

SAFETY DATA SHEET

Date Printed: September 1, 2016

Version: 3

Revision date: June 9, 2020

Regulation: In accordance with Commission Regulation (EU) CLP 1272/2008

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product identifier

1.1.1. Product name: KONNATE T-80

1.1.2. EC No.: 247-722-4

1.1.3. (Pre)REACH Registration No.: 01-2119454791-34-0015

1.1.4. CAS No.: 26471-62-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Identified Uses

- Manufacture: Manufacturing of TDI, Manufacturing, Manufacturing of TDI – Site LU
- Formulation: Manufacturing of other substances, other composite materials, formulating, repackaging and distribution, manufacturing of other substances-Site LU, adhesives and sealants, other composite material industrial use, manufacturing of TDI, manufacturing of TDI – Site LU, manufacturing, adhesives and sealants industrial use, elastomers TPU, polyamide, polyimide & synthetic fibres, elastomers TPU, polyamide, polyimide & synthetic fibres industrial use, coating industrial use, flexible foam, flexible foam industrial use, coatings, formulation and repackaging and distribution
- Uses at industrial sites: Adhesives and sealants industrial use, flexible form industry use, elastomers, TPU, polyamide, polyimide & synthetic fibres, flexible foam, formulating, repackaging and distribution, adhesives and sealants, manufacturing of other substances, coating industry use, manufacturing of TDI, other composite materials, manufacturing of other substances, elastomers, TPU, polyamide, polyimide & synthetic fibres industrial use, coatings, manufacturing of TDI? – Site LU, manufacturing of other substance, manufacturing of other substance – Site LU, coating industrial use, other composite material industrial use, formulation, repackaging and distribution – Site LU
- Uses by professional workers: Other composite material professional use, adhesives and sealants professional use, coating professional use, adhesives and sealants professional use, other composite materials, coating professional use, coating, adhesives and sealants

1.2.2. Recommended use

- Soft foam is being used in footwear, furniture, automotive, bedding, toys and semi-rigid foams used car interiors, etc.

1.2.3. 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

1.3.3. Fax: +82-2-729-5347

1.3.4. Email Address: alvin@hanwha.com

1.4. Emergency telephone number

1.4.1. Emergency Telephone: +82-2-729-3079, +82-61-688-4888

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP)

Physical / Chemical Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP):

Not classified

Health Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP):

Acute toxicity (inhalation: vapors): Category 1

Skin corrosion/irritation: Category 2

Eye Damage/irritation: Category 2A

Skin sensitization: Category 1

Respiratory sensitization: Category 1

Carcinogenicity: Category 2

Specific target organ toxicity (Single exposure): Category 3 (respiratory tract irritation)

Environmental Hazards:

Classification according to Regulation (EC) 1272/2008 (CLP):

Not classified

2.2 Label elements

Hazard pictograms:



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.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

Additional precautionary statements: Not applicable

Precautionary statements

- Precaution:

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/vapors/spray.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P264 Wash your hands 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.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P284 Wear respiratory protection.

- Treatment:

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.

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.

P312 Call a poison center or doctor/physician you feel unwell.

P320 Specific treatment is urgent (see Section 8 on this label).

P321 Specific treatment (see Section 8 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 + P364 Take off contaminated clothing and wash before reuse.

- Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

- Disposal:

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

2.3 Other hazards

- **Additional precautionary statements:** Not applicable

- **National Fire Protection Association (NFPA)**

Health: 2

Flammability: 1

Reactivity: -

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	EC No.	Conc. / %	Classification according to 1272/2008/EEC	(Pre) Registration No.
Toluene diisocyanate	26471-62-5	247-722-4	100	Carc. 2, Acute Tox. 2 *, STOT SE 3, Skin Irrit. 2, Eye Irrit. 2, Resp. Sens. 1, Skin Sens. 1, Aquatic Chronic 3	01-2119454791-34-0015
2,4-TDI	584-84-9	209-544-5	80	-	
2,6-TDI	91-08-7	202-039-0	20	-	

Note C: Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

4. FIRST AID MEASURES

4.1 Description of first aid measures

4.1.1. General information:

Remove soiled or soaked clothing immediately, do not allow to dry.

Adhere to personal protective measures when giving first aid.

Clean body thoroughly (Bad, shower).

4.1.2. Following inhalation:

If inhaled: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

Immediately 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.

