



## Safety Data Sheet Toluene Diisocyanate

Revision Date: 06-June-2017

Version 1.1

### 1. Supplier and Substance Identification

#### Product Information

**Product name:** Toluene Diisocyanate

**Description:** Polyurethane component, industrial chemicals

#### Recommended use of the chemical and restrictions on use

**Recommended use** Plasticizer

**Uses advised against** None known

#### Supplier:

The Chemical Company

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Jamestown, RI 02835 USA

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Fax : 401.423.3102

Email : [info@thechemco.com](mailto:info@thechemco.com)

Web : [www.thechemco.com](http://www.thechemco.com)

#### For Chemical Emergency

Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

### 2. Hazards Identification

#### GHS-US classification

Acute toxicity (inhal.), Category 1 H330 Fatal if inhaled

Skin corrosion/irritation, Category 2 H315 Causes

skin irritation Serious eye damage/eye irritation,

Category 2A H319 Causes serious eye irritation

Sensitization – Respiratory, Category 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
Sensitization – Skin, Category 1 H317 May cause an allergic skin reaction  
Carcinogenicity, Category 2 H351 Suspected of causing cancer

Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation

Full text of H statements: see section 16

H335 May cause respiratory irritation  
Hazard pictograms (GHS-US) :



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : 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

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and

understood P260 - Do not breathe fume, mist, spray, vapors

P264 - Wash hands thoroughly after handling

P271 - Use only outdoors or in a well-ventilated area

P272 - Contaminated work clothing must not be allowed out of the workplace

P280 - Wear protective clothing, protective gloves, eye protection,

Respiratory protection P302+P352 - If on skin: Wash with plenty of water

P304+P341 - If inhaled: If breathing is difficult, remove person to fresh

air and keep 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 P312 - Call a doctor, a POISON CENTER if you

feel unwell P332+P313 - If skin irritation occurs: Get medical

advice/attention.

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

February 10, 2017 EN (English) 2/8

P337+P313 - If eye irritation persists: Get medical advice/attention

P342+P311 - If experiencing respiratory symptoms: Call a POISON

CENTER P362+P364 - Take off contaminated clothing and wash it

before reuse

P363 - Wash contaminated clothing before reuse

P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up  
P501 - Dis local, national and international

### 3. Composition/Information on Ingredients

Name	Product identifier	%
Toluene Diisocyanate	(CAS No) 26471-62-6	100
Benzene, 2,4-diisocyanato-1-methyl- (Constituent)	(CAS No) 584-84-9	80
2-methyl-m-phenylene diisocyanate, toluene-2,6-di-isocyanate (Constituent)	(CAS No) 91-08-7	20

### 4. First Aid Measures

First-aid measures after inhalation: Immediately call a POISON CENTER or doctor/physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms:

Call a POISON CENTER or doctor/physician.

First-aid measures after skin contact : Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact : 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.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

Symptoms/injuries after inhalation : Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.

Symptoms/injuries after skin contact : Causes skin irritation. May cause an allergic skin reaction. Symptoms/injuries after eye contact : Causes serious eye irritation.

Symptoms/injuries after ingestion : May be harmful if swallowed. May cause stomach pain or discomfort. Chronic symptoms : Suspected of causing cancer.

### 5. Fire Fighting Measures

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Alcohol-resistant foam. Unsuitable extinguishing media Do NOT use water.

Fire hazard : Slight fire hazard when heated. Thermal decomposition products may include highly toxic hydrogen cyanide, and toxic and hazardous carbon oxides and nitrogen.

Explosion hazard : May form flammable vapor-air mixture. Containers may explode and rupture when heated.

Reactivity : Stable, but reacts exothermically with water yielding carbon dioxide and an organic base. May brown on exposure to sunlight. Toxic gas may accumulate in a closed space. Frozen at less than 15°C, and can produce dimer at high temps.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering the environment.

Protective equipment for firefighters : Do not enter fire area without proper protective equipment, including respiratory protection.

## 6. Accidental Release Measures

Emergency procedures

Evacuate unnecessary personnel.

