

SAFETY DATA SHEET

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Regulation: According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

1. Identification

1.1 Product identifier

1.1.1 Product name: KONNATE L-75

1.1.2 Other means of identification: Not available

1.2 Recommended use of the chemical and restrictions on use

1.2.1 Recommended use: Wood, metal, synthetic leather, adhesives, inks, coatings, etc.

1.2.2. Restrictions on use: Do not use for purposes other than those recommended.

1.3 Details of the supplier of the safety data sheet

1.3.1 Manufacturer

Company name: TDI Plant, Hanwha Solutions Co, Ltd.

Address: 46-47, Yeosusandan 2-ro, Yeosu-si, Jeollanam-do, Korea

Prepared by: TDI Production Team

Contact Telephone: +82-61-688-4888

1.3.2 Supplier & Distributor

Company name: Hanwha Solutions Co, Ltd.

Address: Hanwha Building, 86 Cheonggyecheon-ro, Jung-gu, Seoul, Korea

Prepared by: TDI Sales Team

Contact Telephone: +82-2-729-2700

1.4 Emergency phone number

Emergency phone : +1 201-308-6615 (Ext.801) (Any problems that occurs in U.S.A)

2. Hazard(s) identification

2.1 Classification of the substance or mixture

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Physical / Chemical Hazards:

Flammable liquids: Category 2

Health Hazards:

Acute toxicity(inhalation: vapors): Category 4

Respiratory sensitization: Category 1

Skin sensitization: Category 1

Carcinogenicity: Category 2

Specific target organ toxicity (Single exposure): Category 3 (narcotic effects)

Environmental Hazards:

Not classified

2.2 Label elements, including precautionary statements

o Pictogram and symbol:



o Signal word: Danger

o Hazard statements:

- H225 Highly flammable liquid and vapors
- H317 May cause an allergic skin reaction.
- H332 Harmful if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H336 May cause drowsiness or dizziness.
- H351 Suspected of causing cancer.

o Precautionary statements:**- 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.
- P243 Take precautionary measures against static discharge.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Wear protective gloves/protective clothing/eye protection/face protection.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P284 [In case of inadequate ventilation] wear respiratory protection.

- Treatment:

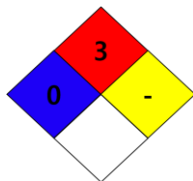
- P302+P352 IF ON SKIN: Wash with plenty of water/...
- P303+P361+P353 If on skin (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
- P304+P340 If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P312 Call a poison center or doctor/physician you feel unwell.
- P321 Specific treatment.
- P333+P313 IF skin irritation or rash occurs: Get medical advice/attention.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor/...
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P370+P378 In case of fire: Use suitable extinguishing chemicals for extinction.

- Storage:

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

- Disposal:

- P501 Dispose the contents/container in accordance with local/regional/national/international regulations.

**2.3 Other hazard information not included in hazard classification
(National Fire Protection Association; NFPA)**

- o Health:** 2
- o Flammability:** 3
- o Reactivity:** 0
- o Specific hazard:** Not available

3. Composition/information on ingredients

Component	Common name and synonyms	CAS No.	Conc. / %
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol polymer with 1,3-diisocyanatomethylbenzene and 2,2'-oxybis[ethanol]	Toluenediisocyanate, trimethylolpropane, diethylene glycol polymer	53317-61-6	74.7~75.1
Ethyl acetate	Acetic acid ethyl ester	141-78-6	24.8
Toluene diisocyanate	Benzene, 1,3-diisocyanatomethyl	26471-62-5	0.1~0.5

4. First aid measures

4.1 Description of first aid measures

Eye contact

- Call emergency medical service.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Skin contact

- If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If skin irritation or rash occurs: Get medical advice/attention.
- Wash contaminated clothing before reuse.
- Call emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Wash skin with soap and water.

Inhalation

- If inhaled: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- If exposed or concerned: Get medical advice/ attention.
- If experiencing respiratory symptoms: Call a poison center or doctor/physician.
- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.

