

# SAFETY DATA SHEET

**Date Printed:** November 2, 2022

**Version:** 5

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

## 1. Identification

### 1.1 Product identifier

**1.1.1 Product of name:** KONNATE X-100

**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:** Lens, ink binder, glue, paint, lamination, ext.

**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: +82-61-688-4800

#### 1.3.2 Supplier & Distributor

Company name: Hanwha Solutions Co, Ltd.

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

Prepared by: FM Sales Team

Contact Telephone: +82-2-729-2700

### 1.4 Emergency phone number

Emergency phone: 1-800-424-9300, +1 703-527-3887, +1 713-402-1990 (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:** Not classified

#### Health Hazards:

Acute toxicity (inhalation: vapors): Category 2

Skin corrosion/irritation: Category 2

Eye Damage/irritation: Category 1

Skin sensitization: Category 1

**Environmental Hazards:** Not classified

### 2.2 Label elements, including precautionary statements

#### o Pictogram and symbol:



o Signal word: Danger

o Hazard statements:

H315 Causes skin irritation  
H317 May cause an allergic skin reaction  
H318 Causes serious eye damage  
H330 Fatal if inhaled

**o Precautionary statements:**

**- Prevention:**

P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P264 Wash parts of the body 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/eye protection/face protection.  
P284 [In case of inadequate ventilation] wear respiratory protection.

**- Treatment:**

P302+P352 IF ON SKIN: Wash with plenty water.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P310 Immediately call a position center or doctor/physician.  
P320 Specific treatment is urgent.  
P321 Specific treatment.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P362+P364 Take off contaminated clothing and wash before reuse.

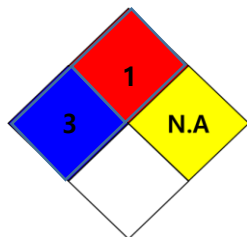
**- Storage:**

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

**- Disposal:**

P501 Dispose of 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:** 3  
**o Flammability:** 1  
**o Reactivity:** Not available

**3. Composition/information on ingredients**

Component	Common name and synonyms	CAS No.	Conc. / %
Benzene, 1,3-bis(isocyanatomethyl)	1,3-Di(isocyanatomethyl)benzene; 1,3-Bis(isocyanatomethyl)benzene;	3634-83-1	100

**4. First aid measures**

**4.1 Description of first aid measures**

**Eye contact**

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

**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.

#### **Inhalation**

- 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.

#### **Ingestion**

- Call emergency medical service.
- 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 effects**

- Not known

#### **4.3 Indication of immediate medical attention and notes for physician**

- 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 spray
- Use dry sand or earth to smother fire.
- Unsuitable extinguishing media: Not available

#### **5.2 Specific hazards arising from the chemical**

- Thermal decomposition products: nitrogen oxides, carbon monoxide, hydrogen cyanide gas
- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning.
- Containers may explode when heated.
- Some of these materials may burn, but none ignites readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

#### **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.
- 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/vapours/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.
- 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

- 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.

## 7. Handling and storage

### 7.1 Precautions for safe handling

- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Wash 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.
- Please note that there are materials and conditions to avoid.
- Please work with reference to engineering controls and personal protective equipment.

### 7.2 Conditions for safe storage, including any incompatibilities

- Store in a well-ventilated place. Keep container tightly closed.
- 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

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

### 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**

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

#### **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**

- 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**

<b>Description:</b>	Liquid
<b>Color:</b>	Light yellow
<b>Odor:</b>	Not available
<b>Odor threshold:</b>	Not available
<b>pH:</b>	Not available
<b>Melting point/freezing point:</b>	-7 °C
<b>Initial boiling point and boiling range:</b>	293.00 to 294.00 °C. @ 760.00 mm Hg (est)
<b>Flash point:</b>	168 °C (Pensky-Martens Closed Cup) (ASTM D93-20)
<b>Evaporation rate:</b>	Not available
<b>Flammability (solid, gas):</b>	Not applicable
<b>Upper/lower flammability or explosive limits:</b>	Not available
<b>Vapor pressure:</b>	0.021 Pa (20 °C)
<b>Vapor density:</b>	1.2 g/cm <sup>3</sup> (20 °C)
<b>Relative density</b>	Not available
<b>Solubility:</b>	Not available
<b>Solubility in organic solvents:</b>	Not available
<b>Partition coefficient: n-octanol/water:</b>	3.00 (25°C)
<b>Auto ignition temperature:</b>	470 °C (≥ 1,015.1 - ≤ 1,021.9 hPa)
<b>Decomposition temperature:</b>	175 °C (OECD TG 103)
<b>Viscosity:</b>	6 mPas (25 °C)
<b>Molecular weight:</b>	188.18 g/mol
<b>Particle Size (Polymer compound)</b>	Not applicable
<b>Self-accelerated decomposition temperature (Polymer compound)</b>	Not applicable

“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:

- May decompose at high temperatures into forming toxic gases.
- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

