

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

### 1 Identification of substance:

- **Product details:**
- **Trade name:** Toluene diisocyanate
- **Application of the substance / the preparation**  
Used for the production of flexible polyurethane foam, special varnish and adhesives
- **Supplier/Manufacturer:**  
Penpet Petrochemical Trading GmbH  
Merkur-Park  
Sieker Landstrasse 126  
22143 Hamburg  
Germany  
Tel: +49 40 675 799 0  
Fax: +49 40 675 799 99 / 88
- **Email competent person:** angelika.torges@kft.de
- **Information department:** See supplier/manufacturer
- **Emergency information:** National Poisons Information Centre      Tel.: +44 (0)870 6006266

### 2 Hazards identification

- **Hazard description:**



Carc. Cat. 3  
T+ Very toxic

- **Information pertaining to particular dangers for man and environment:**

Under working conditions mainly resorbed via respiratory tract.

R 26      Very toxic by inhalation.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 40      Limited evidence of a carcinogenic effect.

R 42/43    May cause sensitisation by inhalation and skin contact.

R 52/53    Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Contains isocyanates. See information supplied by the manufacturer

- **Classification system:**

The classification was made according to the latest editions of the EU-lists, and expanded using company data and specialized literature.

- **Additional information:**

For safety reason persons with a hypersensitivity of the respiratory tract (e.g. asthma, chronic bronchitis) are not allowed to handle this product.

### 3 Composition/information on ingredients

- **Chemical characterization:**
- **CAS No. Description:**  
584-84-9 4-methyl-m-phenylene diisocyanate
- **Identification number(s):**
- **EINECS Number:** 209-544-5
- **EU Number:** 615-006-00-4

### 4 First aid measures

- **General information:**

First aid personnel should pay attention to their own safety.  
Immediately remove any clothing soiled by the product.

(Contd. on page 2)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name: Toluene diisocyanate**

(Contd. of page 1)

Remove breathing apparatus only after contaminated clothing have been completely removed.

· **After inhalation:**

Remove victim from contaminated area. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Call a doctor.

In case of unconsciousness, place patients on their side in a stable position for transportation.

· **After skin contact:**

Remove soiled clothes and shoes.

At first dab with dry tissue, because substance reacts with water.

Afterwards:

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

· **After eye contact:**

Rinse the eyes with open eyelids for 10 - 15 minutes with water.

Immediate transport to ophthalmologist or ophthalmic clinic.

· **After swallowing:**

Rinse mouth with water.

Drink slowly 1 glass of water.

Administer medicinal carbon

Do not induce vomiting.

If vomiting occurs spontaneously:

Hold the head of the casualty low with the body in a prone position in order to avoid aspiration.

Immediate transport to a hospital.

· **Information for doctor:**

· **The following symptoms may occur:**

After inhalation:

Irritation of mucuous membranes

Difficulties of breathing

Malfunction of the lungs

· **Treatment:**

Symptomatic treatment

(decontamination, vital functions)

In cases of irritation to the lungs, initial treatment with Dexametason metered aerosol.

In case of heavily aggravated breathing (allergic asthma) application of Salbutamol-Spray is recommended.

### 5 Fire fighting measures

· **Suitable extinguishing agents:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Use fire fighting measures that suit the environment.

· **For safety reasons unsuitable extinguishing agents:** Direct jet water

· **Special hazards caused by the material, its products of combustion or resulting gases:**

Dangerous decomposition product see chapter 10: stability and reactivity

· **Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

· **Additional information:**

Heating leads to pressure increase entailing danger of bursting and explosion. Immediately cool neighbouring packages and containers with sprayed water and, if possible, remove them out of the danger zone

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter the sewage system.

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name: Toluene diisocyanate**

(Contd. of page 2)

### 6 Accidental release measures

· **Person-related safety precautions:**



Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Use respiratory protective device against the effects of fumes/dust/aerosol.

Avoid contact with eyes and skin.

· **Measures for environmental protection:**

Do not allow product to reach sewage system or any water course.

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to penetrate the ground/soil.

In case of seepage into the ground inform responsible authorities.

· **Measures for cleaning/collecting:**

Ensure adequate ventilation.

Cover with a moist binding agent (e.g. sand, saw dust, PUR-dust). Then douse with an isocyanate annihilating agent and let it act for at least 10 minutes.

Fill collected, contaminated material into clean and labelled "open-top-drums". Do not seal airtight. Danger of burst !!

Treat with further annihilating agent. Disposal after 1-2 days.