Ingestion

- If exposed or concerned: Get medical advice/ attention.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

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

- Not known

4.3 Indication of immediate medical attention and notes for physician

- Exposures require specialized first aid with contact and medical follow-up.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire-fighting measures

5.1 Extinguishing media

- Suitable extinguishing media: alcohol foam, carbon dioxide, or water
- Use dry sand or earth to smother fire.
- Unsuitable extinguishing media: Not available

5.2 Specific hazards arising from the chemical

- Highly flammable liquid and vapor.
- May decompose at high temperatures into forming toxic gases.
- May violently polymerize and result in fire and explosion.
- Vapors may travel to a source of ignition and ignite.
- May form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Spilled material may create fire or explosion hazard.
- May cause vapor explosion hazard indoors, outdoors or in sewers.
- Some of these materials may burn, but none ignite readily.
- Vapors may form explosive mixtures with air.

5.3 Special protective equipment and precautions for fire-fighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Many liquids are lighter than water.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas
- Substance may be transported hot.
- Substance may be transported in a molten form.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Avoid breathing dust/fume/gas/mist/vapors/spray.
- The very fine particles may cause a fire or explosion, eliminate all ignition sources.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- Eliminate all ignition sources.
- All equipment used when handling the product must be grounded.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- A vapor suppressing foam may be used to reduce vapors.
- Cover with plastic sheet to prevent spreading.
- Please note that there are materials and conditions to avoid.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and materials for containment and cleaning up

- Dike and collect water used to fight fire.
- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- Use clean non-sparking tools to collect absorbed material.

7. Handling and storage

7.1 Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Avoid breathing dust/fume/gas/mist/vapors/spray.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid prolonged or repeated contact with skin.
- All equipment used when handling the product must be grounded.
- Please note that there are materials and conditions to avoid.
- Be careful to heat.
- You need measurement of air concentration and ventilation in low, closed and confined areas due to lack of oxygen.

7.2 Conditions for safe storage, including any incompatibilities

- Keep away from heat/sparks/open flames/hot surfaces. - No smoking
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

8. Exposure controls/personal protection

8.1 Occupational Exposure limits

< 2-Ethyl-2-(hydroxymethyl)-1,3-propanediol polymer with 1,3-diisocyanatomethylbenzene and 2,2'-oxybis[ethanol] >

- o **ACGIH regulation:** Not available
- o **Biological exposure index:** Not available
- o **OSHA regulation:** Not available
- o **NIOSH regulation:** Not available
- o **EU regulation:** Not available
- o **Other:** Not available

<Ethyl acetate>

- o **ACGIH regulation:** TWA=400 ppm
- o **Biological exposure index:** Not available
- o **OSHA regulation:** TWA=400 ppm (1,400 mg/m³)
- o **NIOSH regulation:** TWA=400ppm(1,400mg/m³)

o **EU regulation:** Not available

o **Other:**

- Australia: TWA=200ppm (720 mg/m³), 400 ppm, STEL=1,440 mg/m³
- Brazil: TWA=310 ppm (1,090 mg/m³)
- China: TWA=200 mg/m³, STEL=300 mg/m³
- Austria: TWA=300 ppm (1050 mg/m³)
- Belgium: TWA=400 ppm (1,461 mg/m³)
- Czech Republic: TWA=700 mg/m³

<Toluene diisocyanate>

o **ACGIH regulation:** TWA=0.001 ppm, STEL=0.005 ppm

o **Biological exposure index:** Not available

o **OSHA regulation:** Not available

o **NIOSH regulation:** Not available

o **EU regulation:** Not available

o **Other:**

- Bahrain: TWA=0.01 ppm (0.08 mg/m³)
- Belgium: STEL=0.02 ppm (0.14 mg/m³)
- Italy: TWA=0.005 ppm

8.2 Exposure controls

Appropriate engineering controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
- If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the recommended exposure limit.

