Biological exposure indices : NO DATA

○ (Butoxymethyl)oxirane
- 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 : 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 : 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 : 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 : 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 : Liquid

B. Odor : Specific Odor

C. Odor threshold : NO DATA

D. PH : NO DATA

E. Melting point/Freezing point : NO DATA

F. Initial Boiling Point/Boiling Ranges : 171℃

G. Flash point : 74

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 : Water insoluble

M. Vapour density : NO DATA

N. Specific gravity : 1.1 ± 0.3

O. Partition coefficient of n-octanol/water : NO DATA

P. Autoignition temperature : 425

Q. Decomposition temperature : NO DATA

R. Viscosity : 120~130KU

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
○ 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
○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- Acute toxicity

Oral : LD50 > 1000 ㎎/㎏ Rat
Dermal : LD50 > 20000 ㎎/㎏ Rabbit
Inhalation : LD50 > 20000 ㎎/㎏ Rabbit
- Skin corrosion/irritation : - rabbit skin Irritation(CERI Hazard data 2002) - Annex 1 to the 7th EU Directive revision of the classification R3
- Serious eye damage/irritation : - Having a rabbit eye irritation (CERI Hazard Data, 2002) - STANDARD DRAIZE TEST rabbit show in the middle or stimulation
- Respiratory sensitization : NO DATA
- Skin sensitization : Revision of the EU Directive Annex 1 to the classification of the 7th R43 (may cause sensitization by skin contact. Apply)
- Carcinogenicity
IARC : NO DATA
OSHA : NO DATA
ACGIH : NO DATA
NTP : NO DATA
EU CLP : NO DATA
- Germ cell mutagenicity : In vitro CHL cells, without metabolic activation in the Positive salt vivo test was over, metabolic activation in the test Negative. - Salmonella typhimuriumtest the Positive
- Reproductive toxicity : In vitro CHL cells, without metabolic activation in the Positive salt vivo test was over, metabolic activation in the test Negative. - Salmonella typhimuriumtest the Positive
- STOT-single exposure : NO DATA
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

○ Propylene glycol methyl ether
- Acute toxicity
Oral : LD50 > 5000 ㎎/㎏ Rat
Dermal : LD50 = 13000 ㎎/㎏ Rabbit
Inhalation : LD50 = 13000 ㎎/㎏ 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

○ (Butoxymethyl)oxirane
- Acute toxicity
Oral : LD50 = 1660 ㎎/㎏ Rat
Dermal : LD50 = 788 ㎎/㎏ Rabbit
Inhalation : LD50 = 788 ㎎/㎏ Rabbit
- Skin corrosion/irritation : weakstimulus(454mg, 3day, rabbit), usuallystimulus(20mg, 24H, rabbit) skin - stimulus
- Serious eye damage/irritation : Severe irritation(750ug, 24hr, rabbit), Mild irritant(91mg, rabbit)
- Respiratory sensitization : NO DATA
- Skin sensitization : Skin sensitization in humans have been reported
- Carcinogenicity
IARC : NO DATA
OSHA : NO DATA
ACGIH : NO DATA
NTP : NO DATA
EU CLP : Carc.2
- Germ cell mutagenicity : Using Mouse Micronucleus test result Positive
- Reproductive toxicity : rat micronucleus test : positive
- STOT-single exposure : Irritating people appear to pray
- STOT-repeated exposure : NO DATA
- Aspiration hazard : NO DATA

12. Ecological information

A. Ecotoxicity

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- Fish : LC50 = 1.41 ㎎/ℓ 96 hr Oryzias latipes
- Crustaceans : EC50 = 1.7 ㎎/ℓ 48 hr
- Algae : NO DATA

○ Propylene glycol methyl ether
- Fish : NO DATA
- Crustaceans : EC50 > 500 ㎎/ℓ 48 hr
- Algae : NO DATA

○ (Butoxymethyl)oxirane
- Fish : NO DATA
- Crustaceans : NO DATA
- Algae : NO DATA

B. Persistence and degradability

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- Persistence : log Kow = 2.821 (Estimates)
- Degradability : NO DATA

○ Propylene glycol methyl ether
- Persistence : NO DATA
- Degradability : NO DATA

○ (Butoxymethyl)oxirane
- Persistence : NO DATA
- Degradability : NO DATA

C. Bioaccumulative potential

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- Bioaccumulative potential : BCF = 0.56 ~ 0.67 (Exposure concentrations:10ug/l, 5.6<= BCF=<6.8(Exposure concentrations:1ug/l))
- Biodegration : Biodegradability = 0 (%) 28 day

○ Propylene glycol methyl ether
- Bioaccumulative potential : BCF = 2
- Biodegration : Biodegradability = 90 (%) 29 day (Aerobic, industrial sewage, Easily decomposed)

○ (Butoxymethyl)oxirane
- Bioaccumulative potential : NO DATA
- Biodegration : NO DATA

D. Mobility in soil

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
▷ NO DATA

○ Propylene glycol methyl ether
▷ NO DATA

○ (Butoxymethyl)oxirane
▷ NO DATA

E. Other adverse effects

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
▷ NO DATA

○ Propylene glycol methyl ether
▷ NO DATA

○ (Butoxymethyl)oxirane
▷ NO DATA

13. Disposal considerations

A. Disposal methods : Disposal 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 : 3082

B. Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

C. Hazard class : 9

D. Packing group : III

E. Marine pollutant : be applicable

F. Special precautions for user related to transport or transportation measures

○ EmS FIRE SCHEDULE : F-A

○ EmS SPILLAGE SCHEDULE : S-F

15. Regulatory information

○ 4,4'-(1-methylethylidene)bisphenol polymer with (chloromethyl)oxirane
- 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

○ 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

○ (Butoxymethyl)oxirane
- 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

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 : 2018-01-03 오후 5:41:13

C. Revision number and Last date revised : 1.(2018-01-03 오후 5:41:13)

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