



MATERIAL SAFETY DATA SHEET

Road Marking Paint for KS M 6080 The 5th Class Part A

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1. IDENTIFICATION

A. Product name

- Road Marking Paint for KS M 6080 The 5th Class Part A

B. Recommended use and restriction on use

- General use : Road marking Paint
 - Restriction on use : Don't use this for other use

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : JEONGSEOK
 - Address : 192 Wanjusandan 5ro bongdong-eup Wanju-gun, Jeollabuk-do Korea, 565-904
 - Dept. : R&D Department
 - Telephone number : +82-63-260-2323
 - Emergency telephone number : +82-63-260-2323
 - Fax number : +82-63-260-3577
 - E-mail address :

o Supplier/Distributor information

- Company name : JEONGSEOK
 - Address : 192 Wanjusandan 5ro bongdong-eup Wanju-gun, Jeollabuk-do Korea, 565-904
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 - E-mail address :

2. HAZARD IDENTIFICATION

A. GHS Classification

- Carcinogenicity : Category1A
 - Flammable liquids : Category2
 - Specific target organ toxicity(Repeated exposure) : Category1
 - Skin sensitization : Category1

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H225 Highly flammable liquid and vapour
 - H317 May cause an allergic skin reaction

- H350 May cause cancer
- H372 Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

o Precautionary statements

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- 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.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P363 Wash contaminated clothing before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

4) 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)

o NFPA grade (0 ~ 4 level)

- Health : 0, Flammability : 0, Reactivity : 1

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Limestone	Calcium carbonate	1317-65-3	30 ~ 40
Titanium dioxide	Titanium oxide (TiO ₂)	13463-67-7	10 ~ 20
Quartz (SiO ₂)	Crystalline silica	14808-60-7	10 ~ 20
2-Hydroxyethyl methacrylate	Ethylene glycol methacrylate	868-77-9	1 ~ 10
Silicon dioxide	Silic anhydride	7631-86-9	1 ~ 10
Secret	Secret	-	1 ~ 10

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of wter for at least 15 minutes while removing contaminated clothing and shoes.

- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- Remove contaminated clothing, shoes and isolate.
- Wash thoroughly after handling.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- About whether I should induce vomiting Take the advice of a doctor.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is out.
- Avoid inhalation of materials or combustion by-products.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- The extremely low flash point made by fire-fighters may be less effective at digesting weeks.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- Handling the damaged containers or spilled material after wearing protective equipment.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Do not use plastic containers.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Comply with all applicable laws and regulations for handling
- Get the manual before use.
- Dealing only with a well-ventilated place.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Save in cool, dry and well ventilated place.
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Keep in the original container.
- Keep sealed when not in use.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - [Titanium dioxide] : TWA 10 mg/m³
 - [Quartz (SiO₂)] : TWA 0.025 mg/m³, Respirable particulate matter
 - [Secret] : TWA 100 ppm (434 mg/m³), STEL, 150 ppm (651 mg/m³)
 - [Secret] : Ceiling, 100 mg/m³ (39 ppm), Aerosol
 - [Secret] : TWA, 20 ppm (87 mg/m³)
 - [Secret] : TWA, 150 ppm (713 mg/m³), STEL, 200 ppm (950 mg/m³)
 - [Secret] : TWA, 50 ppm (152 mg/m³)
 - [Secret] : TWA 20 ppm (75 mg/m³)

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Personal protective equipment

- o **Respiratory protection**
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Any chemical cartridge respirator with organic vapor cartridge(s).

- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- **Hand protection**
 - Wear appropriate chemical resistant glove.
- **Skin protection**
 - Wear appropriate chemical resistant protective clothing.
- **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	Not available
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	100 °C
G. Flash point	13 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	12.5/0.8
K. Vapour pressure	Not available
L. Solubility	Insolubility
M. Vapour density	Not available
N. Specific gravity(Relative density)	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	280
Q. Decomposition temperature	Not available
R. Viscosity	paste
S. Molecular weight	No information

10. STABILITY AND REACTIVITY

A. Chemical Stability and Reactivity

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- **(Respiratory tracts)**
 - Not available
- **(Oral)**
 - Not available
- **(Eye/Skin)**
 - May cause an allergic skin reaction