4.1.3. Following skin contact:

If skin irritation or rash occurs: Get medical advice/attention.

Take off contaminated clothing and wash before reuse.

For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.

Call emergency medical service.

Remove and isolate contaminated clothing and shoes.

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

For minor skin contact, avoid spreading material on unaffected skin.

4.1.4. Following eye contact:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

4.1.5. Following 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 others proper respiratory medical device.

4.1.6. Self-protection of the first aider:

First aider: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delay Acute effects:

- Inhalation: May cause acute toxic effects.
- Skin contact: Contact with this substance will cause skin irritation moderately.
- Eye contact: May cause severe irritation of eyes.

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 extinguisher: Dry chemical, CO₂, Alcohol-resistant foam
- Unsuitable extinguisher: Water

5.2 Special hazards arising from the substance or mixture

- Thermal decomposition products: NO₂, TDI vapors, CO₂, CO, HCl, HCN
- Vapor-air mixtures are explosive above flash point.
- Slight fire hazard when exposed to heat or flame.

5.3 Advice for firefighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- 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.

- Clean up spills immediately, observing precautions in Protective Equipment section.
- Isolate hazard area.
- Keep unnecessary and unprotected personnel from entering.
- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Cover with plastic sheet to prevent spreading.

6.2 Environmental precautions

- Prevent entry into water ways, sewers, basements or confined areas.

6.3 The methods of purification and removal

- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Reduce dust and prevent scattering by moistening with water.
- Absorb the liquid and scrub the area with detergent and water.
- TDI neutralizer

Powder, aqueous ammonia, alcoholic solution and calcium hydroxide are suitable as neutralizing agent when the leak.

1) Powder	
Sawdust	23.0 WT%
Clay	38.5 WT%
Ethanol	19.2 WT%
Triethanol amine	3.8 WT%
Ammonia concentrations	3.8 WT%
Water	11.7 WT%
2) Aqueous ammonia	
Ammonia concentrations	3 - 8 WT%
Liquid detergent	0.2-0.5 WT%
Water	90-95 WT%
3) Alcoholic solution	
Alcohol	50 WT%
Ammonia concentrations	5 WT%
Water	45 WT%
4) Calcium hydroxide	

- *Caution) 1. Alcohol solution must be careful when you use it to fire flammable.
 2. Neutralizer amount is equal or more to the amount of spilled TDI.
 3. If the neutralizer is not urgently prepared, use the wet sand in a simple way.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.
- Avoid breathing dust/fume/gas/mist/vapors/spray.
- Wash your hands thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- 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.

7.2 Conditions for safe storage, including any incompatibilities

- Store locked up.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum

- reconditioner, or properly disposed of.
 - Storage temperature : 20 ~ 30 °C

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limits

o EU regulation:

- Belgium: TWA=0.005ppm(0.037mg/m³), STEL=0.02ppm(0.14mg/m³)
- France: TWA=0.01ppm(0.08mg/m³), STEL=0.02ppm(0.16mg/m³)
- Italy: TWA=0.005ppm, STEL=0.02ppm

o U.S regulation:

- NIOSH: Not available
- OSHA: Not available

o ACGIH: TWA=0.005 ppm, STEL=0.02ppm

o Biological exposure index: 5 µg/g

o Others:

- Colombia: TWA=0.02ppm, STEL=0.005ppm
- Dominican Republic: TWA=0.005ppm, STEL=0.02ppm
- Bahrain: TWA=0.01ppm(0.08mg/m³)

o DNELs, PNECs:

Exposure route of relevance	DNELs, DMELs PNECs											
	Industrial				Professional				Consumer			
	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect	Long term, Local effects	Long term, systemic effects	Short term, local effects	Short term, systemic effect
Human: oral (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	-	-	-
Human: inhalation (mg/m ³)	35	35	140	140	-	-	-	-	-	-	-	-
Human: dermal (mg/kg bw/day)	-	-	-	-	-	-	-	-	-	-	-	-
Environment : water	12.5 ug/L (Freshwater), 1.25 ug/L (Marine water), 125 ug/L (Intermittent releases)											
Environment : air	-											
Environment : soil	1 mg/kg soil dw											
Environment : sediment	-											
Environment : STP	1 mg/L											
Environment : Predators	-											

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.
- Facilities for storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Individual protection measures, such as personal protective equipment:
Respiratory protection:

