

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

A. Product name

- A-UT6581-A

B. Recommended use and restriction on use

- General use : As a urethane finishing coat for heavy-duty
- Restriction on use : Do not use except for purpose

C. Supplier information

- Company name : KCC Corporation
- Address : 30, Bangeojinsunhwando-ro, Dong-gu, Ulsan
- Emergency telephone number : 82-52-280-1717

2. HAZARD IDENTIFICATION

A. GHS Classification

- Chronic aquatic toxicity : Category3
- Carcinogenicity : Category1B
- Germ cell mutagenicity : Category1B
- Flammable liquids : Category3
- Skin corrosion/irritation : Category2
- Aspiration hazard : Category1

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H226 Flammable liquid and vapour
- H304 May be fatal if swallowed and enters airways
- H315 Causes skin irritation
- H340 May cause genetic defects
- H350 May cause cancer
- H412 Harmful to aquatic life with long lasting effects

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.
- P264 Wash hands thoroughly after handling.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

- 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.
- P321 Specific treatment
- P331 Do NOT induce vomiting.
- P332+P313 If skin irritation occurs: 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)

o NFPA grade (0 ~ 4 level)

- Health : 2, Flammability : 3, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Thermosetting acrylic resin	-	-	30 ~ 40
Titanium dioxide	Titanium oxide (Tio2)	13463-67-7	20 ~ 30
Solvent naphtha (petroleum), light arom.	Naphtha	64742-95-6	10 ~ 20
Limestone	Calcium carbonate	1317-65-3	1 ~ 10
1,2,4-Trimethylbenzene	Pseudocumene	95-63-6	1 ~ 10
m-xylene	1,3-Dimethylbenzene	108-38-3	1 ~ 10
Propylene glycol methyl ether acetate	Propylene glycol monomethyl ether acetate	108-65-6	1 ~ 10
Ethylbenzene	Benzene, ethyl-	100-41-4	1 ~ 10
p-Xylene	1,4-Dimethylbenzene	106-42-3	1 ~ 10
o-Xylene	1,2-Dimethylbenzene	95-47-6	1 ~ 10
Xylene	Dimethylbenzene	1330-20-7	1 ~ 10
Stoddard solvent	Turpentine, mineral	8052-41-3	0 ~ 1
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.
- If swallowed, large amounts of water to drink and do not induce vomiting.

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

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- 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.
- Must work against the wind, let the upwind people to evacuate.
- 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.

- Prevent the influx to waterways, sewers, basements or confined spaces.
- 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.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- 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 use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- 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.
- Store away from water and sewer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - [Titanium dioxide] : TWA 10 mg/m³
 - [1,2,4-Trimethylbenzene] : TWA 25 ppm (123 mg/m³)
 - [m-xylene] : TWA 100 ppm (434 mg/m³), STEL, 150 ppm (651 mg/m³)
 - [Ethylbenzene] : TWA, 20 ppm (87 mg/m³)
 - [p-Xylene] : TWA 100 ppm (434 mg/m³), STEL, 150 ppm (651 mg/m³)
 - [o-Xylene] : TWA 100 ppm (434 mg/m³), STEL 150 ppm (651 mg/m³)
 - [Xylene] : TWA 100 ppm (434 mg/m³), STEL, 150 ppm (651 mg/m³)
 - [Stoddard solvent] : TWA 100 ppm (525 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 vaporcartridge(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.

- **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	Not available
B. Odor	Solvent odor
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	29 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	14% / 1%
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	> 1(Air=1)
N. Specific gravity(Relative density)	1.19 ~ 1.29
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	343 °C
Q. Decomposition temperature	Not available
R. Viscosity	70 ~ 80 KU
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical Stability

- 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)
 - May be fatal if swallowed and enters airways
- (Oral)
 - Not available
- (Eye-Skin)
 - Causes skin irritation

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
- [Solvent naphtha (petroleum), light arom.] : LD50 = 8400 mg/kg Rat
- [1,2,4-Trimethylbenzene] : LD50 = 3400 mg/kg Rat
- [m-xylene] : LD50=5011 mg/kg Rat
- [Propylene glycol methyl ether acetate] : LD50 = 8532 mg/kg Rat
- [Ethylbenzene] : LD50 = 3500 mg/kg Rat
- [p-Xylene] : LD50 = 4029 mg/kg rat
- [o-Xylene] : rat LD50=3608 mg/kg
- [Xylene] : LD50=3550 mg/kg rat
- [Stoddard solvent] : LD50 > 5000 mg/kg Rat

