

## MATERIAL SAFETY DATA SHEET

### Air drying Road Marking Paint for KS M 6080 The 1st Class Yellow

Date of issue: 2016-11-02

Revision date: Not applicable

Version: R0001.0001

#### 1. IDENTIFICATION

##### A. Product name

- Air drying Road Marking Paint for KS M 6080 The 1st Class Yellow [AP-52570-3093]

##### B. Recommended use and restriction on use

- General use : Road Marking Paint  
 - Restriction on use : Not available

##### 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  
 - 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 :

#### 2. HAZARD IDENTIFICATION

##### A. GHS Classification

- Carcinogenicity : Category2  
 - Reproductive toxicity : Category1B  
 - Serious eye damage/irritation : Category2  
 - Flammable liquids : Category2  
 - Specific target organ toxicity(Single exposure) : Category1  
 - Specific target organ toxicity(Repeated exposure) : Category1  
 - Skin corrosion/irritation : Category2

##### B. GHS label elements

###### o Hazard symbols



###### o Signal words

- Danger

○ **Hazard statements**

- H225 Highly flammable liquid and vapour
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H351 Suspected of causing cancer
- H360 May damage fertility or the unborn child
- H370 Causes damage to organs(Refer Section SDS 11)
- H372 Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ **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.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- 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.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P307+P311 If exposed: Call a POISON CENTER or doctor/physician.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing and wash 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)**

○ **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 0, Reactivity : 0

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Limestone	Calcium carbonate	1317-65-3	20 ~ 30
Toluene	Methylbenzene	108-88-3	10 ~ 20
2-Hydroxyethyl methacrylate, n-butyl methacrylate, butyl acrylate, styrene, methyl methacrylate, acrylic acid copolymer	-	57828-93-0	10 ~ 20
Talc	Talcum	14807-96-6	10 ~ 20
Xylene	Dimethylbenzene	1330-20-7	1 ~ 10
Dimethyl carbonate	Carbonic acid, dimethyl ester	616-38-6	1 ~ 10
C.I. pigment yellow 074	-	6358-31-2	1 ~ 10

Ethylene glycol monoethyl ether	Ethanol, 2-ethoxy-	110-80-5	1 ~ 10
Titanium dioxide	Titanium oxide (TiO <sub>2</sub> )	13463-67-7	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 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- Remove contact lenses if worn.

##### B. Skin contact

- Flush skin with plenty of water 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.
- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- Do not access if the tank on fire.
- 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

- Ventilate closed spaces before entering.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- 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

- Avoid contact with incompatible materials.
- Comply with all applicable laws and regulations for handling
- Refer to Engineering controls and personal protective equipment.
- Operators should wear antistatic footwear and clothing.
- 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

- Do not apply direct heat.
- Avoid direct sunlight.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### A. Exposure limits

- o ACGIH TLV
  - [Toluene] : TWA 20 ppm (75 mg/m<sup>3</sup>)
  - [Talc] : TWA 2 mg/m<sup>3</sup>, Respirable particulate matter (containing no asbestos and <1% crystalline silica)
  - [Xylene] : TWA 100 ppm (434 mg/m<sup>3</sup>), STEL, 150 ppm (651 mg/m<sup>3</sup>)
  - [Ethylene glycol monoethyl ether] : TWA, 5 ppm (18 mg/m<sup>3</sup>)

- [Titanium dioxide] : TWA 10 mg/m<sup>3</sup>
- [Secret] : TWA 0.025 mg/m<sup>3</sup>, Respirable particulate matter
- [Secret] : TWA 1 mg/m<sup>3</sup> STEL 3 mg/m<sup>3</sup>

## 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.

### o 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.

### o Hand protection

- Wear appropriate chemical resistant glove.

### o Skin protection

- Wear appropriate chemical resistant protective clothing.

