

TOLUENE -2-4-DIISOCYANATE
CAS No 584-84-9

MATERIAL SAFETY DATA SHEET
SDS/MSDS

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Toluene -2-4-Diisocyanate

CAS-No. : 584-84-9

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

Identified uses : Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet

Company : Central Drug House (P) Ltd
 7/28 Vardaan House
 New Delhi -110002
 INDIA

Telephone : +91 11 49404040
 Email : care@cdhfinechemical.com

1.4 Emergency telephone number

Emergency Phone # : +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Inhalation (Category 1), H330
 Skin irritation (Category 2), H315
 Eye irritation (Category 2), H319
 Respiratory sensitisation (Category 1), H334
 Skin sensitisation (Category 1), H317
 Carcinogenicity (Category 2), H351
 Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
 Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Danger

Hazard statement(s)

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.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284	Wear respiratory protection.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.

Supplemental Hazard Statements none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. Lachrymator.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : TDI
 4-Methyl-1,3-phenylene diisocyanate
 2,4-Diisocyanatotoluene
 4-Methyl-m-phenylene diisocyanate
 BASF LUPRANATE T80
 Toluene 2,4-diisocyanate

Formula : C₉H₆N₂O₂
 Molecular weight : 174.16 g/mol
 CAS-No. : 584-84-9
 EC-No. : 209-544-5
 Index-No. : 615-006-00-4

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Classification	Concentration
Toluene-2,4-di-isocyanate		
CAS-No.	584-84-9	Acute Tox. 1; Skin Irrit. 2; Eye Irrit. 2; Resp. Sens. 1; Skin Sens. 1; Carc. 2; STOT SE 3; Aquatic Chronic 3; H330, H315, H319, H334, H317, H351, H335, H412 Concentration limits: >= 0.1 %: Resp. Sens. 1, H334;
EC-No.	209-544-5	
Index-No.	615-006-00-4	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures**5.1 Extinguishing media****Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, Nitrogen oxides (NOx)

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C

Store under inert gas. Product is sensitive to light and moisture.

Storage class (TRGS 510): Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN 14387) respirator cartridges as a backup to enginee protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Form: clear, liquid Colour: colourless
b) Odour	No data available
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	Melting point/range: 20 - 22 °C - lit.
f) Initial boiling point and boiling range	115 - 120 °C at 13 hPa - lit.
g) Flash point	132 °C - closed cup
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	Upper explosion limit: 9.5 %(V) Lower explosion limit: 0.9 %(V)
k) Vapour pressure	0.03 mmHg at 25 °C
l) Vapour density	6.01 - (Air = 1.0)
m) Relative density	1.214 g/cm ³ at 25 °C
n) Water solubility	No data available

- | | |
|---|---------------------------------|
| o) Partition coefficient: n-octanol/water | log Pow: 3.43 at 22 °C |
| p) Auto-ignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | 2 mm ² /s at 21 °C - |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

Surface tension	25 mN/m at 25 °C
Relative vapour density	6.01 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat

10.5 Incompatible materials

Alcohols, Strong bases, Amines, acids, Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NO_x)
 Other decomposition products - No data available
 In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 5,110 mg/kg(Toluene-2,4-di-isocyanate)
 (OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 1 h - 0.48 mg/l(Toluene-2,4-di-isocyanate)

LD50 Dermal - Rabbit - male and female - > 9,400 mg/kg(Toluene-2,4-di-isocyanate)
 (OECD Test Guideline 402)

Skin corrosion/irritation

Skin - Rabbit(Toluene-2,4-di-isocyanate)

Result: Skin irritation - 24 h

Remarks: Moderate skin irritation

Serious eye damage/eye irritation

Eyes - Rabbit(Toluene-2,4-di-isocyanate)

Result: Irritating to eyes.

(Draize Test)

Respiratory or skin sensitisation

- Guinea pig(Toluene-2,4-di-isocyanate)

Result: May cause sensitisation by inhalation.

- Guinea pig(Toluene-2,4-di-isocyanate)

Result: May cause sensitisation by skin contact.

Germ cell mutagenicity

Ames test(Toluene-2,4-di-isocyanate)

S. typhimurium

Result: positive

Mutagenicity (micronucleus test)(Toluene-2,4-di-isocyanate)

Mouse - male and female

Result: negative

Carcinogenicity

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Toluene-2,4-di-isocyanate)

Reproductive toxicity

No data available(Toluene-2,4-di-isocyanate)

Specific target organ toxicity - single exposure

No data available(Toluene-2,4-di-isocyanate)

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available(Toluene-2,4-di-isocyanate)

Additional Information

RTECS: CZ6300000

Cough, Shortness of breath, Headache, Nausea, Vomiting(Toluene-2,4-di-isocyanate)

SECTION 12: Ecological information**12.1 Toxicity**

Toxicity to fish	static test LC50 - Oncorhynchus mykiss (rainbow trout) - 133 mg/l - 96 h(Toluene-2,4-di-isocyanate) (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 12.5 mg/l - 48 h(Toluene-2,4-di-isocyanate) (OECD Test Guideline 202)
Toxicity to algae	EC50 - Chlorella vulgaris (Fresh water algae) - 4,300 mg/l - 96 h(Toluene-2,4-di-isocyanate) (OECD Test Guideline 201)
Toxicity to bacteria	EC50 - Sludge Treatment - > 100 mg/l - 3 h(Toluene-2,4-di-isocyanate) (OECD Test Guideline 209)

12.2 Persistence and degradability

Biodegradability aerobic Biochemical oxygen demand - Exposure time 28 d(Toluene-2,4-di-isocyanate)
Result: 0 % - Not biodegradable

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available(Toluene-2,4-di-isocyanate)

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: 2078

IMDG: 2078

IATA: 2078

14.2 UN proper shipping name

ADR/RID: TOLUENE DIISOCYANATE

IMDG: TOLUENE DIISOCYANATE

IATA: Toluene diisocyanate

14.3 Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

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.
H412	Harmful to aquatic life with long lasting effects.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale