Safety Data Sheet
TDI-100
(2,4-Toluene Diisocyanate 100%)

Revision Date: 10/18/2022

1. Identification

1.1. Product identifier

Product Identity	TDI-100
Alternate Names	2,4-Toluene Diisocyanate 100%

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

Intended use	**Identified uses:** 2,4-TDI (2,4-toluene diisocyanate), component in manufacture of flexible foam polymers, coatings, adhesives and sealants.
Restrictions on use	**Restrictions on use:** NOT for consumer and domestic (household) uses.

1.3. Details of the supplier of the safety data sheet

Company Name	Silver Fern Chemical, Inc. 2226 Queen Anne Avenue North Seattle, WA 98109 USA Customer Service: 1-866-282-3384 / info@silverfernchemical.com Website - www.silverfernchemical.com
Emergency **24 hour Emergency Telephone No.**	**Emergency telephone number** **Infotrac: 1-800-535-5053;** **Outside USA & Canada +1-352-323-3500**

2. Hazard(s) identification

2.1. Classification of the substance or mixture

Acute Toxicity-inhalation Cat. 1; H330
Skin Irritation Cat. 2; H315
Skin Sensitization Cat. 1; H317
Eye Irritation Cat. 2A; H319
Respiratory Sensitization Cat. 1; H334
Specific Target Organ Toxicity Single Exposure Cat. 3; H335
Carcinogenicity Cat. 2; H351

2.2. Label elements

Danger

Hazards
Fatal if inhaled.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.
Suspected of causing cancer.

Prevention
Do not breathe vapor, fume, mist or spray.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash exposed skin thoroughly after handling.
Wear protective gloves, protective clothing and eye protection or face protection.
Contaminated work clothing should not be allowed out of the workplace.
Use only outdoors or in a well-ventilated area.
In case of inadequate ventilation wear respiratory protection.

Response
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
IF ON SKIN: Wash with plenty of water and soap.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
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 attention.

Storage
Store in a well ventilated place. Keep container tightly closed.
Store locked up.

Disposal
Recycle and or dispose of contents and containers in accordance with local and national/international regulations.

2.3 Other hazards:
Contains isocyanates, may react with water. Heat and contamination can cause polymerization and rupture of containers.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Toluene-2,4- diisocyanate (TDI) **CAS Number: 0000584-84-9**	**98.5-100**	**Carc. 2;H351** **Acute Tox. 1;H330** **Eye Irrit. 2;H319** **STOT SE 3;H335** **Skin Irrit. 2;H315** **Resp. Sens. 1;H334 C ≥ 0,1 %** **Skin Sens. 1;H317** **Aquatic Chronic 3;H412**	**----**

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.
*PBT/vPvB - PBT-substance or vPvB-substance.
The full texts of the phrases are shown in Section 16.

Section 4. First aid measures

4.1. Description of first aid measures

General In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Precautions Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). First aid providers should avoid exposures to this chemical.

Inhalation Remove source of exposure or move person to fresh air and keep person warm and comfortable for breathing. Immediately call a POISON CENTER or doctor. If unconscious, place in the recovery position. Give nothing by mouth.

If breathing is irregular or has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eyes Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical attention.

If product is a solid in the eye: Do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. Have victim look right and left, and then up and down. If particle/dust does not dislodge, rinse cautiously with water until particle is removed. If

	irritation persists, obtain medical attention. DO NOT attempt to manually remove anything stuck to eye(s).
Skin	Take off immediately all contaminated clothing shoes and leather goods (e.g. watchbands, belts). Gently blot or brush away excess product. Wash exposed skin with plenty of water and non-abrasive soap. Completely decontaminate clothing, shoes and leather goods before reuse or discard. If skin irritation or rash occurs: Get medical advice/attention.
Ingestion	If swallowed, call a POISON CENTER or doctor. Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Quickly transport victim to an emergency care facility.