* **Dermal**

- [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit
- [Solvent naphtha (petroleum), light arom.] : LD50 > 2000 mg/kg Rabbit
- [1,2,4-Trimethylbenzene] : LD50 > 3160 mg/kg Rabbit
- [m-xylene] : LD50 12180 mg/kg Rabbit
- [Propylene glycol methyl ether acetate] : LD50 > 5000 mg/kg Rabbit
- [Ethylbenzene] : LD50 = 15400 mg/kg Rabbit
- [o-Xylene] : LD50 14100 mg/kg rabbit
- [Xylene] : LD50 4350 mg/kg Rabbit

* **Inhalation**

- [Titanium dioxide] : LC50 > 6.82 mg/ℓ 4 hr Rat
- [Solvent naphtha (petroleum), light arom.] : LC50 > 5.2 mg/L 4 hr Rat, LC50=3400 ppm 4hr
- [1,2,4-Trimethylbenzene] : Steam LC50 = 18 mg/ℓ 4 hr Rat
- [m-xylene] : Steam LC50 31.82 mg/L/4 hr Rat
- [Propylene glycol methyl ether acetate] : Steam LC50 = 28.8 mg/L/4 hr Rat
- [Ethylbenzene] : Steam LC50 = 9.6 mg/L/4 hr Rat
- [p-Xylene] : LC50 20.6 mg/L/4 hr Rat
- [o-Xylene] : LC50 27.4 mg/L/4 hr Rat
- [Xylene] : Steam LC50 6700 ppm 4 hr Rat (Equivalents : 29.09 mg/L)

○ **Skin corrosion/irritation**

- Causes skin irritation

○ **Serious eye damage/irritation**

- Not available

○ **Respiratory sensitization**

- Not available

○ **Skin sensitization**

- Not available

○ **Carcinogenicity**

* **IARC**

- [Ethylbenzene] : Group 2B
- [Titanium dioxide] : Group 2B
- [o-Xylene] : Group 3
- [p-Xylene] : Group 3
- [m-xylene] : Group 3
- [Xylene] : Group 3

* **OSHA**

- Not available

* **ACGIH**

- [Ethylbenzene] : A3
- [Titanium dioxide] : A4
- [o-Xylene] : A4
- [p-Xylene] : A4
- [m-xylene] : A4
- [Xylene] : A4

* **NTP**

- Not available
- * **EU CLP**
 - [Stoddard solvent] : Carc.1B
 - [Solvent naphtha (petroleum), light arom.] : Carc.1B
- **Germ cell mutagenicity**
 - May cause genetic defects
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - May be fatal if swallowed and enters airways

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Solvent naphtha (petroleum), light arom.] : LC50 = 9.22 mg/l 96 hr *Oncorhynchus mykiss*
 - [1,2,4-Trimethylbenzene] : LC50 = 7.72 mg/l 96 hr *Pimephales promelas*
 - [m-xylene] : LC50 16 mg/l 96 hr
 - [Propylene glycol methyl ether acetate] : LC50 \geq 100 mg/l 96 hr *Oryzias latipes*
 - [Ethylbenzene] : LC50 = 9.09 mg/l 96 hr
 - [p-Xylene] : LC50 8.8 mg/l 96 hr
 - [o-Xylene] : LC50 16.4 mg/l 96 hr
 - [Xylene] : LC50 3.3 mg/l 96 hr
- **Crustaceans**
 - [Titanium dioxide] : EC50 > 1000 mg/l 48 hr
 - [Solvent naphtha (petroleum), light arom.] : EC50 = 6.14 mg/l 48 hr *Daphnia magna*
 - [1,2,4-Trimethylbenzene] : EC50 = 6.14 mg/l 48 hr *Daphnia magna*
 - [m-xylene] : EC50 2.3 mg/l 48 hr
 - [Propylene glycol methyl ether acetate] : EC50 = 373 mg/l 48 hr *Daphnia magna*
 - [Ethylbenzene] : LC50 = 0.4 mg/l 96 hr
 - [p-Xylene] : LC50 1.7 mg/l 96 hr
 - [Xylene] : LC50 190 mg/l 96 hr
 - [Stoddard solvent] : LC50 = 0.4 ~ 2.3 mg/l 48 hr
- **Algae**
 - [Solvent naphtha (petroleum), light arom.] : EC50 = 19 mg/l 72 hr *Selenastrum capricornutum*
 - [m-xylene] : EC50 4.9 mg/l 72 hr
 - [Propylene glycol methyl ether acetate] : EC50 \geq 1000 mg/l 72 hr *Selenastrum capricornutum*
 - [o-Xylene] : ErC50 0.8 mg/l 72 hr
 - [p-Xylene] : EC50 3.2 mg/l 72 hr