- Follow the European Standard EN149. Use a European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Eye protection:

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

Hand protection:

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

Body protection:

- Wear appropriate **resistant** 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:	colorless to yellowish
Odor:	characteristic, pungent
Odor threshold:	0.05ppm
pH :	Not available
Melting point/freezing point:	11.5 - 13.5°C
Initial boiling point and boiling range:	251°C (1013hPa)
Flash point:	135°C
Evaporation rate:	Not available
Flammability (solid, gas):	No gas generation or spontaneous ignitions were observed during any of the tests.
Upper/lower flammability or explosive limits:	UEL 9.5% / LEL 0.5%
Vapor pressure:	0.03mmHg (25°C)
Vapor density:	6 (Air=1)
Relative density:	1.22 (25°C)
Solubility(ies):	Non-soluble
Partition coefficient: n-octanol/water:	LogKow=3.74 (estimated)
Auto-ignition temperature:	> 600°C
Decomposition temperature:	Not available
Viscosity:	3.1cPs (25 °C)
Explosive properties:	Not available
Oxidizing properties:	Not available
Molecular weight:	174.2g/mol

10. STABILITY AND REACTIVITY

10.1 Reactivity/Chemical stability/Possibility of hazardous reactions

- Stable(Non-hazardous polymerization occurs slowly above 40 °C)
- Reacts exothermically with water yielding carbon dioxide and an organic base.
- May darken on exposure to sunlight
- Toxic gas that may accumulate in a closed space
- This material is frozen at less than 17°C, and can be produce dimer at high temperatures.

10.2 Conditions to avoid

- Containers may be exploded and ruptured when heated.
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.

10.3 Incompatible materials

- Water, acid, acyl chloride, alcohol, aluminum, amines, ammonia, aniline, strong bases, copper and copper alloys, activated hydrogen, metal, oxidizing agents, plastics, rubber coating, polyurethane, surface active agents, zinc alloy

10.4 Hazardous decomposition products:

- Thermal decomposition products may include highly toxic hydrogen cyanide, and toxic and hazardous carbon oxides and nitrogen.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects	
(a) Acute toxicity	
Oral	Not classified
	Rat(female) LD ₅₀ =4,130 mg/kg bw (OECD TG 401)
Dermal	Not classified
	Rabbit, LD ₅₀ >9,400 mg/kg bw (OECD TG 402)
Inhalation	Category 1
	Rat, LC ₅₀ (4h) = 0.234 mg/L (OECD TG 403)
(b) Skin Corrosion/ Irritation	Category 2
	In skin irritation test with rabbit for 72h, moderately irritating was shown (PDII: 4.7)
(c) Serious Eye Damage/ Irritation	Category 2A
	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	Category 1
	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 <i>hapten-protein</i> conjugate.
(e) Skin Sensitization	Category 1
	In skin sensitization: Local Lymph Node Assay with mice, the substance

	induces skin sensitization. (OECD TG 429)
(f) Carcinogenicity	Category 2
	- EU CLP 1272/2008: 2 (Suspected of causing cancer) - ACGIH: A4 (Not Classifiable as a Human Carcinogen) - IARC Group: 2B (Possibly Carcinogenic to Humans) - NTP: R (Reasonably Anticipated To Be A Human Carcinogen)
(g) Mutagenicity	Not classified
	<i>In vitro</i> : Bacterial Reverse Mutation Assay: with/ without metabolic activation: Positive (OECD TG 471) <i>In vivo</i> : Mammalian Erythrocyte Micronucleus Test: with/ without metabolic activation: Negative (OECD TG 474, GLP)
(h) Reproductive toxicity	Not classified
	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 turbinate 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 (respiratory tract irritation)
	In an 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) (Shiotsuka 1987b)
(j) Specific target organ toxicity (repeat exposure)	Not classified
	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 turbinate (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) This substance has already been classified for specific health hazard categories (acute inhalation, skin/respiratory sensitization, skin/eye/respiratory irritation, etc.) due to membrane irritation, sensitization, etc., and therefore should not be classified for specific target organ toxicity.
(k) Aspiration Hazard	Not available

12. ECOLOGICAL INFORMATION

12.1 Toxicity	
Acute toxicity	Not classified
	Fish: <i>Oncorhynchus mykiss</i> , LC ₅₀ (96h)=133 mg/L static (OECD TG 203)