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

Overview	Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure. Treat symptomatically. Check section 2.2 (GHS Label Elements) for further details.
Inhalation	Symptoms include eye and nose irritation, sore or burning throat, runny nose, shortness of breath, wheezing, and laryngitis. Coughing with chest pain or tightness may also occur, frequently at night. These symptoms may occur during exposure or may be delayed for several hours. Higher exposures could cause inflammation of the lung tissue (chemical pneumonitis), chemical bronchitis with severe asthma-like wheezing, severe coughing spasms, and accumulation of fluid in the lungs (pulmonary edema), which could prove fatal. Symptoms of pulmonary edema (tightness in the chest and shortness of breath) can develop up to 48 hours after exposure, and are aggravated by physical exertion. May cause allergic reaction.
Eyes	Severe irritation of the eye tissue and possible clouding of the cornea.
Skin	Severe irritation of the skin with symptoms of marked inflammation, rash or redness of the skin, swelling and possible blisters. Repeated skin contact with this material may cause skin sensitization in humans. Further skin contact may result in inflammation, rash, itching and staining. May cause an allergic skin reaction.
Ingestion	Causes severe irritation of the tissues of the mouth, throat and digestive tract.

4.3 Indication of any immediate medical attention and special treatment needed:	Get immediate medical attention if inhaled or if allergy symptoms develop.

Section 5. Fire-fighting measures

5.1. Extinguishing media

Carbon dioxide, dry chemical powder, dry sand, alcohol-resistant foam. Alcohol resistant foams are preferred for large fires. Use water spray to cool fire-exposed containers. Exercise caution when using water since the reaction between water and hot isocyanates can be vigorous and will generate CO2 gas.
Unsuitable extinguishing media: Do not use water jet. **Do not get water inside containers.**

5.2. Special hazards arising from the substance or mixture

During a fire, products of combustion may include toxic hydrogen cyanide, isocyanate vapor, carbon monoxide, carbon dioxide, nitrogen oxides, dense smoke and irritating or toxic fumes. Reacts vigorously with water at high temperatures. Closed containers may rupture violently when heated or contaminated with water.

Keep container tightly closed.

Avoid breathing dust, fume, gas, mist, vapors, spray.

5.3. Special protective equipment and precautions for fire-fighters

Fire poses the risk of pressure build-up and rupture; very toxic fumes.

As for any fire, evacuate the area and fight the fire from a safe distance. Firefighters must wear full protective equipment including self-contained breathing apparatus with chemical protection clothing when firefighters are exposed to decomposition products from this material.

As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean-up immediately after fire. No smoking.

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Section 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

Clean-up should only be performed by trained personnel. Isolate spill area, preventing entry by unauthorized persons. Wear adequate personal protective equipment, including an appropriate respirator as indicated in Section 8. Ventilate area of spill. Do not touch or walk through spilled material.
Stop the leak if you can do it without risk.

When cleaning with Decontamination solution, harmful gases may evolve; ensure adequate ventilation or wear a respirator.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.2. Environmental precautions

Do not allow spills to enter drains or waterways. Avoid releases to the environment and prevent material from entering confined areas, domestic sewers, natural waterways, or storm water management systems.

6.3. Methods and material for containment and cleaning up

Ventilate the area and avoid breathing vapors. Take the personal protective measures listed in section 8.

Immediately shut off the leak if it is safe to do so. Contain the spill with suitable non-combustible absorbent material (e.g. sand, silica gel, acid binder, universal binder).

Use clean tools to collect absorbed material.

Shovel into open-top drums or plastic bags for further decontamination, if necessary. Do not seal drums or containers. Neutralize small spills with Decontamination solution.

Never return spills in original containers for re-use. Place in closed containers outside buildings and dispose of according to the Waste Regulations.

Wash area with one of the following Decontamination solutions:
Formulation A: Liquid surfactant 0.2% to 2%; Sodium carbonate 5% to 10%; Water to make up to 100%.
Formulation B: Liquid surfactant 0.2% to 2%; Concentrated ammonia 3% to 8%; Water to make up to 100%.
Formulation C: Ethanol, isopropanol or butanol 50%; Concentrated ammonia 5%; Water to make up to 100%.

Formulation B reacts faster than Formulation A.
Formulation C is especially suitable for cleaning of equipment from unreacted isocyanate and neutralizing under freezing conditions.

6.4 Reference to other sections:

See Section 8 for information on selection of personal protective equipment.
See Section 13 for information on disposal of spilled product and contaminated absorbents.

Section 7. Handling and storage

7.1. Precautions for safe handling

Handle containers carefully to prevent damage and spillage.
Check section 2.2 (GHS Label Elements) for further details. - [Prevention]

Before handling, it is important that engineering controls are operating, protective equipment requirements and personal hygiene measures are being followed.

People working with this chemical should be properly trained regarding its hazards and its safe use.

Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.

Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this preparation is used.

Examination of lung function should be carried out on a regular basis on persons applying this preparation.

