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# Safety Data Sheet

# HFC-32-001E

Product	KONNATE T-80

Product	CAS No.	UN No.	EC INDEX NO	EC No.
TOLUENE DIISOCYANATE (MIXED ISOMERS)	26471-62-5	2078	615-006-00-4	247-722-4

SECTION 1- Identification of the su	ubstance or mixture and of the supplier
1. Product Name	KONNATE T-80
2. Other name(s)	TDI; TDI 80/20; Toluene diisocyanate;
	Benzenediisocyanatomethyl; Tolylene Diisocyanate);
	Diisocyanatotoluene; Methylphenylene isocyanate;
	Benzene, 1,3-diisocyanatomethyl-; Toluenediisocyanate (mixed isomers)
3. Recommended use of the chemical and res	strictions on use
Recommendations For Use Of The Produ	uct : polyurethane component, industrial chemicals
4. Manufacturer/Supplier/Distributor Information	n
Company	Hanwha Fine Chemical Corporation
Seoul Office : 16F, 86, Cheonggyecheon	i-ro, Jung-gu, Seoul, Korea
TEL :+82-2-729-2	2700
FAX : +82-2-729-	5347
Head Office / Plant : 46–47, Yeosusanda	an 2-ro, Yeosu-si, Jeollanam-do, Korea
(old address) 425 W	alha-Dong, Yeosu-City, Chunnam, South Korea
TEL :+82-61-688-4800	
FAX :+82-61-691	-0116
Emergency telephone number	
TEL:1-800-424-	-9300, +1 703–527–3887
(Any problems the second s	hat occures in U.S.A)



### SECTION 2 - HAZARDS IDENTIFICATION

#### Label elements

#### According to Regulation (EC) No 1272/2008 [CLP]

1	Hazard Risk	Classification
ι.	I Idzalu I lisk	Classification

Acute Toxicity(Inhalation : Dust / Mist) : Category 2 Skin Corrosion/Irritation : Category 2 Serious eye damage/eye irritation : Category 2(eye irritation) Respiratory hypersensitivity : Category 1 Skin hypersensitivity : Category 1 Carcinogenic : Category 2 Specific target organ toxicity(single exposure) : Category 3 Chronic (long-term) aquatic hazard : Category 3

2. Label elements including precautionary statements

#### Symbol



Signal Word	Danger
Hazard Statement	H315 Causes skin irritation.
	H317 May cause an allergic skin reaction.
	H319 Causes serious eye irritation.
	H330 Fatal if inhaled.
	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	H351 Suspected of causing cancer.
	H335 May cause respiratory irritation.
	H412 Harmful to aquatic life with long lasting effects.
Precautionary Statement	
Prevention	P201 Obtain special instructions before use.
	P202 Do not handle until all safety precautions have been read and understood.
	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
	P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
	P264 Wash thoroughly after handling.
	P271 Use only outdoors or in a well-ventilated area.
	P272 Contaminated work clothing should not be allowed out of the workplace.
	P273 Avoid release to the environment.
	P280 Wear protective gloves and eye/face protection.
	P281 Use personal protective equipment as required.
	P284 Wear respiratory protection.
	P285 In case of inadequate ventilation wear respiratory protection.



Response	P302+P352 IF ON SKIN: Wash with plenty of soap and water.
	P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position
	comfortable for breathing.
	P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in
	a position comfortable for breathing.
	P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove
	contact lenses, if present and easy to do. Continue rinsing.
	P308+P313 IF exposed or concerned: Get medical advice/attention.
	P310 Immediately call a POISON CENTER or doctor/physician.
	P320 Specific treatment is urgent (see on this label).
	P321 Specific treatment (see on this label).
	P332+P313 If skin irritation occurs: Get medical advice/attention.
	P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
	P337+P313 If eye irritation persists: Get medical advice/attention.
	P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or
	doctor/physician.
	P362 Take off contaminated clothing and wash before reuse.
	P363 Wash contaminated clothing before reuse.
Storage	P403+P233 Store in a well-ventilated place. Keep container tightly closed
otorago	P405 Store locked up
Uisposal	P501 Dispose of contents/container to hazardous or special waste collection point.

