

## 1 Identification

### Product identifier

**Product name:** Toluene-2,6-diisocyanate

**Stock number:** L12745

**CAS Number:**

91-08-7

**EC number:**

202-039-0

**Index number:**

615-006-00-4

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

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS06 Skull and crossbones

Acute Tox. 2 H330 Fatal if inhaled.



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carc. 2 H351 Suspected of causing cancer.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

#### Hazard pictograms



GHS06 GHS08

#### Signal word

**Danger**

#### Hazard statements

H330 Fatal if inhaled.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H335 May cause respiratory irritation.

#### Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves / protective clothing.

P273 Avoid release to the environment.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P310 Immediately call a POISON CENTER/doctor/...

#### WHMIS classification

D1A - Very toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects



#### Classification system

**HMIS ratings (scale 0-4)**

**(Hazardous Materials Identification System)**

**HEALTH** 4 Health (acute effects) = 4

**FIRE** 1 Flammability = 1

**REACTIVITY** 1 Physical Hazard = 1

**Product name: Toluene-2,6-diisocyanate**

**Other hazards**  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.

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**3 Composition/information on ingredients**

**Chemical characterization: Substances**  
**CAS# Description:**  
91-08-7 Toluene-2,6-diisocyanate  
**Identification number(s):**  
**EC number:** 202-039-0  
**Index number:** 615-006-00-4

**4 First-aid measures**

**Description of first aid measures**  
**General information**  
Immediately remove any clothing soiled by the product.  
Remove breathing apparatus only after contaminated clothing has been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.  
**After inhalation**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.  
**After skin contact**  
Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.  
**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.  
**After swallowing** Seek medical treatment.  
**Information for doctor**  
**Most important symptoms and effects, both acute and delayed** No further relevant information available.  
**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**5 Fire-fighting measures**

**Extinguishing media**  
**Suitable extinguishing agents** CO2, sand, extinguishing powder. Do not use water.  
**Special hazards arising from the substance or mixture**  
If this product is involved in a fire, the following can be released:  
Carbon monoxide and carbon dioxide  
Nitrogen oxides (NOx)  
Possibly Hydrogen cyanide (HCN)  
**Advice for firefighters**  
**Protective equipment:**  
Wear self-contained respirator.  
Wear fully protective impervious suit.

**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
**Ensure adequate ventilation**  
**Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.  
**Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of contaminated material as waste according to section 13.  
**Ensure adequate ventilation.**  
**Prevention of secondary hazards:** No special measures required.  
**Reference to other sections**  
See Section 7 for information on safe handling  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

**7 Handling and storage**

**Handling**  
**Precautions for safe handling**  
Handle under dry protective gas.  
Keep container tightly sealed.  
Ensure good ventilation at the workplace.  
Open and handle container with care.  
Prevent formation of aerosols.  
**Information about protection against explosions and fires:** No information known.  
**Conditions for safe storage, including any incompatibilities**  
**Storage**  
**Requirements to be met by storerooms and receptacles:** Refrigerate  
**Information about storage in one common storage facility:**  
Store away from oxidizing agents.  
Protect from heat.  
Store away from water/moisture.  
**Further information about storage conditions:**  
Store under dry inert gas.  
This product is moisture sensitive.  
Keep container tightly sealed.  
Protect from humidity and water.  
Refrigerate  
**Specific end use(s)** No further relevant information available.

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:**  
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

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USA

Product name: **Toluene-2,6-diisocyanate**

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**Control parameters**

**Components with limit values that require monitoring at the workplace:**

**91-08-7 Toluene-2,6-diisocyanate (100.0%)**

TLV (USA)	Short-term value: (0.14) NIC-0.021* mg/m <sup>3</sup> , (0.02) NIC-0.003* ppm Long-term value: (0.036) NIC-0.007* mg/m <sup>3</sup> , (0.005) NIC-0.001* ppm *IFV SEN; NIC-Skin; A3
EL (Canada)	Short-term value: C 0.01 ppm Long-term value: 0.005 ppm IARC 2B; S
EV (Canada)	Long-term value: 0.005 ppm

**Additional information:** No data

**Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Penetration time of glove material (in minutes)** Not determined

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

**9 Physical and chemical properties**

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Pungent
<b>Odor threshold:</b>	Not determined.
<b>pH-value:</b>	Not determined.

**Change in condition**

<b>Melting point/Melting range:</b>	13 °C (55 °F)
<b>Boiling point/Boiling range:</b>	246-247 °C (475-477 °F)
<b>Sublimation temperature / start:</b>	Not determined

<b>Flash point:</b>	> 110 °C (> 230 °F)
<b>Flammability (solid, gaseous)</b>	Not determined.
<b>Ignition temperature:</b>	>549 °C (>1020 °F)
<b>Decomposition temperature:</b>	Not determined
<b>Auto igniting:</b>	Not determined.