Keep container tightly closed.
Do not breathe vapors, fumes, spray mist or dusts from this material.
Avoid contact with skin and eyes.
Use only in a well-ventilated area.

Wear respiratory protection when handling heated product or if spraying.
Wear protective gloves, protective clothing and eye/face protection.
Contaminated work clothing must not be allowed out of the workplace.
Do not reseal containers if contamination of containers is suspected.
Assume that empty containers contain residues which are hazardous.
Keep away from food and drink.
Wash hands and exposed skin before eating, drinking or smoking and at the end of the workshift.
Refer to directives and regulations for instructions on the safe handling, employee training, monitoring and enforcement procedures for isocyanates [e.g. US Department of Labor, OSHA Directive # CPL 03-00-017 National Emphasis Program – Occupational Exposure to Isocyanates. Ontario Designated Substances Regulation-Isocyanates].

7.2. Conditions for safe storage, including any incompatibilities

Store in a dry, well-ventilated area, out of direct sunlight and away from heat, sources of ignition and incompatible materials. Incompatible with aluminum, copper and copper alloys, brass and bronze, and zinc.

Recommended storage temperature: 16 – 38°C (60 – 100°F).
Have appropriate fire extinguishers and spill clean-up equipment in or near storage area.
Store in a place accessible by authorized persons only.
Keep containers tightly closed.
Protect from moisture/humidity; diisocyanate reacts with water producing CO2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Do not re-seal contaminated containers.
Store product in its original container.

Check section 2.2 (GHS Label Elements) for further details. - [Storage]

7.3. Specific end use(s)

Component in manufacture of flexible foam polymers, coatings, adhesives and sealants.

Section 8. Exposure controls / personal protection

8.1. Control parameters

Occupational Exposure Limits: Consult local authorities for acceptable exposure limits.

Ingredient	ACGIH® TLV®	U.S. OSHA PEL	Ontario (Canada) TWA
TDI – Toluene Diisocyanate	0.001 ppm STEL 0.005 ppm (Inhalable fraction and vapor)	0.005 ppm STEL 0.02 ppm, Ceiling	0.005 ppm 0.02 ppm Ceiling Designated Substance
Other exposure guidelines: IDLH* = 2.5 ppm (*Immediately Dangerous to Life or Health, NIOSH)			
Some jurisdictions have specific regulations for isocyanates. These regulations may include requirements for medical surveillance programs, including pre-employment and pre-placement examinations, periodic medical examinations, clinical tests, health education and record keeping. Obtain detailed information from the appropriate government agency in relevant jurisdictions.			

8.2. Exposure controls

Engineering Controls

Provide adequate ventilation. Handle product in closed system or area provided with appropriate exhaust ventilation. Handle in accordance with good industrial hygiene and safety practice. Ensure regular cleaning of equipment, work area and clothing. Curing ovens must be properly ventilated to prevent emissions of isocyanate monomer into the workplace. Monitor the workplace air for the presence of isocyanate vapor and fume.

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have equipment available for use in emergencies such as spills or fire.

8.3 Personal Protection Measures

Respiratory Protection If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

Airborne concentrations of TDI may exceed the occupational exposure limits when the product is sprayed, aerosolized or heated. When airborne concentrations of TDI exceed the exposure limits, approved respiratory protective equipment (RPE) is required. Wear an approved air purifying respirator with organic vapor cartridges and HEPA particulate filter or self-contained breathing apparatus (SCBA) or supplied air respirator.

A respiratory protection program that meets the regulatory requirement, such as OSHA's 29 CFR 1910.134 or Canadian Standards Association (CSA) Standard Z94.4, must be followed whenever workplace conditions warrant a respirator's use.

NIOSH Recommendations for TDI concentrations in air: IDLH (Immediately Dangerous to Life or Health) for TDI =2.5 ppm At any detectable concentration: (APF = 10,000) self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode; any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Eyes/Face Protection Wear chemical safety goggles. Wear a face-shield or full-face respirator when needed to prevent exposure to liquid, mist or fume. An eye wash station is suggested as a good workplace practice.

Skin Avoid skin contact. Wear chemical protective gloves, suit, and boots to prevent skin exposure. Wear PVC or rubber gloves to keep skin contact to a minimum. Butyl rubber gloves and clothing may be used to minimize dermal exposures to this material and for cleaning and maintenance operations. Evaluate resistance under conditions of use and maintain protective clothing carefully. Refer to the manufacturer's recommendations regarding the suitability of any gloves used.