#### According to Directive 67/548/EEC or 1999/45/EC

Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances

Hazard symbol(s)

T+ Very toxic.

R-phrase(s)
R26 Very toxic by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.
R42/43 May cause sensitization by inhalation and skin contact.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R40 Limited evidence of a carcinogenic effect.

#### S-phrase(s)

S1/2 keep locked up and out of reach of children.

S23.5 Do not breathe vapour.

S36/37 Wear suitable protective clothing and gloves.

S45 In case of accident or if you feel unwell, seek medical advice immediately

(show the label where possible).

S61 Avoid release to the environment. Refer to special instructions/safety data sheets.



Contains isocyanates. Observe manufacturer's instructions.

Hazard determining component(s) for labelling : TOLYLIDENEDIISOCYANATE

Classification of the substance or mixture

#### According to Regulation (EC) No 1272/2008 [CLP]

Acute Toxicity(Inhalation : Dust / Mist) : Category 2 Skin Corrosion/Irritation : Category 2 Serious eye damage/eye irritation : Category 2(eye irritation) Respiratory hypersensitivity : Category 1 Skin hypersensitivity : Category 1 Carcinogenic : Category 2 Specific target organ toxicity(single exposure) : Category 3 Chronic (long-term) aquatic hazard : Category 3

#### According to Directive 67/548/EEC or 1999/45/EC

Carc. Cat. 3 – Category 3 : Substances which cause concern for man due to possible carcinogenic effects, however, since sufficient information is not available a satisfactory assessment cannot be made.

Possible Hazards : Very toxic by inhalation. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Limited evidence of a carcinogenic effect.

#### 3. NFPA RATINGS (SCALE 0-4)



- NFPA HEALTH hazard: 3 Short exposure could cause serious temporary or moderate residual injury.
- NFPA FIRE hazard: 1 Materials that require considerable preheating, under all ambient temperature conditions, before ionition and combustion can occur.
- NFPA REACTIVITY: 1 Normally stable, but can become unstable at elevated temperatures and pressures.

### SECTION 3 - COMPOSITION, INFORMATION ON INGREDIENTS

### REACH pre-registration has been completed.

Chemical Name	CAS number	Content (%)
KONNATE T-80	26471-62-5	100
2,4 - TDI	584-84-9	80
2,6 - TDI	91-08-7	20

### SECTION 4 - FIRST AID MEASURES

#### Description of first aid measures

1. Eye contact	<ul> <li>FIRST AID - Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes).</li> <li>Continue irrigating with normal saline until the pH has returned to normal (30-60 minutes).</li> <li>Cover with sterile bandages.</li> <li>Get medical attention immediately.</li> <li>consult an eye specialist.</li> </ul>
2. Skin contact	FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15–20 minutes). If burns occur, proceed with the following: Cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately. Consult a doctor if skin irritation persists.
3. Inhalation	FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.
4. Ingestion	<ul> <li>FIRST AID- If the person is conscious and not convulsing, induce emesis by giving syrup of ipecac followed by water.</li> <li>(If vomiting occurs keep the head below the hips to prevent aspiration).</li> <li>Repeat in 20 minutes if not effective initially.</li> <li>Give activated charcoal. In patients with depressed respiration or if emesis is not produced, perform gastric lavage cautiously (Dreisbach, Handbook of Poisoning, 12th Ed.).</li> <li>Treat symptomatically and supportively.</li> <li>Gastric lavage should be performed by qualified medical personnel.</li> <li>Get medical attention immediately.</li> <li>When there is not a ceremony or the convulsion occurs, it does not induce an absolute vomit</li> </ul>



#### Most important symptoms and effects, both acute and delayed

Hazards: Symptoms can appear later.

