

# Material Safety Data Sheet



Toluene

## Section 1. Chemical product and company identification

<b>Product Name</b>	: Toluene
<b>Supplier</b>	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
<b>Synonym</b>	: toluol; phenyl methane; methyl benzene; benzene, methyl-
<b>Material uses</b>	: Other non specified industry: AVIATION GASOLINE AND HIGH-OCTANE BLENDING STOCK; BENZENE, PHENOL, AND CAPROLACTAM; SOLVENT FOR PAINTS AND COATINGS, GUMS, RESINS, MOST OILS, RUBBER, VINYL ORGANOSOLS; DILUENT AND THINNER IN NITROCELLULOSE LACQUERS; ADHESIVE SOLVENT IN PLASTIC TOYS AND MODEL AIRPLANES; CHEMICALS (BENZOIC ACID, BENXYL AND BENZOYL DERIVATIVES, SACCHARIN, MEDICINES, DYES, PERFUMES); SOURCE OF TOLUENEDIISOCYANATES (POLYURETHANE RESINS); EXPLOSIVES (TNT); TOLUENE SULFONATES (DETERGENTS); SCINTILLATION COUNTER.
<b>MSDS#</b>	: 001063
<b>Date of Preparation/Revision</b>	: <b>1/30/2007.</b>
<b>In case of emergency</b>	: 1-866-734-3438

## Section 2. Hazards identification

<b>Physical state</b>	: Liquid. (COLORLESS WATERY LIQUID WITH A SWEET, PUNGENT, BENZENE-LIKE ODOR)
<b>Emergency overview</b>	: Warning! CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, RESPIRATORY TRACT, SKIN, EYES, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA. FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. MAY BE HARMFUL IF SWALLOWED. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Do not ingest. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.
<b>Potential acute health effects</b>	
<b>Eyes</b>	: Irritating to eyes.
<b>Skin</b>	: Irritating to skin.
<b>Inhalation</b>	: Irritating to respiratory system.
<b>Ingestion</b>	: Harmful if swallowed.
<b>Potential chronic health effects</b>	: <b>CARCINOGENIC EFFECTS</b> A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. <b>MUTAGENIC EFFECTS</b> Not available. <b>TERATOGENIC EFFECTS</b> Not available.
<b>Medical conditions aggravated by overexposure</b>	: Repeated or prolonged exposure is not known to aggravate medical condition.

See toxicological Information (section 11)

## Section 3. Composition, Information on Ingredients

### United States

Toluene 108-88-3 100

### Exposure limits

**ACGIH TLV (United States, 5/2004). Skin Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.**

TWA: 188 mg/m<sup>3</sup> 8 hour(s). Form: All forms

TWA: 50 ppm 8 hour(s). Form: All forms

**NIOSH REL (United States, 6/2001).**

STEL: 560 mg/m<sup>3</sup> 15 minute(s). Form: All forms

STEL: 150 ppm 15 minute(s). Form: All forms

TWA: 375 mg/m<sup>3</sup> 10 hour(s). Form: All forms

TWA: 100 ppm 10 hour(s). Form: All forms

**OSHA PEL Z2 (United States, 6/2002).**

AMP: 500 ppm 10 minute(s). Form: All forms

CEIL: 300 ppm Form: All forms

TWA: 200 ppm 8 hour(s). Form: All forms

## Section 4. First aid measures

- Eye contact** : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
- Skin contact** : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
- Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

## Section 5. Fire fighting measures

- Flammability of the product** : Flammable.
- Auto-ignition temperature** : 535.85°C (996.5°F)
- Flash point** : Closed cup: 4.85°C (40.7°F).
- Flammable limits** : Lower: 1.4% Upper: 7.4%
- Products of combustion** : These products are carbon oxides (CO, CO<sub>2</sub>).
- Fire fighting media and instructions** : In case of fire, use water spray (fog), foam, dry chemicals, or CO<sub>2</sub>.

Flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

- Special protective equipment for fire-fighters** : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

## Section 6. Accidental release measures

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion proof means to transfer material to a sealed, appropriate container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Toluene

## Section 7. Handling and storage

- Handling** : Do not ingest. Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- Storage** : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.
- Personal protection**
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Personal protection in case of a large spill** : Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Product name

### United States

Toluene

### Exposure limits

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TWA: 188 mg/m<sup>3</sup> 8 hour(s). Form: All forms

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## Section 9. Physical and chemical properties

- Physical state** : Liquid. (COLORLESS WATERY LIQUID WITH A SWEET, PUNGENT, BENZENE-LIKE ODOR)
- Odor** : STRONG, PLEASANT
- Molecular weight** : 92.15 g/mole
- Molecular formula** : C7-H8
- Boiling/condensation point** : 110.45°C (230.8°F)
- Melting/freezing point** : -95.15°C (-139.3°F)
- Critical temperature** : 318.7°C (605.7°F)
- Specific gravity** : 0.867 (Water = 1)

## Toluene

- Vapor density** : 3.14 (Air = 1)  
**Evaporation rate** : 2 compared to Butyl acetate.

## Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.  
**Incompatibility with various substances** : Extremely reactive or incompatible with oxidizing agents.

## Section 11. Toxicological information

### Toxicity data

<u>Ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Toluene	LD50	636 mg/kg	Oral	Rat
	LDLo	50 mg/kg	Oral	human
	LC50	28830 ppm (1 hour(s))	Inhalation	Rat

**IDLH** : 500 ppm

**Chronic effects on humans** : **CARCINOGENIC EFFECTS** A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.  
Causes damage to the following organs: kidneys, liver, upper respiratory tract, skin, eyes, central nervous system (CNS), eye, lens or cornea.

**Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material for humans.

### Specific effects

**Carcinogenic effects** : May cause cancer based on animal data. Risk of cancer depends on duration and level of exposure.

**Mutagenic effects** : No known significant effects or critical hazards.

**Reproduction toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Toluene	Daphnia magna (EC50)	48 hour(s)	6 mg/l
	Daphnia magna (EC50)	48 hour(s)	6.56 mg/l
	Oncorhynchus mykiss (EC50)	48 hour(s)	6.78 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	5.8 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	6.78 mg/l
	Pimephales promelas (LC50)	96 hour(s)	12.6 mg/l

**Products of degradation** : These products are carbon oxides (CO, CO<sub>2</sub>) and water.

**Toxicity of the products of biodegradation** : The products of degradation are less toxic than the product itself.




## Section 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Consult your local or regional authorities.

## Section 14. Transport information

**Toluene**

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN1294	TOLUENE	3	II		<p><b>Reportable quantity</b> 1000 lbs. (453.6 kg)</p> <p><b>Limited quantity</b> Yes.</p> <p><b>Packaging instruction</b> <b>Passenger Aircraft</b> Quantity limitation: 5 L</p> <p><b>Cargo Aircraft</b> Quantity limitation: 60 L</p> <p><b>Special provisions</b> IB2, T4, TP1</p>
<b>TDG Classification</b>	UN1294	TOLUENE	3	II		<p><b>Explosive Limit and Limited Quantity Index</b> 1</p> <p><b>Passenger Carrying Road or Rail Index</b> 5</p>
<b>Mexico Classification</b>	UN1294	TOLUENE	3	II		<p><b>Reportable quantity</b> 1000 lbs. (453.6 kg)</p> <p><b>Limited quantity</b> Yes.</p> <p><b>Packaging instruction</b> <b>Passenger Aircraft</b> Quantity limitation: 5 L</p> <p><b>Cargo Aircraft</b> Quantity limitation: 60 L</p> <p><b>Special provisions</b> IB2, T4, TP1</p>

<b>Toluene</b>						

## Section 15. Regulatory information

### United States

**HCS Classification** : Flammable liquid  
Carcinogen  
Target organ effects

**U.S. Federal regulations** : TSCA 8(b) inventory: Toluene  
SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: Toluene  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Toluene: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard  
Clean Water Act (CWA) 307: Toluene  
Clean Water Act (CWA) 311: Toluene  
Clean air act (CAA) 112 accidental release prevention: No products were found.  
Clean air act (CAA) 112 regulated flammable substances: No products were found.  
Clean air act (CAA) 112 regulated toxic substances: No products were found.

### SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
<b>Form R - Reporting requirements</b>	: Toluene	108-88-3	100
<b>Supplier notification</b>	: Toluene	108-88-3	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations** : Pennsylvania RTK: Toluene: (environmental hazard, generic environmental hazard)  
Massachusetts RTK: Toluene  
New Jersey: Toluene

**WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Toluene	No.	Yes.	No.	Yes.

### Canada

**WHMIS (Canada)** : Class B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).  
Class D-2A: Material causing other toxic effects (VERY TOXIC).  
CEPA DSL: Toluene

## Section 16. Other information

**Label Requirements** : CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, RESPIRATORY TRACT, SKIN, EYES, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.  
FLAMMABLE LIQUID AND VAPOR.  
VAPOR MAY CAUSE FLASH FIRE.  
MAY BE HARMFUL IF SWALLOWED.  
POSSIBLE CANCER HAZARD.  
MAY CAUSE CANCER BASED ON ANIMAL DATA.

**Hazardous Material Information System (U.S.A.)** :

<b>Health</b>	*	2
<b>Fire hazard</b>		3
<b>Reactivity</b>		1
<b>Personal protection</b>		C

**Toluene**

**National Fire Protection Association (U.S.A.) :**



**Notice to reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.