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

Safety shower, hand-wash station and eye-wash fountain readily available in the immediate work area.

Environmental exposure controls: Store finished products in closed containers (e.g. bulk tanks, drums, cans). All waste products are assumed to be collected and returned for re-processing or incineration.

Check section 2.2 (GHS Label Elements) for further details.

Section 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Clear Liquid
Odor	Pungent odor
Odor threshold	0.45 ppm – detection. Sharp pungent odor at 2 ppm
pH	No available information
Melting point / freezing point	21 - 22°C (69.8 – 71.6°F)
Initial boiling point and boiling range	252 - 254°C (485.6 - 489.2°F) (decomposes)
Flash Point	131°C (267.8°F)
Evaporation rate (Ether = 1)	No available information
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** No available information **Upper Explosive Limit:** No available information
Vapor pressure (Pa)	0.014 hPa @ 20°C
Vapor Density	6 (air = 1) calculated
Relative Density	1.21 (water = 1)
Solubility in Water	Insoluble in water; reacts with water (Completely soluble in benzene, diethyl ether, chlorobenzene.)
Partition coefficient n-octanol/water (Log Kow)	Not available; reacts with water
Auto-ignition temperature	No available information
Decomposition temperature	230°C (446°F)
Viscosity (cSt)	Dynamic: 3 mPa s @ 25°C
Oxidising properties	No available information
Explosive properties	No available information
Flammability	Product can burn if heated or involved in a fire.
Odor Threshold	0.45 ppm – detection. Sharp pungent odor at 2 ppm
Relative Density	1.21 (water = 1)

9.2. Other information

No other relevant information.

Section 10. Stability and reactivity

10.1 Reactivity:

Reacts with water, Amines, Strong bases, Alcohols, Metal compounds (e.g. organotin catalysts).

10.2 Chemical stability:

Isocyanates are very reactive compounds and are especially highly reactive toward a large number of compounds with active hydrogens, particularly at high temperatures and in the presence of catalysts.
Reacts with water releasing heat, CO2 and polyureas.
May attack and make brittle many plastic and rubber materials. May degrade some elastomers including nitrile rubber.

10.3 Possibility of hazardous reactions:

Contact with water or humidity may cause a slow reaction, forming carbon dioxide which could rupture closed containers. TDI may undergo uncontrolled exothermic polymerization upon contact with incompatible materials or if heated above 177°C. The resulting pressure build-up could rupture

closed containers.
May react violently with ammonia solution, primary and secondary amines, primary alcohols, oxidizers and hot water.

10.4 Conditions to avoid:
Avoid moisture, heat (temperatures above 40°C) and freezing temperatures.

10.5 Incompatible materials:

- Strong bases, Amines, Alcohols, Acids - May react violently with generation of heat.
- Metal compounds (e.g. organotin catalysts) - May polymerize with the generation of heat and pressure.
- Strong oxidizing agents (e.g. nitric acid, peroxides, perchlorates) – Violent reaction, risk of fire and explosion.
- Water - Reacts slowly, forming carbon dioxide which could rupture closed containers. Temperatures above 50°C increase the rate and reaction becomes more vigorous.

10.6 Hazardous decomposition products:
By thermal decomposition and combustion, product may generate nitrogen oxide, hydrogen cyanide and isocyanate vapours.
Reaction with water generates Toluenediamine substances.

Section 11. Toxicological information

11.1 Information on toxicological effects:

Acute health hazards:

Inhalation: Fatal if inhaled.
In animal studies, 1 hour exposure to <17 ppm TDI, animals showed signs of lung damage (hemorrhagic and fluid-filled).

Skin: In animal studies, application of TDI caused delayed dermal irritation and skin lesions subsided by 14th day of observation. TDI was not acutely toxic by the dermal route with the LD_{50} >2000 mg/kg.

Eye: Liquid, vapors and aerosols, can cause eye irritation in humans.

Ingestion: Animal studies for acute oral toxicity, oral LD_{50} was > 2000 mg/kg.

Skin corrosion / irritation
In a study with similar TDI isomers, TDI caused irritation and edema in rabbits. (test according to OECD guideline 404)

Serious eye damage / irritation
In animal studies, TDI caused moderate to severe corneal opacity. Eye irritation was reported in humans at vapor concentrations of 0.05 ppm.