#### Indication of any immediate medical attention and special treatment needed

No specific antidote. Treat symptomatically and supportively.

### SECTION 5 - FIRE FIGHTING MEASURES

1. Suitable (and unsuitable)	extinguishing	media
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dry powder, carbon dioxide, alcohol-resistant foam, water spray

2. Specific hazards arising from the chemical

	carbon monoxide, carbon dioxide, hydrogen cyanide, nitrogen oxides, isocyanate The substances/groups of substances mentioned can be released in case of fire.
Hazardous combustion products	Thermal decomposition products may include highly toxic hydrogen cyanide, and toxic and hazardous oxides of carbon and nitrogen.
Fire and explosion hazard	Slight fire hazard when exposed to heat or flame. Vapor-air mixtures are explosive above flash point.

3. Special protective equipment and precautions for fire-fighters

Special protective equipment :

Wear self-contained breathing apparatus and chemical-protective clothing.

### SECTION 6 - ACCIDENTAL RELEASE MEASURES

1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing.

Use breathing apparatus if exposed to vapours/dust/aerosol.

Ensure adequate ventilation.

2. Environmental precautions and protective procedures

1) Air	No Data
2) Soil	Do not discharge into the subsoil/soil.
3) Water	Do not empty into drains
3. Methods and materials for containment an	d cleaning up
	OCCUPATIONAL SPILL:
	Shut off ignition sources.
	Do not touch spilled material.
	Stop leak if you can do it without risk.
	Use water spray to reduce vapors.
	For small spills, take up with sand or other absorbent material and place into containers for
	OHS23602 later disposal.
	For small dry spills, with clean shovel place material into clean, dry containers and cover.
	Move containers from spill area.



For larger spills, dike far ahead of spill for later disposal.

No smoking, flames or flares in hazard area! Keep unnecessary people away.

Isolate hazard area and deny entry.

Ventilate closed spaces before entering.

WATER SPILL:

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

# SECTION 7 - HANDLING AND STORAGE

1. Precautions for safe handling	<ul> <li>Provide suitable exhaust ventilation at the processing machines.</li> <li>Ensure thorough ventilation of stores and work areas.</li> <li>Avoid aerosol formation.</li> <li>When handling heated product, vapours of the product should be ventilated, and respiratory protection used.</li> <li>Wear respiratory protection when spraying.</li> <li>Danger of bursting when sealed gastight.</li> <li>Protect against moisture.</li> <li>Products freshly manufactured from isocyanates can contain incompletely reacted isocyanates and other dangerous substances.</li> </ul>
2. Conditions for safe storage	Conditions for safe storage, including any incompatibilities Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases. Suitable materials for containers: carbon steel (iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), tin (tinplate), Stainless steel 1.4301 (V2) Unsuitable materials for containers: paper, board
	<ul> <li>Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place.</li> <li>Protect against moisture.</li> <li>Formation of CO2 and build up of pressure possible.</li> <li>Danger of bursting when sealed gastight.</li> <li>Storage stability :</li> <li>Protect against moisture.</li> <li>If moisture enters isocyanate containers, CO2 forms and pressure builds up.</li> <li>Custody temperature 20 ~ 30°C are proper and it is made to freeze from below 17°C and DIMER creates is paid attention from high temperature</li> </ul>