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - [Titanium dioxide] : LD50 > 10000 mg/kg Rat
 - [2-Hydroxyethyl methacrylate] : LD50 > 4000 mg/kg Rat
 - [Silicon dioxide] : LD50 = 3160 mg/kg Rat
 - [Secret] : LD50 > 5000 mg/kg Rat
 - [Secret] : LD50=3550 mg/kg rat
 - [Secret] : LD50 = 4000 mg/kg Rat
 - [Secret] : LD50 = 8400 mg/kg Rat
 - [Secret] : LD50 = 3500 mg/kg Rat
 - [Secret] : LD50 = 8532 mg/kg Rat
 - [Secret] : LD50 = 14130 mg/kg Rat
 - [Secret] : LD50 = 2460 mg/kg Rat
 - [Secret] : rat LD50=2600 mg/kg
 - * **Dermal**
 - [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit
 - [2-Hydroxyethyl methacrylate] : LD50 > 3000 mg/kg Rabbit
 - [Secret] : LD50 4350 mg/kg Rabbit
 - [Secret] : LD50 = 10600 mg/kg Rabbit
 - [Secret] : LD50 > 2000 mg/kg Rabbit
 - [Secret] : LD50 = 15400 mg/kg Rabbit
 - [Secret] : LD50 > 5000 mg/kg Rabbit
 - [Secret] : LD50 = 17600 mg/kg Rabbit
 - [Secret] : LD50 = 2460 mg/kg Rabbit
 - [Secret] : rabbit LD50=12,000 mg/kg
 - * **Inhalation**
 - [Titanium dioxide] : LC50 > 6.82 mg/l 4 hr Rat
 - [Secret] : Steam LC50 6700 ppm 4 hr Rat (Equivalents : 29.09 mg/L)
 - [Secret] : LC50 > 5.2 mg/L 4 hr Rat, LC50=3400 ppm 4hr
 - [Secret] : Steam LC50 = 9.6 mg/L/4 hr Rat
 - [Secret] : Steam LC50 = 28.8 mg/L/4 hr Rat
 - [Secret] : Steam LC50 = 0.74 mg/L/4hr Rat (GLP)
 - [Secret] : rat LC50=28.1 mg/L/4hr
- **Skin corrosion/irritation**
 - Not available
- **Serious eye damage/irritation**
 - Not available
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - May cause an allergic skin reaction
- **Carcinogenicity**
 - * **IARC**
 - [Titanium dioxide] : Group 2B
 - [Quartz (SiO₂)] : Group 1
 - [Silicon dioxide] : Group 3

- [Secret] : Group 3
- [Secret] : Group 2B
- * **OSHA**
 - Not available
- * **ACGIH**
 - [Titanium dioxide] : A4
 - [Quartz (SiO₂)] : A2
 - [Secret] : A4
 - [Secret] : A3
- * **NTP**
 - [Quartz (SiO₂)] : K
- * **EU CLP**
 - [Secret] : Carc. 1B
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [2-Hydroxyethyl methacrylate] : LC50 > 100 mg/ℓ 96 hr *Oryzias latipes*
 - [Secret] : LC50 = 11.911 mg/ℓ 96 hr Other
 - [Secret] : LC50 > 100 mg/ℓ 96 hr Other (*Salmo trutta*)
 - [Secret] : LC50 = 8050 mg/ℓ 96 hr *Pimephales promelas*
 - [Secret] : LC50 = 9.22 mg/ℓ 96 hr *Oncorhynchus mykiss*
 - [Secret] : LC50 = 9.09 mg/ℓ 96 hr
 - [Secret] : LC50 ≥ 100 mg/ℓ 96 hr *Oryzias latipes*
 - [Secret] : LC50 = 62 mg/ℓ 96 hr
 - [Secret] : LC50 = 1000 mg/ℓ 96 hr
 - [Secret] : LC50 24 mg/ℓ 96 hr *Oncorhynchus mykiss*
- **Crustaceans**
 - [Titanium dioxide] : EC50 > 1000 mg/ℓ 48 hr
 - [2-Hydroxyethyl methacrylate] : EC50 = 380 mg/ℓ 48 hr *Daphnia magna*
 - [Secret] : LC50 = 345.292 mg/ℓ 48 hr Other
 - [Secret] : EC50 > 100 mg/ℓ 48 hr *Daphnia magna*
 - [Secret] : LC50 = 41100 mg/ℓ 48 hr *Daphnia magna*
 - [Secret] : EC50 = 6.14 mg/ℓ 48 hr *Daphnia magna*
 - [Secret] : LC50 = 0.4 mg/ℓ 96 hr
 - [Secret] : EC50 = 373 mg/ℓ 48 hr *Daphnia magna*
 - [Secret] : LC50 = 32 mg/ℓ 48 hr
 - [Secret] : EC50 = 1250 mg/ℓ 24 hr
 - [Secret] : EC50 11.5 mg/ℓ 48 hr *Daphnia magna*
- **Algae**
 - [2-Hydroxyethyl methacrylate] : EC50 = 345 mg/ℓ 72 hr *Selenastrum capricornutum*
 - [Secret] : EC50 = 32.341 mg/ℓ 96 hr Other
 - [Secret] : EC50 > 100 mg/ℓ 72 hr *Selenastrum capricornutum*
 - [Secret] : EC50 = 6500 ~ 13000 mg/ℓ 96 hr *Selenastrum capricornutum*
 - [Secret] : EC50 = 19 mg/ℓ 72 hr *Selenastrum capricornutum*
 - [Secret] : EC50 ≥ 1000 mg/ℓ 72 hr *Selenastrum capricornutum*

