



Material Safety Data Sheet

Toluene

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Toluene

OTHER/GENERIC NAMES: Toloul, Methylbenzene

PRODUCT USE: Solvent

MANUFACTURER: Honeywell
1953 South Harvey Street
Muskegon, MI 49442

DISTRIBUTOR: VWR International
1310 Goshen Parkway
West Chester, PA 19380

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-932-5000

IN CASE OF EMERGENCY CALL:
(24 Hours/Day, 7 Days/Week)
1-800-424-9300 (USA Only)
For Transportation Emergencies:
1-800-424-9300 (CHEMTREC - Domestic)
1-613-996-6666(CANUTEC- Canada)

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Toluene	108-88-3	100

Component Information/Information on Non-Hazardous Components

This product is considered to be hazardous according to the criteria specified in 29 CFR 1910.1200 (Hazard Communication Standard) and the Canadian Controlled Product Regulations.

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear, volatile, flammable liquid. Has a sweet, pungent odor. Highly flammable. Vapours may form explosive mixtures with air. The product causes irritation of eyes, skin and mucous membranes. Causes headache, drowsiness or other effects to the central nervous system. Harmful: may cause lung damage if swallowed. Severe exposure may cause respiratory depression, unconsciousness, convulsions and death. Do not allow product to contact skin, eyes and clothing. Do not breathe vapours.



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POTENTIAL HEALTH HAZARDS

SKIN: Irritating to skin. May be harmful if absorbed through skin. Skin absorption may cause toxic effects similar to those described for inhalation. Repeated or extended contact may cause erythema (reddening of the skin) or dermatitis, resulting from a defatting action on tissue.

EYES: Vapours irritate the eyes. Contact with liquid or mist will irritate the eyes. May cause damage to the cornea.

INHALATION: Harmful: danger of serious damage to health by prolonged exposure through inhalation. Vapours may cause drowsiness and dizziness. Inhalation of high vapour concentrations can cause CNS-depression and narcosis. Symptoms include headache, nausea, dizziness, lack of coordination and anesthesia.

INGESTION: Harmful: may cause lung damage if swallowed. Ingestion causes gastrointestinal disturbances. Ingestion of this product may result in central nervous system effects including headache, sleepiness, dizziness, slurred speech and blurred vision.

DELAYED EFFECTS: Repeated and prolonged exposure to solvents may cause brain and nervous system damage. Repeated or prolonged exposure may cause damage to the liver and kidney. Possible risk of harm to the unborn child.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory diseases, liver or kidney dysfunctions, or blood, cardiovascular or central nervous system disorders may be aggravated by exposure.

HMIS Ratings: Health: 2* Fire: 3 Physical Hazard: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No component of this product at levels greater than or equal to 0.1% is identified as a carcinogen by ACGIH, IARC, NTP or OSHA.			

4. FIRST AID MEASURES

SKIN: Wash off immediately with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Obtain medical attention.

EYES: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

INHALATION: Move to fresh air in case of accidental inhalation of vapours. If not breathing, give artificial respiration. If breathing is difficult, give oxygen, provided a qualified operator is available. Call a physician immediately.



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INGESTION: DO NOT induce vomiting. Immediate medical attention is required. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.

ADVICE TO PHYSICIAN: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 39.2°F (4°C)
FLASH POINT METHOD: Closed Cup
AUTOIGNITION TEMPERATURE: 896°F (480°C)
UPPER FLAME LIMIT (volume % in air): 7.1
LOWER FLAME LIMIT (volume % in air): 1.1
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Class 1B Flammable Liquid

EXTINGUISHING MEDIA:

Use alcohol-resistant foam, carbon dioxide (CO₂) or dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Highly flammable. Vapours may form explosive mixtures with air. Vapours are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Hazardous combustion products may include carbon monoxide, carbon dioxide (CO₂).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Water may be ineffective. Fire-fighters should wear self-contained, NIOSH-approved breathing apparatus and full protective clothing. Fire or intense heat may cause violent rupture of packages. In the event of fire, cool tanks with water spray. Do not use a solid water stream as it may scatter and spread fire. After fire, flush area with water to prevent re-ignition.

NFPA Ratings: Health: 2 Fire: 3 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:

Containment Procedures: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Stop flow of material, if this is without risk.