### SECTION 8 - EXPOSURE CONTROLS & PERSONAL PROTECTION

1. Chemical Exposure, Biological Exposure Limits			
1) Domestic Regulations	TWA – 0.005ppm 0.04mg/m3 STEL – 0.02ppm 0.15mg/m3		
2) ACGIH Regulations	TWA 0.005 ppm (STEL 0.02 ppm)		
3) Biological Exposure Limits	No Data		
2. Appropriate engineering controls	Process isolation, local exhaust, or air to adjust to levels below the exposure guidelines go for the other engineering controls. During operation of dust, fume or mist occurs, the air pollution please ventilation to maintain exposures below occupational limits. Store or use this material, washing facilities and safety shower facility below to install		
3. Personal protective equipment			
1) Respiratory Protection	Respiratory protection in case of vapour/aerosol release.		
	Gas filter for gases/vapours of organic compounds Particle filter with high efficiency for solid and liquid particles.		
	Suitable respiratory protection for higher concentrations or long-term effect : Self-contained breathing apparatus.		
2) Eye Protection	Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance. Emergency wash facilities: Where there is any possibility that an employee's eyes and/or		
	skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.		
3) Hand Protection	Chemical resistant protective gloves		
	Suitable materials also with prolonged, direct contact		
	nitrile rubber (NBR) – 0.4 mm coating thickness		
	butyl rubber (butyl) – 0.7 mm coating thickness		
	chloroprene rubber (CR) – 0.5 mm coating thickness		
	Unsuitable materials :		
	polyvinylchloride (PVC) – 0.7 mm coating thickness		
	Polyethylene-Laminate (PE laminate) - ca. 0.1 mm coating thickness		
4) Body Protection	Emergency wash facilities : Where there is any possibility that an employee's eyes and/or		
	skin may be exposed to this substance, the employer should provide an eye wash fountain		
	and quick drench shower within the immediate work area for emergency use. CLOTHING:		
	Employee must wear appropriate protective (impervious) clothing and equipment to prevent		
	any possibility of skin contact with this substance.		
	safety shoes & Wear the chemical sex protection gloves		



# Personal protective equipment

OVERALLS, CHEMICAL GOGGLES, SAFETY SHOES, FACE SHIELD OR AIR MASK, GLOVES (Long).

\* Not required if wearing air supplied mask.



# SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

1. Appearance		
Form	liquid	
Color	colourless to yellowish	
2. Smell	characteristic, pungent	
3. Odor threshold	No Data	
4. pH	not applicable	
5. Melting point / Freezing point	11.5~13.5 °C	
6. Initial boiling point and boiling range	251 °C	
7. Flash point	135 °C	
8. Evaporation rate	No Data	
9. Flammability (solid, gas)	No Data	
10. Flash or explosion range	9.5 / 0.9 %	
of upper/lower limit		
11. Vapor pressure	0.03 mmHg (25℃)	
12. Solubility	Hydrolyzes to form water - insoluble compounds	
13. Vapor density	6 (air=1)	
14. Specific gravity	1.22 (25°C)	
15. n-Octanol / water partition coefficient	3.74 (estimated)	
16. Autoignition temperature	⊃° 000 <	
17. Decomposition temperature	No Data	
18. Viscosity	3.1 cps at 25°C	
19. Molecular weight	174.2	
20. Formula	C9H6N2O2	



## SECTION 10 - STABILITY AND REACTIVITY

1. Chemical stability and the possibility	Reactivity:
of adverse reactions	Reacts exothermically with water yielding carbon dioxide and an organic base.
	May darken on exposure to sunlight
	Chemical stability :
	The product is stable if stored and handled as prescribed/indicated
2. Conditions to avoid	May be ignited by heat, sparks or flames.
	Container may explode in heat of fire.
	Vapor explosion and poison hazard indoors, outdoors or in sewers.
	Avoid moisture.
3. Materials to avoid	copper, zinc, tin, acids, alcohols, amines, water, Alkalines, copper alloys,
	aluminum compounds, strong oxidizing agents
4. Hazardous decomposition products	Thermal decomposition products may include highly toxic hydrogen cyanide, and toxic
	and hazardous oxides of carbon and nitrogen.
	POLYMERIZATION:
	Slow, non-hazardous polymerization occurs above 40 $^\circ \! C$