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

<b>Lower:</b>	9 Vol %
<b>Upper:</b>	Not determined
<b>Vapor pressure at 25 °C (77 °F):</b>	0.025 hPa
<b>Density at 20 °C (68 °F):</b>	1.226 g/cm <sup>3</sup> (10.231 lbs/gal)
<b>Relative density</b>	Not determined.
<b>Vapor density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Hydrolyzes
<b>Partition coefficient (n-octanol/water):</b>	Not determined.
<b>Viscosity:</b>	
<b>dynamic at 25 °C (77 °F):</b>	3 mPas
<b>kinematic:</b>	Not determined.
<b>Other information</b>	No further relevant information available.

**10 Stability and reactivity**

**Reactivity** No information known.

**Chemical stability** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known

**Conditions to avoid** No further relevant information available.

**Incompatible materials:**

Alcohols  
Amines  
Oxidizing agents  
Heat

**Hazardous decomposition products:**

Carbon monoxide and carbon dioxide  
Nitrogen oxides  
Possibly Hydrogen cyanide (HCN)

**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:** Fatal if inhaled.

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USA

Product name: **Toluene-2,6-diisocyanate**

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**LD/LC50 values that are relevant for classification:** No data  
**Skin irritation or corrosion:** Causes skin irritation.  
**Eye irritation or corrosion:** Causes serious eye irritation.  
**Sensitization:**  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
**Germ cell mutagenicity:** No effects known.  
**Carcinogenicity:**  
Suspected of causing cancer.  
IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.  
NTP-R: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.  
ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.  
**Reproductive toxicity:** No effects known.  
**Specific target organ system toxicity - repeated exposure:** No effects known.  
**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.  
**Aspiration hazard:** No effects known.  
**Other information (about experimental toxicology):** Mutagenic effects have been observed on tests with laboratory animals.  
**Subacute to chronic toxicity:**  
The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:  
Sense Organs and Special Senses (Olfaction) - effect, not otherwise specified.  
Sense Organs and Special Senses (Eye) - effect, not otherwise specified.  
Lungs, Thorax, or Respiration - other changes.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.



12 Ecological information

**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Ecotoxical effects:**  
**Remark:** Harmful to aquatic organisms  
**Additional ecological information:**  
**General notes:**  
Do not allow product to reach ground water, water course or sewage system.  
Do not allow material to be released to the environment without proper governmental permits.  
Danger to drinking water if even small quantities leak into the ground.  
May cause long lasting harmful effects to aquatic life.  
Avoid transfer into the environment.  
Harmful to aquatic organisms  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.

13 Disposal considerations

**Waste treatment methods**  
**Recommendation** Consult state, local or national regulations to ensure proper disposal.  
**Uncleaned packagings:**  
**Recommendation:** Disposal must be made according to official regulations.

14 Transport information

<b>UN-Number</b> <b>DOT, IMDG, IATA</b>	UN2078
<b>UN proper shipping name</b> <b>DOT</b> <b>IMDG, IATA</b>	Toluene diisocyanate TOLUENE DIISOCYANATE
<b>Transport hazard class(es)</b> <b>DOT</b> 	
<b>Class</b> <b>Label</b> <b>Class</b> <b>Label</b> <b>IMDG, IATA</b> 	6.1 Toxic substances. 6.1 6.1 (T1) Toxic substances 6.1
<b>Class</b> <b>Label</b>	6.1 Toxic substances. 6.1
<b>Packing group</b> <b>DOT, IMDG, IATA</b>	II
<b>Environmental hazards:</b>	Not applicable.
<b>Special precautions for user</b>	Warning: Toxic substances
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b> <b>DOT</b> <b>Marine Pollutant (DOT):</b>	No
<b>UN "Model Regulation":</b>	UN2078, Toluene diisocyanate, 6.1, II

**Product name: Toluene-2,6-diisocyanate**

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**15 Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
**Hazard pictograms**



**Signal word** Danger  
**Hazard statements**  
H330 Fatal if inhaled.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H335 May cause respiratory irritation.

**Precautionary statements**  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves / protective clothing.  
P273 Avoid release to the environment.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P310 Immediately call a POISON CENTER/doctor/...

**National regulations**  
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.  
All components of this product are listed on the Canadian Domestic Substances List (DSL).

**SARA Section 313 (specific toxic chemical listings)**

91-08-7 Toluene-2,6-diisocyanate

**California Proposition 65**  
**Prop 65 - Chemicals known to cause cancer** Substance is not listed.  
**Prop 65 - Developmental toxicity** Substance is not listed.  
**Prop 65 - Developmental toxicity, female** Substance is not listed.  
**Prop 65 - Developmental toxicity, male** Substance is not listed.  
**Information about limitation of use:** For use only by technically qualified individuals.  
**Other regulations, limitations and prohibitive regulations**  
**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.  
**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**  
Substance is not listed.  
**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.  
**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**16 Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department  
**Date of preparation / last revision** 11/23/2015 / -

**Abbreviations and acronyms:**  
RID: Règlement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)