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MSDS No: M01106

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** Toluene  
**Catalog Number:** 1447017

HACH LANGE GmbH  
Willstätterstrasse 11  
40549 Düsseldorf, Germany  
+49 -(0)211 -52880

Emergency Telephone Numbers:  
(Poison Information Center Main)  
(+49 (0) 6131 19240) 24 HR

**SDS Number:** M01106

**Chemical Name:** Benzene, methyl -

**Chemical Formula:** C<sub>7</sub>H<sub>8</sub>

**Chemical Family:** Aromatic Compounds

**Use of the substance/preparation:** Solvent

**CAS No.:** 108-88-8

**Hazard:** Causes irritation. Flammable. Harmful if swallowed, inhaled or absorbed through skin.

**Date of MSDS Preparation:**

**Day:** 13

**Month:** 01

**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32 -(0)70 -245245, France: +33 (0)1 -40370404, Italy: +39 -026101029, Netherlands: +31 -(0)30 -2748888, Switzerland: +41 -(0)1 -2515151

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Toluene

**EEC Number:** 2036259

**CAS No.:** 108-88-3

**Percent Range:** 100,0

**Percent Range Units:** volume / volume

**Ingredient EEC Symbol:** F - HIGHLY FLAMMABLE Xn - HARMFUL

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 11 R 20

**TLV:** 50 ppm

**PEL:** TWA = 200 ppm; ceiling = 300 ppm

**EU Occupational Exposure Limits:** 50 ppm (190 mg/m<sup>3</sup>)

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** Benzene-like

**EU Symbols:** F - HIGHLY FLAMMABLE Xn - HARMFUL

**R PHRASES:** R 11: Highly flammable. R 20: Harmful by inhalation.

### **Protective Equipment:**

#### **Potential Health Effects:**

**Eye Contact (EC):** May cause irritation

**Skin Contact (EC):** Can defat the skin causing: skin redness, irritation or dermatitis Causes moderate irritation

**Skin Absorption (EC):** Will be absorbed through the skin. Effects similar to those of ingestion

**Target Organs (SA E):** Central nervous system Liver Bone marrow

**Ingestion (EC):** May be fatal if swallowed irritation of the mouth and esophagus metallic taste salivation coughing gastrointestinal disturbances nausea vomiting loss of appetite central nervous system effects slow reaction times incoordination hallucinations giddiness confusion stupor vertigo ringing in the ears (tinnitus) coma blood changes anemia bone marrow changes Can cause: enlarged liver narcotic effects

**Target Organs (Ing E):** Central nervous system Liver Bone marrow

**Inhalation:** May cause: respiratory tract irritation Causes: Effects similar to those of ingestion.

**Target Organs (Inh E):** Central nervous system Liver Bone marrow

**Medical Conditions Aggravated:** Eye conditions Dermatitis Liver conditions Respiratory conditions Cardiovascular diseases

**Chronic Effects:** Chronic overexposure may cause weakness paralysis low levels of potassium in the blood gastrointestinal disturbances abdominal pain nausea vomiting central nervous system effects headache dizziness lethargy hallucinations coma

**Cancer / Reproductive Toxicity Information:**

IARC Listed: No

**Additional Cancer / Reproductive Toxicity Information:** an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID MEASURES

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician immediately.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water for 15 minutes. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Flammable Liquid Vaporizes easily at normal temperatures. Vapors can travel to a source of ignition and flash back.

**Hazardous Combustion Products:** carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** May explode on contact with: nitric acid nitric acid + sulfuric acid + heat bromine trifluoride May ignite on contact with: heat sparks, flame, or other ignition sources May form explosive mixtures with: nitromethane May react violently with: oxidizers

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Alcohol foam. Carbon dioxide Dry chemical.

**Extinguishing Media NOT To Be Used:** Not applicable Not applicable Not applicable

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Containers can build up pressure if exposed to heat.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Note:**

Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Remove all combustible material from spill area. Remove all ignition and spark-creating sources from the spill area. Cover spilled liquid with a commercially available flammable liquid sorbent such as vapor barrier blanket or activated carbon to avoid evolution of fumes. Vapors may travel to a source of ignition and flash back. May be ignited by: heat, sparks, or flames. Material will float on water creating a fire hazard. Dike the material to create a barrier to combustibles.

**Clean-up Technique:** Eliminate all sources of ignition. Do not breathe the fumes. Cover with an inert material, such as sand. Use only non-sparking tools. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

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## 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat Keep away from: sparks, flames and other ignition sources oxidizers

**Special Packaging Instructions:** Not applicable

**Use of the substance/preparation:** Solvent

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Maintain general industrial hygiene practices when using this product. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin / Hand Protection:** nitrile gloves

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat Keep away from: sparks, flames and other ignition sources oxidizers