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Methods for cleaning up : lids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

See Heading 8. Exposure controls and personal protection. For disposal of residues refer to section 13 : Disposal considerations.

## 7. Handling and Storage

Precautions for safe handling : Provide good ventilation in process area to prevent formation of vapor. Do not breathe fume, mist, spray, vapors. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice. Storage conditions : Keep only in the original container in a cool, well ventilated place away from incompatible materials and sources of heat. Keep container tightly closed.

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.

## 8. Exposure Controls/Personal Protection

Toluene Diisocyanate (26471-62-6)
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ACGIH: TWA=0.005 ppm, STEL=0.02ppm
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Appropriate engineering controls

Provide adequate ventilation. Provide local exhaust or general room ventilation to minimize vapor concentrations. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

**Hand protection:**

Insulating or Impermeable protective gloves.

**Eye protection:**

Chemical goggles or safety glasses

**Skin and body protection:**

Chemical resistant safety shoes. Chemical resistant apron

**Respiratory protection:**

In case of inadequate ventilation wear respiratory protection. NIOSH/MSHA approved air purifying respirator should be used if operating conditions produce airborne concentrations that exceed exposure limits for any individual components. If conditions immediately dangerous to life or health exist, use NIOSH/MSHA self-contained breathing apparatus (SCBA).

**Other information:**

Do not eat, drink or smoke during use.

## 9. Physical and Chemical Properties

Physical state : Liquid

Color : Colorless to yellow

Odor : Characteristic, pungent

Odor threshold : 0.05 ppm

pH : No data available

Melting point : No data available

Freezing point : 11.5 - 13.5 °C

Boiling point : 251 °C (1013 hPa)

Flash point : 135 °C

Relative evaporation rate (butylacetate=1) : No data available

Flammability (solid, gas) : Non flammable.

Vapor pressure : 0.03 mm Hg (at 25 C)

Relative vapor density at 20 °C : 6 (Air = 1)

Relative density : No data available

Solubility : No data available

Log Pow : No data available

Auto-ignition temperature : > 600 °C

Decomposition temperature : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : 3.1 cP (at 25 C)

Explosive limits : Lower explosive limit (LEL): 0.5 vol %

Upper explosive limit (UEL): 9.5 vol %

Explosive properties : No data available

Oxidizing properties : No data available

## 10. Stability and Reactivity

### Reactivity

Stable, but reacts exothermically with water yielding carbon dioxide and an organic base. May brown on exposure to sunlight. Toxic gas may accumulate

in a closed space. Frozen at less than 15°C, and can produce dimer at high temps.

#### Chemical stability

Stable under normal conditions.

#### Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

#### Conditions to Avoid

Extremely low or high temperatures,. Keep away from heat/sparks/openflame/hot surfaces void overheating to minimize fume production.- No smoking

#### 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

#### Possible Hazardous Reactions

Hazardous polymerization will not occur.

#### Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating and toxic gases and vapors

### 11. Toxicological Information

Likely routes of exposure : Ingestion; Inhalation; Skin and eyes contact

Acute toxicity : Inhalation: Fatal if inhaled.

Toluene Diisocyanate	
ATE US (gases)	10.000 ppmv/4h
ATE US (vapors)	0.050 mg/l/4h
ATE US (dust,mist)	0.005 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Causes serious eye irritation.

Respiratory or skin sensitisation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ cell mutagenicity : Not classified

Carcinogenicity : Suspected of causing cancer.

Benzene, 2,4-diisocyanato-1-methyl- (584-84-9)	
IARC group	2B - Possibly carcinogenic to humans
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.

Symptoms/injuries after skin contact : Causes skin irritation. May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye irritation.

Symptoms/injuries after ingestion : May be harmful if swallowed. May cause stomach pain or discomfort.

## 12. Ecological Information

Ecology - general : The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Toluene Diisocyanate	
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)

Toluene Diisocyanate	
Bioaccumulative 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)

High potency of mobility in soil (Koc=1760 (estimated))

Effect on global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

Other information : Avoid release to the environment

## 13. Disposal Consideration

Product/Packaging disposal recommendations : Dispose of contents/container to comply with applicable local, national and international regulation.