Individual protection measures, such as personal protective equipment

Respiratory protection

- Wear NIOSH approved full or half face piece (with goggles) respiratory protective equipment when necessary.

Eye protection

- Wear enclosed safety goggles to protect from gaseous state organic material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.

Hand protection

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

Body protection

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Description:	Liquid
Color:	Transparent
Odor:	Specific odor (organic solvent odor)
Odor threshold:	Not available
pH:	Not available
Melting point/freezing point:	Approx. -83.6 °C
Initial boiling point and boiling range:	Approx. 77.1 °C
Flash point:	-4 °C
Evaporation rate:	Not available
Flammability (solid, gas):	Not applicable
Upper/lower flammability or explosive limits:	2.1-11.5 (ethyl acetate)

Vapor pressure:	43 mmHg(10 °C), 73 mmHg(20 °C)
Vapor density:	4.0
Relative density:	Not available
Solubility:	Not available
Solubility in organic solvents:	Soluble in alcohol, aliphatic hydrocarbon organic solvents
Partition coefficient: n-octanol/water:	Not available
Auto ignition temperature:	427 °C
Decomposition temperature:	Not available
Viscosity:	V-Y(25 °C, Gardner) 1,700-2,300(25 °C, Brookfield)

“NOTE: The physical data presented above are typical values and should not be construed as a specification”

10. Stability and reactivity

10.1 Reactivity/Chemical stability/Possibility of hazardous reactions

- Highly flammable liquid and vapor
- May decompose at high temperatures into forming toxic gases.
- May violently polymerize and result in fire and explosion.
- May form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Spilled material may create fire or explosion hazard.
- May cause vapor explosion hazard indoors, outdoors or in sewers.
- Some of these materials may burn, but none ignite readily.
- Vapors may form explosive mixtures with air.

10.2 Conditions to avoid:

- Keep away from heat/sparks/open flames/hot surfaces. No smoking

10.3 Incompatible materials:

- Combustibles, reducing agents

10.4 Hazardous decomposition products:

- Corrosive and/or toxic fume
- Irritating, corrosive and/or toxic gases

11. Toxicological information

Information on toxicological effects

(a) Acute toxicity	
Oral	Not classified (ATE _{mix} =10,024 mg/kg bw)
	<ul style="list-style-type: none"> • Ethyl acetate: Rat(female), LD₅₀=10,200 mg/kg bw(OECD TG 401) • Toluene diisocyanate: Rat(female), LD₅₀=4,130 mg/kg bw(OECD TG 401)
Dermal	Not classified
	<ul style="list-style-type: none"> • Ethyl acetate: Rabbit(male), LD₅₀>20,000 mg/kg bw • Toluene diisocyanate: Rabbit, LD₅₀>9,400 mg/kg bw, no deaths (OECD TG 402)
Inhalation	Category 4 (ATE _{mix} =19.578 mg/L)
	<ul style="list-style-type: none"> • Ethyl acetate: Rat(male/female), LC₀>27.56 mg/L (4h) (converted; GLP) • Toluene diisocyanate: Rat(male/female), LC₅₀=0.234 mg/L (4h) (OECD TG 403)

(b) Skin Corrosion/ Irritation	<p>Not classified</p> <ul style="list-style-type: none"> • Ethyl acetate: In a skin corrosion/ irritation study with rabbits, the results indicated that using pure ethyl acetate in a transdermal delivery device is mildly to moderately irritating to rabbits. And the irritation is not fully reversible within 7 days. (erythema score=1.33, edema score=0.4) (OECD TG 404) • Toluene diisocyanate: In skin irritation test with rabbit for 72h, moderately irritating was shown (PDII: 4.7).
(c) Serious Eye Damage/ Irritation	<p>Not classified</p> <ul style="list-style-type: none"> • Ethyl acetate: In an eye irritation study with rabbits, ethyl acetate was found to be only mildly irritating to rabbit eyes, with all effects disappearing within 7 days. (cornea score=0.5, iris score=0.17, conjunctivae score=1.33, chemosis score=0.67) (OECD TG 405) • Toluene diisocyanate: In an eye irritation study with rabbits, All three groups showed severe irritation of the conjunctivae, which continue for 18 days in the unwashed and two-second-wash groups, and for 20 days post-application in the group receiving the four-second-wash. (cornea score=0.66/4, iris score=0.33/2, conjunctivae score=3/3, chemosis score=4/4)
(d) Respiratory sensitization	<p>Category 1</p> <ul style="list-style-type: none"> • Toluene diisocyanate: In respiratory sensitization study with guinea pigs(female), results show that detection of antibodies and elicitation of pulmonary hypersensitivity response is dependent upon physicochemical properties of hapten-protein conjugate.
(e) Skin Sensitization	<p>Category 1</p> <ul style="list-style-type: none"> • Ethyl acetate: In a guideline study using the guinea pig maximization test, ethyl acetate showed no evidence of any sensitizing properties. (OECD TG 406) • Toluene diisocyanate: In Local Lymph Node Assay with mice, the substance induced skin sensitization.(OECD TG 429)
(f) Carcinogenicity	<p>Category 2</p> <ul style="list-style-type: none"> • 2-Ethyl-2-(hydroxymethyl)-1,3-propanediol polymer with 1,3-diisocyanatomethylbenzene and 2,2'-oxybis[ethanol]: <ul style="list-style-type: none"> - IARC, NTP, IRIS, NIOSH, OSHA, EU Regulation 1272/2008: Not listed • Ethyl acetate: <ul style="list-style-type: none"> - The potential for ethyl acetate to induce lung tumors in a mouse pulmonary tumor model was evaluated by Stoner in an 8 week study. Ethyl acetate did not produce an increase in mouse lung tumors compared with controls. - IARC, NTP, IRIS, NIOSH, OSHA, EU Regulation 1272/2008: Not listed • Toluene diisocyanate: <ul style="list-style-type: none"> - NTP : R (Reasonably Anticipated To Be A Human Carcinogen) - ACGIH : A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans) - IARC Group : 2B (Possibly Carcinogenic to Humans) - EU CLP : 2 (Suspected of causing cancer)
(g) Mutagenicity	<p>Not classified</p> <ul style="list-style-type: none"> • Ethyl acetate: <ul style="list-style-type: none"> - <i>In vitro</i>: Bacterial Reverse Mutation Assay: with/without metabolic activation: Negative (OECD TG 471) - <i>In vitro</i>: Mammalian Chromosome Aberration Test: with/without metabolic activation: Negative (OECD TG 473) - <i>In vivo</i>: Mammalian Erythrocyte Micronucleus Test: Negative (OECD TG 474) • Toluene diisocyanate: <ul style="list-style-type: none"> - <i>In vitro</i>: Bacterial Reverse Mutation Assay: with/without metabolic activation: Positive (OECD TG 471) - <i>In vivo</i>: Mammalian Erythrocyte Micronucleus Test: Negative (OECD TG 474, GLP)