Dispose contaminated material as waste according to item 13.

\* Annihilating solutions:

Solution I ( water 90-95 wt.%, ammonia conc. 3-8 wt.%,  
liquid wetting agent 0,2-0,5 wt.% )

Solution II ( water 90-95 wt.%, soda 5-10 wt.%,  
liquid wetting agent 0,2-0,5 wt.% )

Solution III ( industrial alcohol (ethanol, isopropanol,  
butanol) 50 wt.%, water 45 wt.%,  
ammonia conc. 5 wt.% )

Wetting agent: household dish washing agent

· **Additional information:**

See Section 8 for information on personal protection equipment.

Contact with water or humidity may produce CO<sub>2</sub>. Danger of burst of closed drums.

### 7 Handling and storage

· **Handling**

· **Information for safe handling:**

Only handle and refill product in closed systems.

Waste air is to be released into the atmosphere only via suitable separators.

Keep receptacles tightly sealed.

Restrict the quantity stored at the work place.

Keep the working area dry and clean.

Avoid inhalation of vapours.

Avoid contact with eyes and skin.

· **Information about protection against explosions and fires:**



Keep ignition sources away - Do not smoke.

Work on containers and pipelines is permitted only after thorough purging and inerting.

· **Storage**

· **Requirements to be met by storerooms and receptacles:**

Store container tightly sealed at a cool and dry place with sufficient ventilation.

Provide solvent resistant, sealed floor.

(Contd. on page 4)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name:** Toluene diisocyanate

(Contd. of page 3)

Prevent any seepage into the ground.

Suitable material:

Stainless steel

Polytetrafluoroethylen

Unsuitable material:

Steel

Copper

Zinc

· **Information about storage in one common storage facility:**

Store away from foodstuffs.

Store away from feed.

For storage observe regulations for toxic materials.

· **Further information about storage conditions:**

Keep receptacle tightly sealed.

Store under lock and key and with access restricted to technical experts or their assistants only.

Store in dry conditions.

Protect from exposure to the light.

Protect from humidity and water.

· **Storage class** 6.1A flammable toxic substances

### 8 Exposure controls and personal protection

· **Additional information about design of technical systems:** Keep away from open flames.

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

**584-84-9 4-methyl-m-phenylene diisocyanate**

WEL (Great Britain) Short-term value: 0.07 mg/m<sup>3</sup>

Long-term value: 0.02 mg/m<sup>3</sup>

Sen; as -NCO

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Personal protective equipment**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Store protective clothing separately.

Do not inhale gases / fumes / aerosols.

Avoid contact with eyes and skin absolutely.

Do not eat or drink while working.

Use skin protection cream for skin protection.

Be sure to clean skin thoroughly after work and before breaks.

· **Breathing equipment:**

In case of unintentional release of the

substance, exceeding the occupational exposure limit value:



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Short term filter device:

Filter B.

B-P3

· **Protection of hands:**

Chemical resistant gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

After use of gloves apply skin-cleaning agents and skin cosmetics.

· **Material of gloves:**

Fluorocarbon rubber (FKM)

(Contd. on page 5)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

---

**Trade name: Toluene diisocyanate**


---

(Contd. of page 4)

Butyl rubber, BR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Penetration time of glove material:**

The exact break-through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Not suitable are gloves made of the following materials:**

Polychloropren rubber (CR)

Butyl rubber, BR

Natural rubber, NR

PVC gloves

- **Eye protection:**

Safety glasses

If vapours or aerosols arise which may injure the eyes , wearing of a full mask is recommended.

- **Body protection:**

Protective work clothing.

According to hazard:

Boots

Apron

Use protective suit.

---

### 9 Physical and chemical properties:

- **General Information**

<b>Form:</b>	Liquid or solid (depending on ambient temperature)
<b>Colour:</b>	Clear Colourless slightly yellowish
<b>Odour:</b>	Pungent

- **Change in condition:**

<b>Melting point/Melting range:</b>	21.8°C
<b>Boiling point/Boiling range:</b>	251°C

- **Flash point:** 127°C (closed cup)

- **Ignition temperature:** 620°C

- **Decomposition temperature:** > 150°C

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

- **Explosion limits:**

<b>Lower:</b>	0.9 Vol %
<b>Upper:</b>	9.5 Vol %

- **Vapour pressure at 20°C:** 0.013 hPa

- **Density at 20°C:** 1.22 g/cm<sup>3</sup>

- **Solubility in / Miscibility with**

<b>Water:</b>	decomposition
---------------	---------------

- **Segregation coefficient (n-octanol/water):** 3.74 log POW

---

### 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

Conditions to be avoided: see chapter 7

(Contd. on page 6)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name: Toluene diisocyanate**