B. Persistence and degradability

- **Persistence**
 - [Solvent naphtha (petroleum), light arom.] : log Kow = 2.1 ~ 6 (Estimates)
 - [1,2,4-Trimethylbenzene] : log Kow = 3.78
 - [Propylene glycol methyl ether acetate] : log Kow = 0.43
 - [Stoddard solvent] : log Kow = 3.16 ~ 7.06
- **Degradability**
 - [Solvent naphtha (petroleum), light arom.] : BOD5/COD = 0.43
 - [o-Xylene] : BOD5/COD 0.56
 - [p-Xylene] : BOD5/COD 0.92

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [1,2,4-Trimethylbenzene] : BCF = 124.5

- [m-xylene] : BCF 1.37
 - [o-Xylene] : BCF 21.4 10 ((20°C), Anguilla japonica)
 - [p-Xylene] : BCF 1.37 (Anguilla japonica)
- o **Biodegradation**
- [1,2,4-Trimethylbenzene] : Biodegradability = 4 ~ 18 (%) 28 day
 - [m-xylene] : 100 (%)
 - [Propylene glycol methyl ether acetate] : Biodegradability > 60 (%) 28 day
 - [p-Xylene] : 38 (%)
 - [o-Xylene] : 100 (%) 12 day ((Aerobic, Other))
 - [Xylene] : 39 (%)
 - [Stoddard solvent] : Biodegradability = 12 ~ 13 (%)

D. Mobility in soil

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

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 sepatrly, 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.

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 No. (IMDG)

- 1263

B. Proper shipping name

- Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base

C. Hazard Class

- 3

D. IMDG Packing group

- III

E. Marine pollutant

- 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

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [Solvent naphtha (petroleum), light arom.] : Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
 - [1,2,4-Trimethylbenzene] : R10 Xn; R20 Xi; R36/37/38 N; R51-53
 - [m-xylene] : R10 Xn; R20/21 Xi; R38
 - [Propylene glycol methyl ether acetate] : R10
 - [Ethylbenzene] : F; R11Xn; R20
 - [p-Xylene] : R10 Xn; R20/21 Xi; R38
 - [o-Xylene] : R10 Xn; R20/21 Xi; R38
 - [Xylene] : R10 Xn; R20/21 Xi; R38
 - [Stoddard solvent] : Carc. Cat. 2; R45 Muta. Cat. 2; R46 Xn; R65
 - * **Risk Phrases**
 - [Solvent naphtha (petroleum), light arom.] : R45, R65, R46
 - [1,2,4-Trimethylbenzene] : R10, R20, R36/37/38, R51/53
 - [m-xylene] : R10, R20/21, R38
 - [Propylene glycol methyl ether acetate] : R10
 - [Ethylbenzene] : R11, R20
 - [p-Xylene] : R10, R20/21, R38
 - [o-Xylene] : R10, R20/21, R38
 - [Xylene] : R10, R20/21, R38
 - [Stoddard solvent] : R45, R46, R65
 - * **Safety Phrase**
 - [Solvent naphtha (petroleum), light arom.] : S53, S45
 - [1,2,4-Trimethylbenzene] : S2, S26, S61
 - [m-xylene] : S2, S25
 - [Propylene glycol methyl ether acetate] : S2
 - [Ethylbenzene] : S2, S16, S24/25, S29
 - [p-Xylene] : S2, S25
 - [o-Xylene] : S2, S25
 - [Xylene] : S2, S25
 - [Stoddard solvent] : S53, S45
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [m-xylene] : 453.599 kg 1000 lb
 - [Ethylbenzene] : 453.599 kg 1000 lb
 - [p-Xylene] : 45.3599 kg 100 lb
 - [o-Xylene] : 453.599 kg 1000 lb
 - [Xylene] : 45.3599 kg 100 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [1,2,4-Trimethylbenzene] : Applicable
 - [m-xylene] : Applicable
 - [Ethylbenzene] : Applicable
 - [p-Xylene] : Applicable
 - [o-Xylene] : Applicable
 - [Xylene] : Applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable

○ **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

- 2015-06-12

C. Revision number and Last date revised

- Not applicable

D. Other

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