### 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:

- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning.
- Corrosive and/or toxic fume
- Nitrogen oxides, carbon monoxide, hydrogen cyanide gas

## 11. Toxicological information

Information on toxicological effects	
(a) Acute toxicity	
Oral	Not classified
	· Rat, LD <sub>50</sub> > 2,000 mg/kg bw
Dermal	Not classified
	· Rat, LD <sub>50</sub> > 2,000 mg/kg bw
Inhalation	Category 2
	· Rat(male/female), inhalation: aerosol, LC <sub>50</sub> = 0.35 mg/L air/4h
(b) Skin Corrosion/ Irritation	Category 2
	· As a result of skin corrosion/irritation test, it caused skin irritation (irritation score : ≥ 2.3).
(c) Serious Eye Damage/ Irritation	Category 1
	· As a result of severe eye damage/irritation test, irreversible corneal opacity, iritis, severe edema, and conjunctival hyperemia were observed.
(d) Respiratory sensitization	Not available
(e) Skin Sensitization	Category 1
	· As a result of skin sensitization test, a positive reaction was induced in 7 out of 8 animals.

(f) Carcinogenicity	Not classified
	· IARC, NTP, OSHA, ACGIH, EU CLP 1272/2008: not listed
(g) Mutagenicity	Not classified
	· <i>In vitro</i> : Bacterial Reverse Mutation Assay : negative · <i>In vitro</i> : Mammalian Chromosome Aberration Test: positive · <i>In vivo</i> : Micronucleus test : negative
(h) Reproductive toxicity	Not classified
	· Local effects were observed, but no maternal or offspring effects related to reproductive and developmental toxicity were observed.
(i) Specific target organ toxicity (single exposure)	Not classified
	· No consistent and identifiable toxic effects from a single exposure to the substance.
(j) Specific target organ toxicity (repeat exposure)	Not classified
	· As a result of repeated inhalation toxicity test, no consistent and identifiable toxic effects were observed for the substance.
(k) Aspiration Hazard	Not available
	· Viscosity: 6 m Pa s (25 °C)

## 12. Ecological information

12.1 Toxicity	
Acute toxicity	Not classified
	· Fish: 96h-LC <sub>50</sub> = 120.9 mg XDI/L · Invertebrate: 48h-EC <sub>50</sub> = 8.6 mg XDI/L · Algae: ErC <sub>50</sub> = 43.5 mg XDI/L * As it rapidly changes to XDA (CAS No. 1477-55-0) in water, XDI does not apply to the aquatic hazard classification criteria.
Chronic toxicity	Not classified
12.2 Persistence and degradability	· BOD 0% degradation was observed after 28 days; not readily biodegradable
12.3 Bio-accumulative potential	· log P <sub>ow</sub> = 2.9952 · BCF = 43.98 (estimated)
12.4 Mobility in soil	· K <sub>oc</sub> = 401.1 (estimated)
12.5 Results of PBT and vPvB assessment	· Due to the properties of the material, it is not applicable to P & B, but XDI fulfils the T criterion for human health as XDI needs to be classified for acute toxicity (inhalation), skin irritation and eye corrosion.
12.6 Hazardous to the ozone layer	Not classified
12.7 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 regulations.

#### 13.2 Disposal precaution

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

### 14. Transport information

#### 14.1 UN No.: 2206

#### 14.2 UN Proper shipping name: ISOCYANATES, TOXIC, N.O.S. (m-xylylene 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 Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable

#### 14.7 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 the substance or mixture USA Regulatory Information

**TSCA (Toxic Substances Control Act):** Section 8 (b) inventory: Present [PMN] (ACTIVE)

**Proposition 65:** Not regulated

**OSHA Regulation:** Not regulated

**CERCLA Regulation:** 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-03244)
- Canada management information: Non-Domestic Substances List (NDSL): Present
- China management information: Inventory of Existing Chemical Substances (IECSC): Present (11924)
- Japan management information: Existing and New Chemical Substances (ENCS): Present ((3)-2216)
- Philippines management information: Inventory of Chemicals and Chemical Substances (PICCS): Present
- Taiwan management information: Taiwan Chemical Substance Inventory (TCSI): Present



## 16. OTHER INFORMATION

### 16.1 Indication of changes:

Preparation date: November 25, 2016

Version: 5

Revision date: November 2, 2022

### 16.2 Key literature reference and sources for data:

- TSCA; [http://iaspub.epa.gov/sor\\_internet/registry/substreg/searchandretrieve/searchbylist/search.do](http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do)
- EU Regulation 1272/2008
- TOMES;LOLI ; <http://csi.micromedex.com/fraMain.asp?Mnu=0>
- UN Recommendations on the transport of dangerous goods 17<sup>th</sup>
- 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>
- OECD SIDS; <http://webnet.oecd.org/>
- HSDB; <https://pubchem.ncbi.nlm.nih.gov/>
- 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>
- K-REACH; K-REACH/registration-dossier
- Boiling point; <http://www.thegoodscentcompany.com>

### 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.