# SECTION 11 - TOXICOLOGICAL INFORMATION

No Data
LD50 5,110 mg/kg Rat (Korea National Institute of Environmental Research)
LD50 > 16,000 mg/kg Rabbit (Korea National Institute of Environmental Research)
LC50 0.35 mg/ $\ell$ 4 hr Rat (vapour) (Korea National Institute of Environmental Research)
irritation(rabbit)
irritation(rabbit)
The substance may cause sensitization of the respiratory tract. Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. However, the relevance of this result for humans is unclear.
Sensitization after skin contact possible. Guinea Pig : positive
Group 2B
No Data
A4
R
Carc. 2

Hanwha Fine Chemical

7) Germ cell mutagenicity	Assessment of mutagenicity: The substance was mutagenic in various test systems with bacterias and cell cultures; however, these results could not be confirmed in tests with mammals.
8) Reproductive toxicity	No Data
<ol> <li>Specific target organ toxicity (single exposure)</li> </ol>	Causes temporary irritation of the respiratory tract.
10) Specific target organ toxicity (repeated exposure)	The substance may cause damage to the lung even after repeated inhalation of low doses, as shown in animal studies. The substance may cause damage to the upper respiratory tract even after repeated inhalation, as shown in animal studies.
11) Aspiration hazard	No Data

### SECTION 12 - ECOLOGICAL INFORMATION

1. Aquatic and terrestrial ecotoxicity			
Fish	LC50 133 $\ensuremath{\texttt{mg/l}}$ 96hr (Korea National Institute of Environmental Research)		
Shellfish	EC50 12.5 $\mathrm{mg}/\ell$ 48hr (Korea National Institute of Environmental Research)		
Birds	EC50 4,300 ${\rm mg}/\ell$ 96hr (Korea National Institute of Environmental Research)		
2. Persistence and degradability			
Persistent	log Kow 3.74 (estimation)		
Degradable	No Data		
3. Bioaccumulative potential			
Concentration	BCF < 5 (25°C, Cyprinus carpio(Fish, fresh water), $0.3$ mg/l)		
Biodegradable	0 % BOD of the ThOD (28 d)		
4. Mobility in soil	No Data		
5. Other adverse effects	crustacea : NOEC(Daphnia magna) $\geq$ 0.5 mg/L/21d		

### SECTION 13 - DISPOSAL CONSIDERATIONS

1. Disposal method	Incinerate in suitable incineration plant, observing local authority regulations. Dispose of isocyanate waste in dry containers and never mix together with other wastes (reaction, dangerous pressure build up).
2. Disposal considerations	Contaminated packaging: Contaminated packaging should be emptied as far as possible; then it can be passed on for
	recycling after being thoroughly cleaned.



### SECTION 14 - TRANSPORT INFORMATION

In accordance with IMDG / ADR / RID / AND / IATA

#### Marine Transport

IMDG Code (International Maritime Dangerous Goods Code);

1. UN number	2078
2. proper shipping name	TOLUENE DIISOCYANATE
3. Transport hazard class	6.1



4. Packing group	II
5. Marine pollution	not applicable
6. Special precaution which a user to b	be aware of or needs to comply with in co

6.	Special precaution which a user to be aware of or needs to comply with in connection with tran	Isport
	or conveyance either within or outside their premises	

Emergency measures in case of fire	F-A
Non-disclosure measures	S-A

### Road and Rail Transport

ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road)RID (Regulations concerning the International Carriage of Dangerous Goods by Rail)

1. UN number	2078
2. proper shipping name	TOLUENE DIISOCYANATE
3. Transport hazard class	6.1 Toxic
4. Packing group	11

### Inland waterway transport

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway)

1. UN number	2078
2. proper shipping name	TOLUENE DIISOCYANATE
3. Transport hazard class	6.1 Toxic
4. Packing group	II

### Air Transport

IATA TI (Technical Instructions for the Safe Transport of Dangerous Goods by Air)