### o Others

- Not available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	Yellow
B. Odor	Unpleasant
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	-48/-48
F. Initial Boiling Point/Boiling Ranges	139 °C
G. Flash point	4 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity(Relative density)	1.38 ± 0.05
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	93 ± 2 KU
S. Molecular weight	Not available

## 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)**
  - Causes serious eye irritation
  - Causes skin irritation

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

- **Acute toxicity**
  - \* **Oral**
    - [Toluene] : rat LD50=2600 mg/kg
    - [Xylene] : LD50=3550 mg/kg rat
    - [Dimethyl carbonate] : LD50 = 13000 mg/kg Rat
    - [Ethylene glycol monoethyl ether] : LD50 = 2125 mg/kg Rat
    - [Titanium dioxide] : LD50 > 10000 mg/kg Rat
    - [Secret] : LD50 > 5000 mg/kg Rat
    - [Secret] : LD50 = 8532 mg/kg Rat
    - [Secret] : LD50 = 3160 mg/kg Rat
    - [Secret] : LD50 = 8400 mg/kg Rat
    - [Secret] : LD50 = 1530 mg/kg Rat
  - \* **Dermal**
    - [Toluene] : rabbit LD50=12,000 mg/kg
    - [Xylene] : LD50 4350 mg/kg Rabbit
    - [Dimethyl carbonate] : LD50 = 5000 mg/kg Rabbit
    - [Ethylene glycol monoethyl ether] : LD50 = 3300 mg/kg Rabbit
    - [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit
    - [Secret] : LD50 > 5000 mg/kg Rabbit
    - [Secret] : LD50 > 2000 mg/kg Rabbit
    - [Secret] : LD50 = 2740 mg/kg rabbit
  - \* **Inhalation**
    - [Toluene] : rat LC50=28.1 mg/L/4hr
    - [Xylene] : Steam LC50 6700 ppm 4 hr Rat (Equivalent : 29.09 mg/L)
    - [Dimethyl carbonate] : LC50 = 140 mg/l 4 hr Rat
    - [Ethylene glycol monoethyl ether] : LC50 = 16 mg/l 4 hr Rat
    - [Titanium dioxide] : LC50 > 6.82 mg/l 4 hr Rat
    - [Secret] : Steam LC50 = 28.8 mg/L/4 hr Rat
    - [Secret] : LC50 > 5.2 mg/L 4 hr Rat, LC50=3400 ppm 4hr
- **Skin corrosion/irritation**

- Causes skin irritation
- **Serious eye damage/irritation**
  - Causes serious eye irritation
- **Respiratory sensitization**
  - Not available
- **Skin sensitization**
  - Not available
- **Carcinogenicity**
  - \* **IARC**
    - [Toluene] : Group 3
    - [Talc] : Group 2B
    - [Xylene] : Group 3
    - [Titanium dioxide] : Group 2B
    - [Secret] : Group 3
    - [Secret] : Group 1
  - \* **OSHA**
    - Not available
  - \* **ACGIH**
    - [Toluene] : A4
    - [Talc] : A4
    - [Xylene] : A4
    - [Titanium dioxide] : A4
    - [Secret] : A2
  - \* **NTP**
    - [Secret] : K
  - \* **EU CLP**
    - [Secret] : Carc. 1B
- **Germ cell mutagenicity**
  - Not available
- **Reproductive toxicity**
  - May damage fertility or the unborn child
- **STOT-single exposure**
  - Causes damage to organs(Refer Section SDS 11)
- **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**
  - [Toluene] : LC50 24 mg/l 96 hr *Oncorhynchus mykiss*
  - [Talc] : LC50 > 100000 mg/l 24 hr *Brachydanio rerio*
  - [C.I. pigment yellow 074] : LC50 = 33.605 mg/l 96 hr
  - [Secret] : LC50 1254.44 mg/l 96 hr *Salmo gairdneri*
  - [Secret] : LC50 ≥ 100 mg/l 96 hr *Oryzias latipes*
  - [Secret] : LC50 > 100 mg/l 96 hr Other (*Salmo trutta*)
  - [Secret] : LC50 = 9.22 mg/l 96 hr *Oncorhynchus mykiss*
  - [Secret] : LC50 = 123.852 mg/l 96 hr
- **Crustaceans**
  - [Toluene] : EC50 11.5 mg/l 48 hr *Daphnia magna*
  - [Talc] : LC50 = 94983.781 mg/l 48 hr
  - [C.I. pigment yellow 074] : LC50 = 35.557 mg/l 48 hr
  - [Ethylene glycol monoethyl ether] : LC50 = 90 mg/l 48 hr
  - [Titanium dioxide] : EC50 > 1000 mg/l 48 hr
  - [Secret] : EC50 = 373 mg/l 48 hr *Daphnia magna*
  - [Secret] : EC50 > 100 mg/l 48 hr *Daphnia magna*