(h) Reproductive toxicity	Not classified
	<ul style="list-style-type: none"> • Ethyl acetate: According to inhalation reproduction toxicity study with rats(male) during 13wks, exposure up to 1500 ppm ethyl acetate had no effect on sperm number, motility or morphology. And There were no test substance-related pathology finding in reproductive tissues examined microscopically. (NOAEL_P=1,500ppm) (US EPA Health Effects Testing Guidelines 40 CFR Part 798.2450, GLP) • Toluene diisocyanate: Clinical signs of toxicity (nasal discharge in males and red-tinged fur in females) were observed in the high-exposure F0 group. And histopathology revealed a significant increase in the incidence of rhinitis in the nasal turbinates of F0 animals (both sexes). Hyperplasia and dysplasia of the respiratory epithelium of F0 males and hyperplasia was significantly increased in F0 females. In the high-exposure group (males), there was a significant increase in the incidence of submucosal lymphoid infiltrates in both the larynx and the trachea as well as a significant increase in the incidence of intracellular eosinophilic droplets. (NOAEC_P=0.08 ppm, NOAEC_{F1}=0.3 ppm, NOAEC_{F2}=0.02 ppm) (OECD TG 416, GLP)
(i) Specific target organ toxicity (single exposure)	Category 3 (narcotic effects)
	<ul style="list-style-type: none"> • Ethyl acetate: Inhalation of ethyl acetate at 77mg/l for 60-65 min was fatal to guinea pigs, death being due to depression of the central nervous system. • Toluene diisocyanate: In a experiment, male Sprague-Dawley rats (n=4) were exposed head-only for 3 h to a 2,4- and 2,6-TDI mixture (80:20). Transient decreases in weight gain occurred post-exposure at the two highest concentrations, and rales were heard in one animal exposed at 1.45 ppm. (RD50(decrease of respiratory rate)=2.12 ppm) (ASTM Method E981-84)
(j) Specific target organ toxicity (repeat exposure)	Not classified
	<ul style="list-style-type: none"> • Ethyl acetate: <ul style="list-style-type: none"> - The sub-chronic oral toxicity of ethyl acetate with rats(male/female) was evaluated in rats by US EPA. Salivation, irregular breathing, and lethargy were observed at notably increased frequency in the high dose male and female animals when compared to control animals. (NOAEL=900 mg/kg bw/day (nominal), LOAEL=3 600 mg/kg bw/day (nominal)) (EPA OTS 795.2600, GLP) - The 90-Day Inhalation Toxicity of ethyl acetate was evaluated in rats by US EPA. respiratory irritation as nasal irritation was observed at all exposure concentrations in both males and females. (LOEC=350ppm, NOEC_{systemic toxicity}=350ppm) (EPA OTS 798.2450, GLP) • Toluene diisocyanate: In a combined chronic toxicity and carcinogenicity study with mice, increased clinical signs of swollen abdomens and opaque watery eyes were observed from week 65 onwards. And histopathology revealed marked inflammatory processes in trachea, larynx, bronchi, lungs and predominantly in nasal turbinates (chronic and necrotic rhinitis) of male and female animals. (NOAEC(male)=0.05 ppm, NOAEC(female)<0.05 ppm, LOAEC(male)=0.15 ppm, LOAEC(female)=0.05 ppm) (OECD TG 453, GLP)
(k) Aspiration Hazard	Not classified
	<ul style="list-style-type: none"> • Viscosity: V-Y(25 °C, Gardner) 1,700-2,300(25 °C, Brookfield)