Cleanup Procedures: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Shovel into suitable container for disposal. Do not use sparking tools. Do not allow product to enter sewer or waterways.

Evacuation Procedures: Keep unnecessary people away. Isolate area.

Special Procedures: Use personal protective equipment. Remove all sources of ignition. Ensure adequate ventilation.



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Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Ensure all equipment is electrically grounded before beginning transfer operations. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe vapours. Keep away from fire, sparks and heated surfaces. Keep container tightly closed in a dry and well-ventilated place.

STORAGE RECOMMENDATIONS:

Keep in a well-ventilated place. Empty containers may retain product residue including Flammable or Explosive vapours. Do not cut, drill, grind, or weld near full, partially full, or empty product containers. Keep away from heat and sources of ignition. Store away from incompatible substances. Re-open used containers with caution. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in area designed for storage of flammable liquids. Outside or detached storage is preferable. Protect containers against physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapours or mists generated from the handling of this product. Use product only in closed system. Prevent electrostatic charge build-up by using common bonding and grounding techniques.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Wear impervious gloves and flame retardant antistatic protective clothing. For leak, spills, or other emergency, use full protective equipment.

EYE PROTECTION:

For handling in closed ventilation system, wear safety glasses with side-shields. For leak, spill or other emergency, use chemical goggles and face-shield.

RESPIRATORY PROTECTION:

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. For routine operations, wear self-contained breathing apparatus.

ADDITIONAL RECOMMENDATIONS:

Provide eyewash stations and quick-drench shower facilities.



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EXPOSURE GUIDELINES

Component Exposure Limits

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ACGIH:	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA (Final):	200 ppm TWA 300 ppm Ceiling
OSHA (Vacated):	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL
NIOSH:	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL
Alberta:	50 ppm TWA; 188 mg/m ³ TWA Substance may be readily absorbed through intact skin
British Columbia:	50 ppm TWA Skin notation
Manitoba:	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL
New Brunswick:	50 ppm TWA; 188 mg/m ³ TWA Skin - potential for cutaneous absorption
North West Territories:	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL Skin notation
Nova Scotia:	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route
Nunavut:	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL Skin notation
Ontario:	50 ppm TWAEV
Quebec:	100 ppm TWAEV; 377 mg/m ³ TWAEV 150 ppm STEV; 565 mg/m ³ STEV
Saskatchewan:	188 mg/m ³ TWA; 50 ppm TWA 235 mg/m ³ STEL; 60 ppm STEL
Yukon:	100 ppm TWA; 375 mg/m ³ TWA 150 ppm STEL; 560 mg/m ³ STEL Skin notation

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid
PHYSICAL STATE:	Liquid
MOLECULAR WEIGHT:	92.14
CHEMICAL FORMULA:	C ₇ H ₈
ODOR:	Sweet, pungent
SPECIFIC GRAVITY (water = 1.0):	0.867@ 68°F (20°C)



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SOLUBILITY IN WATER (weight %): 0.074% @ 68°F (20°C)
pH: Not applicable
BOILING POINT: 231.08°F (110.6°C) @ 760 mm Hg
MELTING POINT: -125°F (-95°C)
VAPOUR PRESSURE: 28.5 @ 68°F (20°C)
VAPOUR DENSITY (air = 1.0): 3.1
EVAPORATION RATE: 4.5 **COMPARED TO:** Ether
% VOLATILES: ~100
FLASH POINT: 39.2°F (4°C)
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

Stable under recommended storage conditions.
Avoid: Heat, flames and sparks. Incompatible products

INCOMPATIBILITIES:

Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hazardous decomposition products include carbon monoxide and carbon dioxide (CO₂).

HAZARDOUS POLYMERISATION:

Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

Component Analysis - LD50/LC50

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Rat: LD50 - Route: Inhalation; Dose: 12.5 mg/L/4H
LD50 - Route: Inhalation; Dose: >26700 ppm/1H
LD50 - Route: Oral; Dose: 636 mg/kg
Rabbit: LD50 - Route: Dermal; Dose: 8390 mg/kg

IMMEDIATE (ACUTE) EFFECTS:

The product causes irritation of eyes, skin and mucous membranes. Causes headache, drowsiness or other effects to the central nervous system. Harmful: may cause lung damage if swallowed. Severe exposure may cause respiratory depression, unconsciousness, convulsions and death.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Possible risk of harm to the unborn child. Repeated and prolonged exposure to solvents may cause brain and nervous system damage. Repeated or prolonged exposure may cause damage to the liver and kidney. Inhalation (rats) of 2500 ppm/6.5h/day for 15 weeks, produced changes in heart, liver, kidney, urethra and bladder.