B. Persistence and degradability

- **Persistence**
 - [2-Hydroxyethyl methacrylate] : log Kow = 0.42
 - [Silicon dioxide] : log Kow = 0.53
 - [Secret] : log Kow = -1.93
 - [Secret] : log Kow = 2.1 ~ 6 (Estimates)
 - [Secret] : log Kow = 0.43
 - [Secret] : log Kow = 1.78
 - [Secret] : log Kow = 0.8
 - [Secret] : log Kow 2.73
- **Degradability**
 - [Secret] : BOD = 0.78 COD = 1.19 BOD = 5/COD = = 0.66
 - [Secret] : BOD5/COD = 0.43

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [2-Hydroxyethyl methacrylate] : BCF = 1.34 ~ 1.54
 - [Silicon dioxide] : BCF = 3.162
 - [Secret] : BCF = 3.162
 - [Secret] : BCF = 200
- **Biodegradation**
 - [2-Hydroxyethyl methacrylate] : Biodegradability = 84 (%) 28 day
 - [Secret] : 39 (%)
 - [Secret] : Biodegradability = 89 (%) 20 day
 - [Secret] : Biodegradability > 60 (%) 28 day
 - [Secret] : Biodegradability = 98 (%)
 - [Secret] : 86 (%) 20 day

D. Mobility in soil

- [Secret] : log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
- [Secret] : log Kow = 3.15 (11)
- [Secret] : log Kow = 0.8 (1)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat sepatatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.
- High temperature incinerate
- After taking off organic solvents that are supposed to be recycled, incinerate the rest of them at a high degree.

B. Special precautions for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN number

- 1263

B. Proper shipping name

-PAINT

C. Hazard class

- 3

D. Packing group

- II

E. Marine pollutant

- Not available

- Not applicable

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

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-E (Flammable liquids, floating on water)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- o **POPs Management Law**
 - Not applicable
- o **Information of EU Classification**
 - * **Classification**
 - [2-Hydroxyethyl methacrylate] : Xi; R36/38 R43
 - [Secret] : R10 Xn; R20/21 Xi; R38
 - [Secret] : Xn; R22
 - [Secret] : Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
 - [Secret] : F; R11Xn; R20
 - [Secret] : R10
 - [Secret] : R10 R66 R67
 - [Secret] : R10 Xi; R37/38-41 R67
 - [Secret] : F; R11 Repr.Cat.3; R63 Xn; R48/20-65 Xi; R38 R67
 - * **Risk Phrases**
 - [2-Hydroxyethyl methacrylate] : R36/38, R43
 - [Secret] : R10, R20/21, R38
 - [Secret] : R22
 - [Secret] : R45, R65, R46
 - [Secret] : R11, R20
 - [Secret] : R10
 - [Secret] : R10, R66, R67
 - [Secret] : R10, R37/38, R41, R67
 - [Secret] : R11, R38, R48/20, R63, R65, R67
 - * **Safety Phrase**
 - [2-Hydroxyethyl methacrylate] : S2, S26, S28
 - [Secret] : S2, S25
 - [Secret] : S2
 - [Secret] : S53, S45
 - [Secret] : S2, S16, S24/25, S29
 - [Secret] : S2, S7/9, S13, S26, S37/39, S46
 - [Secret] : S2, S36/37, S46, S62
- o **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Secret] : 45.3599 kg 100 lb

- [Secret] : 2267.995 kg 5000 lb
- [Secret] : 453.599 kg 1000 lb
- * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
- * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
- * **EPCRA Section 313 (40CFR372.65)**
 - [Secret] : Applicable
- o **Rotterdam Convention listed ingredients**
 - Not applicable
- o **Stockholm Convention listed ingredients**
 - Not applicable
- o **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2016-12-02

C. Revision number and Last date revised

- 2 times, 2016-12-02

D. Other

- This MSDS is prepared according to the Globally Harmonized System (GHS).