12. Ecological information

12.1 Toxicity	
Acute toxicity	Not classified (ATE _{mix} =1,005 mg/L)

	<ul style="list-style-type: none"> • Ethyl acetate: - Fish: <i>Pimephales promelas</i> LC₅₀(96h)=230 mg/L flow-through (US EPA method E03-05) - Invertebrate: <i>Daphnia magna</i> EC₅₀(24h)=2,500 mg/L static (DIN 38412 pt 11) • Toluene diisocyanate: - Fish: <i>Oncorhynchus mykiss</i> LC₅₀(96h)=133 mg/L static (OECD TG 203) - Invertebrate: <i>Daphnia magna</i> EC₅₀(48h)=12.5 mg/L static (OECD TG 202) - Algae: <i>Skeletonema costatum</i> ErC₅₀(96h)=3,230 mg/L static (OECD TG 201)
Chronic toxicity	Not classified
	<ul style="list-style-type: none"> • Ethyl acetate: - Fish: <i>Pimephales promelas</i> NOEC (32d) >75.6 mg/L flow-through (OECD TG 210) - Invertebrate: <i>Daphnia magna</i> NOEC(21d)=2.4 mg/L semi-static (OECD TG 211) - Algae: <i>Scenedesmus subspicatus</i> NOErC(72h)>100mg/L static (OECD TG 201, GLP) • Toluene diisocyanate: - Invertebrate: <i>Daphnia magna</i> NOEC(21d)=1.1 mg/L static (OECD TG 211, GLP)
12.2 Persistence and degradability	<ul style="list-style-type: none"> • Ethyl acetate: - Persistence: Low persistency (log Kow is less than 4 estimated.) (Log Kow=0.68) (25 °C, pH 7) (EPA OPPTS 830.7560) - Degradability: Hydrolysis half-life 7.5days (pH=9), 2 years (pH=6) • Toluene diisocyanate: - Persistence: Low persistency (log Kow is less than 4 estimated.) (Log Kow=3.43) (22 °C, pH ca.7)
12.3 Bio-accumulative potential	<ul style="list-style-type: none"> • Ethyl acetate: - Bioaccumulation: Bioaccumulation is expected to be low according to the BCF <500 (BCF=30) - Biodegradation: As well-biodegraded, it is expected to have low accumulation potential in living organisms (69% biodegradation was observed after 20 days; readily biodegradable) • Toluene diisocyanate: - Bioaccumulation: Bioaccumulation is expected to be low according to the BCF <500 (BCF=136 L/kg wet-wt; estimated) (EPISUITE) - Biodegradation: As not well-biodegraded, it is expected to have high accumulation potential in living organisms (0% biodegradation was observed after 28 days; not readily biodegradable) (OECD TG 302C)
12.4 Mobility in soil	<ul style="list-style-type: none"> • Ethyl acetate: - Low potency of mobility to soil. (Koc =18; estimated) • Toluene diisocyanate: - High potency of mobility to soil. (Koc =1,760; estimated) (EPISUITE)
12.5 Hazardous to the ozone layer	Not classified
12.6 Other adverse effects	Not available

13. Disposal considerations

13.1 Disposal method

Waste must be disposed of in accordance with federal, state and local environmental control regulation.

13.2 Disposal precaution

Consider the required attentions in accordance with waste treatment management regulation.

14. Transport information

14.1 UN No.: 1866

14.2 UN Proper shipping name: Resin solution (KONNATE L-75 Polyisocyanate)

14.3 Transport Hazard class

- ADR: 3
- IMDG: 3
- ICAO/IATA: 3
- RID: 3

14.4 Packing group: II

14.5 Environmental hazards: Not applicable

14.6 Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not regulated

14.7 Special precautions for user

- in case of fire: F-E
- in case of leakage: S-E

15. Regulatory information

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture USA
Regulatory Information

<2-Ethyl-2-(hydroxymethyl)-1,3-propanediol polymer with 1,3-diisocyanatomethylbenzene and 2,2'-oxybis[ethanol]>

TSCA (Toxic Substances Control Act): Present[XU]

Proposition 65: Not regulated

OSHA Regulation: Not regulated

CERCLA Regulation: Not regulated

SARA 311/312 Hazard classes: Not regulated

SARA 302 Regulation: Not regulated

SARA 304 Regulation: Not regulated

SARA 313 Regulation: Not regulated

Foreign Regulatory Information

Substance of Rotterdam Protocol: Not regulated

Substance of Stockholm Protocol: Not regulated

Substance of Montreal Protocol: Not regulated

Foreign Inventory Status

- Korea management information: Existing Chemical Substance (KE-13854)
- European management information: EU - No-Longer Polymers List (67/548/EEC): NLP No. 500-120-8
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (38839)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((7)-877)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Australia Inventory of Chemical Substances (AICS): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): May be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right
- Philippines management information: Philippines Inventory of Chemicals and Chemical Substances (PICCS): Present

<Ethyl acetate>

TSCA (Toxic Substances Control Act): Section 8(b) inventory (Present)