Ecology - waste materials : Hazardous waste due to toxicity. Avoid release to the environment.

## 14. Transport Information

### Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2078 Toluene diisocyanate, 6.1, II



UN-No.(DOT) : UN2078

Proper Shipping Name (DOT) : Toluene diisocyanate

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Class (DOT) : 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 6.1 - Poison

DOT Packaging Non Bulk

(49 CFR 173.xxx) : 202 DOT

Packaging Bulk (49 CFR

173.xxx) : 243

DOT Symbols : + - Fixes (cannot be altered) proper shipping name, hazard class, and packing group

DOT Special Provisions (49 CFR 172.102) : IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.

T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)

TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where:  $t_r$  is the maximum mean bulk temperature during transport,  $t_f$  is the temperature in degrees celsius of the liquid during filling, and  $a$  is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling ( $t_f$ ) and the maximum mean bulk temperature during transportation ( $t_r$ ) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where:  $d_{15}$  and  $d_{50}$  are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

TP13 - Self-contained breathing apparatus must be provided when this hazardous material is transported by sea.

DOT Packaging Exceptions (49 CFR 173.xxx) : 153

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 L

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 25 - Shade from radiant heat, 40 -

Stow "clear of living quarters" Emergency Response Guide

(ERG) Number : 156

Other information : No supplementary information available.

### Transportation of Dangerous Goods

Not applicable

### Transport by sea



Transport document description (IMDG) : UN 2078

TOLUENE DIISOCYANATE, 6.1, II UN-No. (IMDG) : 2078

Proper Shipping Name (IMDG) : TOLUENE DIISOCYANATE

Packing group (IMDG) : II - substances presenting medium danger

Limited quantities (IMDG) : 100 ml

#### Air transport

Transport document description (IATA) : UN 2078 Toluene diisocyanate, 6.1, II

UN-No. (IATA) : 2078

Proper Shipping Name (IATA) : Toluene diisocyanate

Class (IATA) : 6.1 - Toxic Substances

Packing group (IATA) : II - Medium Danger

### 15. Regulatory Information

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory except for:

2-methyl-m-phenylene diisocyanate, toluene-2,6-di-isocyanate	CAS No 91-08-7	20%
Benzene, 2,4-diisocyanato-1-methyl-	CAS No 584-84-9	80%

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Benzene, 2,4-diisocyanato-1-methyl-	CAS No 584-84-9	80%
2-methyl-m-phenylene diisocyanate, toluene-2,6-di-isocyanate	CAS No 91-08-7	20%

<b>Benzene, 2,4-diisocyanato-1-methyl- (584-84-9)</b>	
Listed on the United States SARA Section 302	
CERCLA RQ	100 lb listed under Benzene, 1,3-diisocyanatomethyl-
Section 302 EPCRA Reportable Quantity (RQ)	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb

#### CANADA

<b>Benzene, 2,4-diisocyanato-1-methyl- (584-84-9)</b>
Listed on the Canadian DSL (Domestic Substances List)

#### EU-REGULATIONS

<b>Benzene, 2,4-diisocyanato-1-methyl- (584-84-9)</b>
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### National Regulations

<b>Benzene, 2,4-diisocyanato-1-methyl- (584-84-9)</b>
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Listed on the TCSI (Taiwan Chemical Substance Inventory)

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

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## 16. Other Information

Full text of H-statements:

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

NFPA health hazard

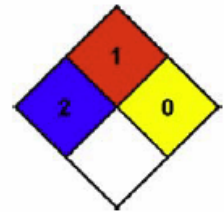
: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard

: 1 - Materials that must be preheated before ignition can occur.

NFPA reactivity

: 0 - Material that in themselves are normally stable, even under fire conditions.



SDS US (GHS HazCom 2012)

**Revision Date**

06-June-2017

**Disclaimer:**

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