	Invertebrate: <i>Daphnia magna</i> , EC ₅₀ (48h)=12.5 mg/L static (OECD TG 202) Algae: <i>Skeletonema costatum</i> , EC ₅₀ (96h)=3,230 mg/L static (OECD TG 201)
Chronic toxicity	Not classified
	Invertebrate: <i>Daphnia magna</i> , NOEC(21d)=1.1 mg/L static (OECD TG 211, GLP)
12.2 Persistence and degradability	Persistence: Low persistency (log Kow is more than 4 estimated.) (LogKow=3.43 (22 °C, pH ca.7)) Degradability: Half lifecycle: 0.5 min (calculated)
12.3 Bio-accumulative potential	Bioaccumulation: Bioaccumulation is expected to be low according to the BCF <500 (BCF = 136.4L/kg wet-wt(estimated)) Biodegradation: As not well-biodegraded, it is expected to have high accumulation potential in living organisms (0% biodegradation was observed after 28 days) (OECD TG 302C)
12.4 Mobility in soil	High potency of mobility to soil. (Koc =1,760(estimated))
12.5 Results of PBT and vPvB assessment	The substance is not PBT / vPvB
12.6 Hazardous to the ozone layer	Not classified
12.7 Other adverse effects	Not available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

13.1.1 Product/Packaging disposal:

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

13.1.2 Waste treatment-relevant information:

Waste must be disposed of in accordance with directive 2008/98/EC.

13.1.3 Sewage disposal-relevant information:

Release to the environment or sewage system is prohibited. Must be treated as hazardous waste.

13.1.4 Other disposal recommendations: Not available

14. TRANSPORT INFORMATION

14.1 UN No.: 2078

14.2 UN Proper shipping name: TOLUENE DIISOCYANATE

14.3 Transport Hazard class

ADR: 6.1

IMDG: 6.1

ICAO/IATA: 6.1

RID: 6.1

14.4 Packing group: II

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user

in case of fire: F-A

in case of leakage: S-A

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/legislation specific for mixture

EU Regulatory Information

EU classification

EU 1272/2008(CLP)

Classification: Carc. 2, Acute Tox. 2 *, STOT SE 3, Skin Irrit. 2, Eye Irrit. 2, Resp. Sens. 1, Skin Sens. 1, Aquatic Chronic 3

Risk phrases: H351, H330, H335, H315, H319, H334, H317, H412

Safety phrases: P201, P202, P280, P308+P313, P405, P501, P260, P271, P284, P272, P273, P304+340, P310, P320, P403+P233, P261, P312, P403+233, P264, P280, P302+P352, P321, P332+P313, P362+P364, P305+P351+P338, P337+P313, P342+P340, P342+P311, P302+P352, P333+p313

EU SVHC list: Not regulated

EU Authorization list: Not regulated

EU Restriction list: Not regulated

Waste Framework Directive 2008/98/EC: Not regulated

Foreign Inventory Status

- Korea management information: Existing Chemical Substance (KE-10914), Phase-in substance subject to registration (437), 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): (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

15.2 Chemical safety assessment: For this substance a chemical safety assessment has been carried out.

16. OTHER INFORMATION

Product safety data sheet for prepared in accordance with Regulation (EU) 1272/2008

16.1 Indication of changes:

Preparation date: September 1, 2016

Version: 3

Revision date: June 9, 2020

16.2 Key literature reference and sources for data:

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>

NIOSH (The National Institute for Occupational Safety and Health)

ACGIH (American Conference of Governmental Industrial Hygienists)

TOMES-LOLI®; <http://www.rightanswerknowledge.com/loginRA.asp> National Emergency

Management Agency-Korea dangerous material inventory management system;

<http://www.nema.go.kr/hazmat/main/main.jsp>

Waste Control Act enforcement regulation attached [1]

National chemicals information systems; <http://ncis.nier.go.kr>

16.3 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008(CLP):

Classification according to Regulation (EC) 1272/2008 (CLP)	Classification procedure
-	-

16.4 Abbreviations

EC₅₀: median effective concentration
LC₅₀: median lethal concentration
LD₅₀: median lethal dose
OEL: Occupational exposure limit
PBT: Persistent, bioaccumulative, toxic chemical
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical
EWC: the European Waste Code

16.5 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.