Acute Toxicity Data

Ingredient	LD_{50} Oral	LD_{50} Dermal	LC_{50} Inhalation
TDI - Toluene Diisocyanate	4130 mg/kg (rat)	>2 000 mg/kg (rabbit)	0.48 mg/L 1-hour (rat) 66 ppm 1-hour (rat)

STOT (Specific Target Organ Toxicity) – Single exposure
Inhalation: Human occupational exposures have resulted in severe respiratory irritation. Respiratory irritation was reported in humans at 0.1 ppm. Single exposure could cause severe, permanent respiratory impairment. TDI has also been reported to cause reactive airways dysfunction syndrome (RADS).

STOT (Specific Target Organ Toxicity) – Repeated exposure

From inhalation of TDI: Long-term, low-level exposure may cause severe, permanent respiratory impairment. Rats (inhalation) NOAEC = 0.05 ppm (2 years)

Aspiration hazard

Data not available.

Sensitization - respiratory and/or skin

May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Isocyanates are known to cause skin and respiratory sensitization in humans. Animal tests have indicated that respiratory sensitization can result from skin contact with diisocyanantes. Symptoms may initially appear to be a cold or mild hay fever; severe asthmatic symptoms can develop and include wheezing, chest tightness, shortness of breath, difficulty breathing and/or coughing. Fever, chills, general feelings of discomfort, headache and fatigue can also occur. Symptoms may occur immediately upon exposure or may be delayed. Sensitized people who continue to work with isocyanates may develop symptoms sooner after each exposure. The number and severity of symptoms may increase. TDI and other isocyanates may also cause hypersensitivity pneumonitis, another allergic lung disease, which is characterized by symptoms such as shortness of breath, fever, tiredness, non-productive cough, and chills.

Carcinogenicity

TDI is possibly carcinogenic to humans based on animal information. The International Agency for Research on Cancer (IARC) has determined there is sufficient evidence for the carcinogenicity of TDI (2,4-TDI, 2,6-TDI and the mixtures of these isomers) in experimental animals.

The International Agency for Research on Cancer (IARC) has concluded that this chemical is possibly carcinogenic to humans (Group 2B) based on animal information.

The American Conference of Governmental Industrial Hygienists (ACGIH) has designated this chemical as not classifiable as a human carcinogen (A3).

The US National Toxicology Program (NTP) has listed this chemical as reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Development of offspring: Data for TDI in rats: NOAEL = >0.1 ppm (maternal and developmental toxicity, in rats)

Sexual function and fertility: Data for TDI in rats: NOAEC = >0.3 ppm (2 generation reproduction toxicity study, in rats)

Effects on or via lactation: Data not available

Germ cell mutagenicity

Not known to be mutagenic.

Interactive effects

Data not available

12.1. Toxicity

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and GHS and is not classified as dangerous for the environment, but contains substance(s) dangerous for the environment. See section 3 for details

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/L	48 hr EC50 crustacea, mg/L	96 Hr ErC50 algae, mg/L
Toluene diisocyanate （mixed isomers） Toluene-2,4-diisocyanate - (584-84-9)	164.50, Pimephales promelas	Daphnia magna: 12.5 mg/L	Pseudokirchnerella subcapitata: >1000 mg/L

12.2. Persistence and degradability

TDI is rapidly hydrolysed in aqueous solution, Half-life (DT50): 0.5 minute (at 25°C)

12.3. Bioaccumulative potential
No available information
12.4. Mobility in soil
No available information
12.5. Results of PBT and vPvB assessment
This product contains no PBT/vPvB chemicals.
12.6. Other adverse effects
No available information

Section 13. Disposal considerations

13.1. Disposal methods
Do NOT discard into any sewers, on the ground or into any body of water.
Store material for disposal as indicated in Section 7 Handling and Storage.

Dispose of waste in accordance with relevant national, regional and local environmental control provisions.
RCRA (USA) - Toluene diisocyanate may be classified as Reactive waste and Toxic waste.
Environment Canada - Toluene diisocyanate Hazardous waste and Hazardous Recyclable Material.