(Contd. of page 5)

**Materials to be avoided:**

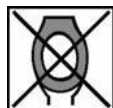
- Amines
- Oxidants
- Methanol
- Phenol
- Bases
- Acids
- Water and humidity
- **Dangerous reactions:** Strong exothermic reaction with above-mentioned substances.
- **Dangerous products of decomposition:**
  - Carbon monoxide and carbon dioxide
  - Hydrogen cyanide (prussic acid)
  - Nitrous gases

### 11 Toxicological information

- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**
  - Oral LD<sub>50</sub> 5800 mg/kg (rat)
  - Inhalative LC<sub>50</sub>/4h 14 ppm (rat)
- **Primary irritant effect:**
- **on the skin:**
  - Irritating to skin
  - Irritating to mucous membrane and respiratory tract.
- **on the eye:** Irritating effect.
- **Sensitization:**
  - Sensitization possible through inhalation.
  - May cause sensitization by skin contact.
- **Other information (about experimental toxicology):** Ames-test: no mutagenic effects
- **Additional toxicological information:**
  - After swallowing: irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
- **Sensitisation** May cause sensitisation by inhalation and skin contact.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
  - Carc. Cat. 3

### 12 Ecological information

- **General notes:**
  - Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water.



Do not allow product to reach ground water, water course or sewage system.

### 13 Disposal considerations

- **Product:**
- **Recommendation:**



Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Disposal according to instructions of local authorities.

(Contd. on page 7)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name: Toluene diisocyanate**

(Contd. of page 6)

- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- **Land transport ADR/RID (cross-border)**



- **ADR/RID class:** 6.1 (T1) Toxic substances.
- **Danger code (Kemler):** 60
- **UN-Number:** 2078
- **Packaging group:** II
- **Label:** 6.1
- **Description of goods:** 2078 TOLUENE DIISOCYANATE
- **Remarks:** Limited Quantity: 500 ml per inner packaging, 2 l per packaging unit

- **Maritime transport IMDG:**



- **IMDG Class:** 6.1
- **UN Number:** 2078
- **Label:** 6.1
- **Packaging group:** II
- **EMS Number:** F-A,S-A
- **Marine pollutant:** No
- **Proper shipping name:** TOLUENE DIISOCYANATE

- **Air transport ICAO-TI and IATA-DGR:**



- **ICAO/IATA Class:** 6.1
- **UN/ID Number:** 2078
- **Label:** 6.1
- **Packaging group:** II
- **Proper shipping name:** TOLUENE DIISOCYANATE
- **Remarks:** Packing Instructions:  
For Limited Quantities: Y609 (Max Net Qty/Pkg: 1 l)  
Passenger and Cargo Aircraft: 609 (Max Net Qty/Pkg: 5 l)  
Cargo Aircraft only: 611 (Max Net Qty/Pkg: 60 l)

### 15 Regulations

- **Markings according to EC guidelines:**

The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials "EC-labelling"

(Contd. on page 8)

## Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 20.12.2007

Revision: 20.12.2007

**Trade name: Toluene diisocyanate**

(Contd. of page 7)

**Code letter and hazard designation of product:**

 Carc. Cat. 3  
 T+ Very toxic

**Risk phrases:**

- 26 Very toxic by inhalation.
- 36/37/38 Irritating to eyes, respiratory system and skin.
- 40 Limited evidence of a carcinogenic effect.
- 42/43 May cause sensitisation by inhalation and skin contact.
- 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety phrases:**

- 23 Do not breathe fumes/aerosol.
- 36/37 Wear suitable protective clothing and gloves.
- 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

**Special labelling of certain preparations:**

Contains isocyanates. See information supplied by the manufacturer

**National regulations**
**Information about limitation of use:**

Restrictions on juvenile employment must be observed.  
 Employment restrictions concerning pregnant and lactating women must be observed.

**Technical guidance (air):**
**Class Share in %**

I 100.0

**Water hazard class:** Water hazard class 2 (Assessment by list): hazardous for water.

**16 Other information:**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Department issuing MSDS:**

KFT-Chemieservice Marienstr. 3 D-64347 Griesheim  
 Postfach 1451 D-64345 Griesheim  
 Tel.: +49-6155-823241 Fax: +49-6155-823246

**Contact:** Angelika Torges

— GB —