**TLV:** 50 ppm

**PEL:** TWA = 200 ppm; ceiling = 300 ppm

**EU Occupational Exposure Limits:** 50 ppm (190 mg/m<sup>3</sup>)

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Odor:** Benzene -like

**pH:** Not applicable

**Vapor Pressure:** 28,5 mm Hg @20° C

**Vapor Density (air = 1):** 3,1

**Boiling Point:** 111° C (232° F)

**Melting Point:** -95° C (-138° F)

**Flash Point:** 4,4° C (40° F)

**Method:** Closed cup

**Autoignition Temperature:** 536° C (997° F)

**Flammability Limits:**

**Lower Explosion Limits:** 1,4%

**Upper Explosion Limits:** 6,7%

**Specific Gravity (water = 1):** 0,866

**Evaporation Rate (water = 1):** 1,8

**Volatile Organic Compounds Content:** 100%

**Partition Coefficient (n -octanol / water):** log K<sub>ow</sub> = 2,69

**Solubility:**

**Water:** Slightly soluble

**Acid:** Soluble in glacial acetic

**Other:** Soluble in petroleum ether, alcohol, chloroform, ether, acetone, carbon disulfide, acetate, benzene

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** None determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Contact with heat, sparks, open flames or other ignition sources.

**Reactivity / Incompatibility:** May explode in contact with: nitric acid bromine trifluoride May react violently in contact with: oxidizers strong acids perchlorates nitrogen tetroxide

**Hazardous Decomposition:** Heating to decomposition releases: carbon dioxide carbon monoxide

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD50 = 636 mg/kg

**LC50:** Inhalation rat LC50 = 49 g/m<sup>3</sup>/4H, Inhalation mouse LC50 = 400 ppm/24H

**Dermal Toxicity Data:** Dermal rabbit LD50 = 14100 µg/kg

**Skin and Eye Irritation Data:** Eye: rabbit 2 mg/24H - SEVERE; Skin: rabbit 20 mg/24H - MODERATE

**Mutation Data:** DNA damage rat liver 30 µmo<sup>3</sup>/l, Cytogenetic analysis Inhalation rat 5400 µg/m<sup>3</sup>/16W (intermittent)

**Reproductive Effects Data:** Inhalation rat TCLo = 1000 mg/m<sup>3</sup>/24H Specific developmental abnormalities - musculoskeletal, Inhalation rat TCLo = 800 mg/m<sup>3</sup>/6H Effects on embryo or fetus - fetotoxicity, Oral mouse TDLo = 9 g/kg fetal death

Inhalation mouse TCLo = 500 mg/m<sup>3</sup>/24H Effects on embryo or fetus - fetotoxicity, Inhalation mouse TCLo = 1000 ppm/6H Specific developmental abnormalities - musculoskeletal, Inhalation mouse TCLo = 200 ppm/7H Abnormalities urogenital system

**Ingredient Toxicological Data:** --

Not applicable

IARC Listed: No

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** Bluegill LC50 = 17 mg/l/24H & 13 mg/l/96H, Grass Shrimp LC50 = 9,5 ppm/96H, Fathead minnow LC50 = 56 mg/l/24H & 34 mg/l/96H, Guppy LC50 = 59,3 mg/l/96H; Bioconcentration: mussel 4,2, algae 380, golden ide fish 90.

**Ingredient Ecological Information:** --

Not applicable

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## 13. DISPOSAL CONSIDERATIONS

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Toluene

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**ICAO Hazard Class:** 3

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number :** UN1294

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Toluene

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**I.M.O. Hazard Class:** 3

**I.M.O. Subsidiary Risk:** NA

**I.M.O. UN Number:** UN1294

**I.M.O. Packing Group:** II

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Toluene

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**A.D.R Hazard Class:** 3

**A.D.R. Subsidiary Risk:** NA

**A.D.R. UN -Number::** 1294

**A.D.R. Packing Group:** II

**Additional Information:** This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit Hazard Class: 9 UN Number 3316

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## 15. REGULATORY INFORMATION

**National Inventories:**

**EEC Inventory Status:** EINECS / ELINCS Listed: No

**EEC Number:** 2036259

**EEC LABEL COPY:**

**EU Symbols:** F - HIGHLY FLAMMABLE Xn - HARMFUL

**R PHRASES:** R 11: Highly flammable. R 20: Harmful by inhalation.

**S PHRASES:** S 16: Keep away from sources of ignition - No smoking. S 25: Avoid contact with eyes. S 29: Do not empty into drains. S 33: Take precautionary measures against static discharge.

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**16. OTHER INFORMATION**

**References:** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332 -2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. In-house information. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. Prager, Jan C. Environmental Contaminants Reference Databook, Volumes I and II. Van Nostrand Reinhold Company, New York. Sax, N. Irving and Richard J. Lewis, Sr., revised by. Hawley's Condensed Chemical Dictionary, Eleventh Ed. New York: Van Nostrand Reinhold Co., 1987. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Technical Judgment. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. TLV's Threshold Limit Values and Biological Exposure Indices for 1992 -1993. American Conference of Governmental Industrial Hygienists, 1992. Vendor Information.

**R PHRASES:** R 11: Highly flammable. R 20: Harmful by inhalation.

**Use of the substance/preparation:** Solvent

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

|                     |                     |
|---------------------|---------------------|
| NA - Not Applicable | w/w - weight/weight |
| ND - Not Determined | w/v - weight/volume |
| NV - Not Available  | v/v - volume/volume |

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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