Proposition 65: Not regulated

OSHA Regulation: Not regulated

CERCLA Regulation: 5000 lb final RQ; 2270 kg final RQ

SARA 311/312 Hazard classes: Regulated

SARA 302 Regulation: Not regulated

SARA 304 Regulation: Not regulated

SARA 313 Regulation: Not regulated

Foreign Regulatory Information

Substance of Rotterdam Protocol: Not regulated

Substance of Stockholm Protocol: Not regulated

Substance of Montreal Protocol: Not regulated

Foreign Inventory Status

- Korea management information: Phase-in substance subject to registration (KE-00047)
Toxic Chemical (97-1-161)
Substances requiring preparation for accidents
- European Inventory of Existing Commercial Chemical Substances(EINECS): Present (205-500-4)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (39342)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((2)-726)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Australia Inventory of Chemical Substances (AICS): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): HSNO Approval:
HSR001041
- Philippines management information: Philippines Inventory of Chemicals and Chemical Substances (PICCS): Present

<Toluene diisocyanate>

TSCA (Toxic Substances Control Act): Section 8(b) inventory (Present) [SP]

Proposition 65: Not regulated

OSHA Regulation: Not regulated

CERCLA Regulation: 100 lb final RQ; 45.4 kg final RQ

SARA 311/312 Hazard classes: Not regulated

SARA 302 Regulation: Not regulated

SARA 304 Regulation: Not regulated

SARA 313 Regulation: Not regulated

Foreign Regulatory Information

Substance of Rotterdam Protocol: Not regulated

Substance of Stockholm Protocol: Not regulated

Substance of Montreal Protocol: Not regulated

Foreign Inventory Status

- Korea management information: Phase-in substance subject to registration (KE-10914)
Toxic Chemical (2010-1-611)
- European Inventory of Existing Commercial Chemical Substances(EINECS): Present (247-722-4)
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (11919)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-2214)
- Canada management information: Domestic Substances List (DSL): Present
- Australia management information: Australia Inventory of Chemical Substances (AICS): Present
- New Zealand management information: New Zealand Inventory of Chemicals (NZIoC): HSNO Approval:
HSR003307
- Philippines management information: Philippines Inventory of Chemicals and Chemical Substances (PICCS): Present

16. OTHER INFORMATION

16.1 Indication of changes:

Preparation date: Sep. 9, 2002

Version: 13

Revision date: June 9, 2020

16.2 Key literature reference and sources for data:

- TSCA; http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do
- IECSC; <http://cciss.cirs-group.com/>
- EU Regulation 1272/2008
- TOMES-LOLI®; <http://www.rightanswerknowledge.com/loginRA.asp>
- UN Recommendations on the transport of dangerous goods 17th
- IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
- ECHA CHEM; <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
- HSDB; <http://toxnet.nlm.nih.gov/cgi-bin/sis/search2>
- EPA; <http://www.epa.gov/iris>
- EPISUITE Program ver.4.1
- NIOSH(The National Institute for Occupational Safety and Health)
- ACGIH(American Conference of Governmental Industrial Hygienists)
- National chemicals information systems; <http://ncis.nier.go.kr>
- National Emergency Management Agency-Korea dangerous material inventory management system; <http://hazmat.mpss.kfi.or.kr/material.do>
- Waste Control Act enforcement regulation attached [1]

16.3 Abbreviations

ACGIH: American Conference of Governmental Industrial hygienists

NIOSH: The National Institute for Occupational Safety and Health

OSHA: Occupational Safety & Health Administration

IARC: International Agency for Research on Cancer

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Dangerous Goods

ICAO/IATA: International Civil Aviation Organization/ International Air Transport Association

RID: Regulations Concerning the International Transport of Dangerous Goods by Rail

16.4 Other

- Product should be handled, stored, and used in accordance with the generally accepted industrial hygiene practices and in conformity with all the applicable legal regulations.
- The information provided herein is based on the knowledge possessed at this present time from the view point of safety requirements.
- It should, therefore, not be construed as guaranteeing specific properties.