Section 14. Transport information

	DOT (Domestic Surface Transportation)	**IMO / IMDG (Ocean Transportation)**	**ICAO/IATA**
14.1. UN number	UN2078	UN2078	UN2078
14.2. UN proper shipping name	UN2078,Toluene diisocyanate,6.1,II	Toluene diisocyanate	Toluene diisocyanate
14.3. Transport hazard class(es)	**DOT Hazard Class:** 6.1 **Sub Class:** Not Applicable	**IMDG:** 6.1 **Sub Class:** Not Applicable	**Air Class:** 6.1 **Sub Class:** Not Applicable
14.4. Packing group	II	II	II

14.5. Environmental hazards
Hazardous substance RQ Toluene diisocyanate (TDI) - 100 lb (45.4 kg) final RQ
IMDG Marine Pollutant: No;
14.6. Special precautions for user
Contains isocyanates. Keep away from moisture and water. ERG 156
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
Noxious liquid substances Category Y

Section 15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.

TSCA Status- Toluene Diisocyanate:
TSCA Action plan Chemicals
TSCA Section 12(b) Export Notification
TSCA Section 4(e) testing list
TSCA Section 5 (a)(2), SNUR
TSCA Section 8(a), Chemical data reporting
TSCA Section 8(b), Inventory
TSCA Section 8(d), Health and Safety reporting

SARA Title III :
Sec. 313 Toluene-2,4-diisocyanate (TDI), 0.1% de minimis
CERCLA RQ Toluene-2,4-diisocyanate (TDI) 100 lbs (45.4kg)
Clean Air Act - Toluene Diisocyanate:
Accidental Release Prevention – Toxic substances: 10000 lb threshold
HON Rule SOCMI Chemicals
VOC's

EPCRA 302 Extremely Hazardous:

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

EPCRA 313 Toxic Chemicals:

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

California Proposition 65 - Carcinogens (>0.0%):
California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

⚠ WARNING: This product will expose you to Toluene Diisocyanates, which are known to the state of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

New Jersey RTK Substances (>1%):

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

Pennsylvania RTK Substances (>1%):

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

Massachusetts RTK Substances (>1%):

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

OSHA Process Safety Management Standard Highly Hazardous Chemicals, Toxics and Reactives:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US EPA List of Regulated Substances under the Risk Management Plan (RMP) Program:

Toluene diisocyanate （mixed isomers） Toluene-2,4- diisocyanate

US EPA Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) under the Minimum Risk Exemption:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

U.S. - DEA List II or Essential Chemicals:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

U.S. - DEA - Exempt Chemical Mixtures - List 1 and 2:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US DHS Chemical Facility Anti-Terrorism Standards (CFATS):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Canada
WHMIS 1988 Classification:
D1A – Immediate and serious toxic effects.
D2A (D2B) - Other toxic effects – Carcinogenicity; Respiratory & skin sensitization; skin and eye irritation.
NSNR Status:
Substances are listed on the on the DSL.
NPRI:
Toluene Diisocyanate Part 1 substance
Canadian Environmental Protection Act:
Toluene Diisocyanate Schedule 1 – list of toxic substances.

Mexico
Pollutant Release and Transfer Register:
Reporting Emissions Threshold Quantity 100 kg/year

International Inventories:
Australia: Substances are listed on the Inventory of Chemical Substances (AICS).
China: Substances are present on the Chemical Inventory (IECSC).
European Inventories: Toluene-2,4-diisocyanate is listed on EINECS 209-544-5
Japan: Listed on the inventory Existing and New Chemical Substances (ENCS) (3)-2214
Korea: Listed on the inventory - Existing and Evaluated Chemical Substances. KE-10929
Mexico: Listed on the inventory (INSQ).
New Zealand: Listed on the Chemical Inventory (NZIoC) HSR001552
Philippines: Listed on the Inventory of Chemicals and Chemical Substances (PICCS).

Section 16. Other information

Revision Date 10/18/2022, Version 1

DISCLAIMER OF RESPONSIBILITY
The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

The full text of the phrases appearing in section 3 is:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H412 Harmful to aquatic life with long lasting effects.

References and sources for data:
CCOHS, Cheminfo Profile for Toluene diisocyanate
RTECS, Registry of Toxic Effects of Chemical Substances
Registration dossier for TDI mixed isomers according to REGULATION (EC) No 1907/2006

Legend to abbreviations:
ACGIH – American Conference of Governmental Industrial Hygienists
GHS- Globally Harmonized System for Classification and Labeling.
IDLH – Immediately Dangerous to Life or Health
LD50- Median lethal dose; the dose causing 50 % lethality
NIOSH-National Institute for Occupational Safety and Health
OEL– Occupational exposure limit
OSHA - Occupational Safety and Health Administration
TWA – Time weighted average
TLV - Threshold Limit Value
WHMIS – Workplace Hazardous Materials Information System.

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