Mutagenicity:



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- Non mutagenic in Ames salmonella/microsome assay
- Non mutagenic in CHO chromosome aberration assay

OTHER DATA:

This material is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

Component Carcinogenicity

Toluene (108-88-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 71, 1999; Monograph 47, 1989 (Group 3 (not classifiable))

12. ECOLOGICAL INFORMATION

Harmful to aquatic organisms. Prevent from entering sewer or waterway.

Component Analysis - Ecotoxicity - Aquatic Toxicity

Toluene (108-88-3)

Test & Species

		Conditions
96 Hr LC50 fathead minnow (1 day old)	25 mg/L	flow-through
96 Hr LC50 rainbow trout	24.0 mg/L	static
96 Hr LC50 bluegill	24.0 mg/L	static
96 Hr LC50 fathead minnow	31.7 mg/L	flow-through
30 min EC50 Photobacterium phosphoreum	19.7 mg/L	
48 Hr EC50 water flea	11.3 mg/L	
48 Hr EC50 water flea	310 mg/L	

Accumulation in terrestrial organisms is unlikely. Bioaccumulation is unlikely.

13. DISPOSAL CONSIDERATIONS

WASTE INFORMATION: This product is a D001 ignitable waste in supplied form. Dispose of as special waste in compliance with local and national regulations. Waste codes should be assigned by the user based on the application for which the product was used. Incineration of waste material in an EPA-approved facility is recommended, allowing a solid, inert residue to form.

OTHER DISPOSAL CONSIDERATIONS: Observe all Federal, State, and Local Environmental regulations.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Toluene

US DOT HAZARD CLASS: 3

US DOT ID NUMBER: UN1294

PACKING GROUP: II



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TDG PROPER SHIPPING NAME: Toluene

TDG HAZARD CLASS: 3

PACKING GROUP: II

TDG ID NUMBER: UN1294

North American Emergency Response Guide (ERG) Number: 130

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: All components are on the U.S. EPA TSCA Inventory List.

OTHER TSCA ISSUES: Additional TSCA information may exist. Contact VWR if you have questions regarding your application or use of this product.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
Toluene	1000	None.

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate. Delayed. Fire.

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Toluene (108-88-3)	1.0 % de minimis concentration

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
Toluene (108-88-3)	100	CA, MA, MN, NJ, PA, RI

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):



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WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

ADDITIONAL REGULATORY INFORMATION:

Toluene is regulated by the Drug Enforcement Administration and appears on List II (21 CFR Section 1310.02(b) and 1310.04(f)(2)). Importation, exportation and domestic sales in excess of the applicable thresholds must comply with the regulations.

WHMIS CLASSIFICATION (CANADA):

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by CPR.

WHMIS Classification:

B2- Flammable Liquid
D2A- Very Toxic Material
D2B- Toxic Material

FOREIGN INVENTORY STATUS:

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC	AUST	PHIL	MITI	KOREA	CHINA
Toluene	108-88-3	Yes	DSL	EINECS	Yes	Yes	Yes	Yes	Yes

16. OTHER INFORMATION

CURRENT ISSUE DATE: December 21, 2005

PREVIOUS ISSUE DATE: New MSDS.

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

New MSDS.

OTHER INFORMATION: As per the OSHA Hazard Communication Standard, 1910.1200, the information contained within this MSDS must be given to those persons using this material. For laboratory use only. Not for food or drug use. Do not store with foodstuffs.

KEY/LEGEND: ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; mg/Kg = milligrams per Kilogram; mg/L = milligrams per Liter; mg/m³ = milligrams per Cubic Meter; MSHA = Mine Safety and Health Administration; NA = Not Applicable or Not Available; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; SARA = Superfund Amendments and Reauthorization Act; TDG = Transport Dangerous Goods; TSCA = Toxic Substances Control Act; WHMIS = Workplace Hazardous Materials Information System.

End of Sheet #BDH-180