- [Secret] : EC50 = 6.14 mg/ℓ 48 hr Daphnia magna
- [Secret] : EC50 = 4.6 mg/ℓ 12 hr
- [Secret] : LC50 = 2332.935 mg/ℓ 48 hr

○ **Algae**

- [Talc] : LC50 = 48545.539 mg/ℓ
- [C.I. pigment yellow 074] : EC50 = 25.518 mg/ℓ 96 hr
- [Secret] : EC50 ≥ 1000 mg/ℓ 72 hr Selenastrum capricornutum
- [Secret] : EC50 > 100 mg/ℓ 72 hr Selenastrum capricornutum
- [Secret] : EC50 = 19 mg/ℓ 72 hr Selenastrum capricornutum
- [Secret] : EC50 = 9.337 mg/ℓ 96 hr

## B. Persistence and degradability

○ **Persistence**

- [Toluene] : log Kow 2.73
- [Talc] : log Kow = -1.50
- [C.I. pigment yellow 074] : log Kow = 2.99
- [Secret] : log Kow 4.24 (KowWin estimate)
- [Secret] : log Kow = 0.43
- [Secret] : log Kow = 0.53
- [Secret] : log Kow 9.55 (Estimates)
- [Secret] : log Kow 5.87
- [Secret] : log Kow = 2.1 ~ 6 (Estimates)
- [Secret] : log Kow = 0.52

○ **Degradability**

- [Secret] : BOD5/COD = 0.43

## C. Bioaccumulative potential

○ **Bioaccumulative potential**

- [Secret] : BCF 10
- [Secret] : BCF = 3.162
- [Secret] : 2.8 (NITE: CHRIP)

○ **Biodegradation**

- [Toluene] : 86 (%) 20 day
- [Xylene] : 39 (%)
- [Secret] : (Cut-off value = -0.5669 : Non - biodegradability (BIOWIN 5))
- [Secret] : Biodegradability > 60 (%) 28 day

## D. Mobility in soil

- [Xylene] : log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
- [Secret] : Koc 36660 (Can be adsorbed in the soil)
- [Secret] : Koc = 1.838

## 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 seperatly, 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

- [Toluene] : F; R11 Repr.Cat.3; R63 Xn; R48/20-65 Xi; R38 R67
- [Xylene] : R10 Xn; R20/21 Xi; R38
- [Dimethyl carbonate] : F; R11
- [Ethylene glycol monoethyl ether] : R10 Repr. Cat. 2; R60-61 Xn; R20/21/22
- [Secret] : R10
- [Secret] : Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
- [Secret] : C; R34
- [Secret] : R10 Repr. Cat. 2; R61 Xi; R37

##### \* Risk Phrases

- [Toluene] : R11, R38, R48/20, R63, R65, R67
- [Xylene] : R10, R20/21, R38
- [Dimethyl carbonate] : R11
- [Ethylene glycol monoethyl ether] : R60, R61, R10, R20/21/22
- [Secret] : R10
- [Secret] : R45, R65, R46
- [Secret] : R34
- [Secret] : R61, R10, R37

##### \* Safety Phrase

- [Toluene] : S2, S36/37, S46, S62
- [Xylene] : S2, S25
- [Dimethyl carbonate] : S2, S9, S16
- [Ethylene glycol monoethyl ether] : S53, S45
- [Secret] : S2
- [Secret] : S53, S45

- [Secret] : S1/2, S26, S45
- o **U.S. Federal regulations**
  - \* **OSHA PROCESS SAFETY (29CFR1910.119)**
    - Not applicable
  - \* **CERCLA Section 103 (40CFR302.4)**
    - [Toluene] : 453.599 kg 1000 lb
    - [Xylene] : 45.3599 kg 100 lb
    - [Ethylene glycol monoethyl ether] : 453.599 kg 1000 lb
    - [Secret] : 2267.995 kg 5000 lb
  - \* **EPCRA Section 302 (40CFR355.30)**
    - Not applicable
  - \* **EPCRA Section 304 (40CFR355.40)**
    - Not applicable
  - \* **EPCRA Section 313 (40CFR372.65)**
    - [Toluene] : Applicable
    - [Xylene] : Applicable
    - [Ethylene glycol monoethyl ether] : 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

- 2016-11-02

### C. Revision number and Last date revised

- Not applicable

### D. Other

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