1. UN number	2078
2. proper shipping name	TOLUENE DIISOCYANATE
3. Transport hazard class	6.1 Toxic
4. Packing group	II



# SECTION 15 - REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question.

#### Domestic Regulations(KOREA)

Management objective material;Workplace measurement material;
Special health checkup material; Exposure standard set material
Toxic Chemical: Accident precaution chemicals
Class 4-3

- Persistent Organic Pollutants Management Act: Not Applicable

### International Regulations

OSHA	Not Applicable
CERCLA	45.3599 kg 100 lb
EPCRA 302	Not Applicable
EPCRA 304	Not Applicable
EPCRA 313	Applicable
Rotterdam Convention material	Not Applicable
Stockholm Convention material	Not Applicable
Montreal Protocol on Substances	Not Applicable
EU Final classification results	Carc. Cat. 3; R40T+; R26Xi; R36/37/38R42/43R52-53
EU Risk Phrases	R26, R36/37/38, R40, R42/43, R52/53
EU Safety Phrases	S1/2, S23, S36/37, S45, S61

#### \* Full text of R-phrases: see section 2

#### TSCA Section 12(b) Export

TSCA §12(b) Notification Name TSCA Inventory Name/Comment	Section	CFR	CAS, Accession or PMN
Benzene, 1,3-diisocyanatomethyl-	5(a)(2)	80 FR 2068 January 15 2015	26471-62-5
Benzene, 2,4-diisocyanato-1-methyl-	5(a)(2)	80 FR 2068 January 15 2015	584-84-9
Benzene, 1,3-diisocyanato-2-methyl-	5(a)(2)	80 FR 2068 January 15 2015	91-08-7



### SECTION 16 - ADDITIONAL INFORMATION

1. Information source and references			
IUCLID Chemical Data Sheet, EC-ECB			
The Chemical Database, The Department of Chemistry at the University of Akron(http://ull.chemistry.uakron.edu/erd)			
http://hazmat.nema.go.kr			
ECB-ESIS(European chemical Substances Information System)(http://ecb.jrc.it/esis)			
ECOTOX Database, EPA(http://cfpub.epa.gov/ecotox)			
TOXNET, U.S. National Library of Medicine(http://toxnet.nlm.nih.gov)			
Corporate Solution From Thomson Micromedex(http://csi.micromedex.com)			
International Chemical Safety Cards(ICSC)(http://www.nihs.go.jp/ICSC)			
HSDB ; RTECS; EHC; IUCLID; QSAR			
Dangerous Properties of Industrial Material	Dangerous Properties of Industrial Materials, N.I.Sax, 6th Ed., p.1084(1984), Van Nostrand Reinhold.		
IARC Monograps on the Evaliation of Carc	IARC Monograps on the Evaliation of Carcinogenic Risk of Chemical to man, Vol.19, p. 303 $^{\sim}$ 311(1984), IARC.		
Handbook of Poison: Prevention, Diagnosis, and Treatment, R.H.Dreisbath, 11th Ed., p.157(1983), Lange Medical Publications.			
Registry of Toxic Effects of Chemical Subs	stances, R.Lewis(1985), NIOSH.		
Hazardous Chemicals Data Book, G.Weiss, p. 871(1980), Noyes.			
Condensed Chemical Dictionary, G.Hawley, 9th Ed., p.1030(1977), Van Nostrand Reinhold.			
http://kosha.net ;http://ncis.nier.go.kr			
2. Issuing date	2001. 12. 14		
3. Revision number and date			
Revision number	11		
the final revised	2015. 11. 20.		
4. Others			

O The MSDS of Occupational Safety and Health Act Article 41, pursuant to South Korea, Health & Safety Authority provided in that Hanwha Fine chemical Company 2 characteristics of the product for some modifications because internal use only and can be used, and external (commercial) purposes use is prohibited. If you are using an external-purpose Hanwha Fine chemical Company, please contact.