

MATERIAL SAFETY DATA SHEET**Product Name:** Toluene**CAS No.:** 108-88-3**Version:** 01**1. Identification**

Product Code : 90050, 90261, 90727, 90579, 90580, 98101
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2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
TOLUENE	108-88-3	99- 100%

3. Hazards Identification**Hazard classification****Physical hazards**

Flammable liquids : Category 2

Health hazards

Acute toxicity (Oral) : Category 4

Acute toxicity, inhalation, vapor : Category 4

Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 2

Toxic to reproduction : Category 2

Specific target organ toxicity -
single

exposure : Category 3

Specific target organ toxicity -
repeated exposure : Category 2

Aspiration hazard : Category 1

Environmental hazards

Acute hazards to the aquatic
environment : Category 2

Labels elements

MATERIAL SAFETY DATA SHEET**Product Name:** Toluene**CAS No.:** 108-88-3**Version:** 01**Hazard symbol****Signal word****Hazard statement**

- : Danger
- : Highly flammable liquid and vapor.
- Harmful if swallowed or if inhaled.
- Causes skin irritation.
- Causes serious eye irritation.
- Suspected of damaging fertility or the unborn child.
- May cause respiratory irritation.
- May cause drowsiness or dizziness.
- May be fatal if swallowed and enters airways.
- May cause damage to organs through prolonged or repeated exposure.
- Toxic to aquatic life.

Precautionary statement**Prevention**

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment.

Response

- : In case of fire: Use water spray, foam, dry powder or carbon dioxide for extinction.
IF exposed or concerned: Get medical advice/attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.

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If eye irritation persists: Get medical advice/attention. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting.

- | | | |
|--|---|---|
| Storage | : | Store at room temperature below 30°C in original packing, keep container tightly closed away from source of ignition, handle at inert atmosphere. |
| Disposal | : | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
| Other hazards which do not result in GHS classification | : | Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. |

4. First Aid Measures

- | | | |
|---|---|--|
| General information | : | Get medical advice/attention if you feel unwell. If medical advice is needed, have product container or label at hand. Show this safety data sheet to the doctor in attendance. |
| Ingestion | : | Call a physician or poison control center immediately. Do not induce vomiting without advice from poison control center. Never give liquid to an unconscious person. |
| Inhalation | : | Move to fresh air. Get medical attention immediately. |
| Skin contact | : | Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes. |
| Eye contact | : | Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. |
| Most important symptoms/effects, acute and delayed | : | Harmful if swallowed. May be fatal if swallowed. Harmful if inhaled. Irritating to eyes, respiratory system and skin. |
| Indication of immediate medical attention and special treatment needed | : | Treat symptomatically. Symptoms may be delayed. |

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5. Fire fighting measures

General fire hazards : In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media : Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical : Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations.

Special protective equipment and precautions for firefighters

Special fire fighting procedures : Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters : Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.

Methods and material for containment and cleaning up : Eliminate all ignition sources if safe to do so. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use only non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures : Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

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Environmental precautions : Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and Storage

Precautions for safe handling : DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Contact with air and light may form explosive peroxides. If peroxide formation is suspected, do not open or move container. Use personal protective equipment as required. Avoid breathing mists or vapors. Do not taste or swallow. Use only with adequate ventilation. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities : Store at room temperature below 30°C in original packing, keep container tightly closed away from source of ignition, handle at inert atmosphere.
Keep away from food, drink and animal feeding stuffs. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure Controls Personal Protection

Control parameters

Occupational exposure limits

Chemical identity	Type	Exposure Limit values	Source
TOLUENE	TWA	20 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	150 ppm 560 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	REL	100 ppm 375 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	TWA	100 ppm 375 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	STEL	150 ppm 560 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

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	TWA	200 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	Ceiling	300 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	MAX. CONC	500 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Biological limit values			
Chemical identity	Exposure Limit values		Source
TOLUENE (o-Cresol, with hydrolysis: Sampling time: End of shift.)	0.3 mg/g (Creatinine in urine)		ACGIH BEL (2011)
TOLUENE (toluene: Sampling time: Prior to last shift of work week.)	0.02 mg/l (Blood)		ACGIH BEL (2011)
TOLUENE (toluene: Sampling time: End of shift.)	0.03 mg/l (Urine)		ACGIH BEL (2011)

Appropriate engineering controls : No data available.

Individual protection measures, such as personal protective equipment

General information : Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/face protection : Wear safety glasses with side shields (or goggles) and a face shield.

Hand protection : Chemical resistant gloves .

Other : Wear suitable protective clothing.

Respiratory protection : In case of inadequate ventilation use suitable respirator. Chemical respirator with organic vapor cartridge and full face piece.

Hygiene measures : Provide eyewash station and safety shower. Observe good industrial hygiene practices. Do not eat, drink or smoke when using the product. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before reuse. Avoid contact with eyes, skin, and clothing

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9. Physical and Chemical Properties

Appearance	: Colorless liquid.
Odor	: Sweet aromatic odor .
pH	: No data available.
Melting point/freezing point	: -94.9 °C
Initial boiling point and boiling range	: 110 °C
Flash Point	: 4 °C
Vapor pressure	: 3.8 kPa (25 °C)
Vapor density	: 3.1 AIR=1
Relative density	: 0.86 (20 °C)
Solubility in water	: 0.7 g/l (23.3 °C)
Solubility (other)	: No data available.
Formula	: C ₇ H ₈
Molecular Weight	: 92.14 g/mol

10. Stability and Reactivity

Reactivity	: No dangerous reaction known under conditions of normal use .
Chemical stability	: Material is stable under normal conditions.
Possibility of hazardous reactions	: Hazardous polymerization does not occur.
Conditions to avoid	: Heat, sparks, flames.
Incompatible materials	: Strong oxidizing agents. Chlorine.
Hazardous decomposition products	: Thermal decomposition may release oxides of carbon.

11. Toxicological Information**Information on likely routes of exposure**

Ingestion	: Harmful if swallowed.
Inhalation	: Harmful if inhaled. May cause irritation to the mucous membranes and upper respiratory tract.
Skin contact	: Causes skin irritation.
Eye contact	: Causes serious eye irritation.

Information on toxicological effects

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Acute toxicity (list all possible routes of exposure)

Oral Product	: LD 50 (Rat): 636 mg/kg.
Dermal Product	: LD 50 (Rabbit): 12,124 mg/kg.
Inhalation Product	: LC 50 (Mouse, 24 h): 400 mg/l LC 50 (Rat, 4 h): 8,000 mg/l
Repeated dose toxicity Product	: No data available.
Skin corrosion/irritation Product	: Causes skin irritation.
Serious eye damage/eye irritation Product	: Causes serious eye irritation.
Respiratory or skin sensitization Product	: Not a skin sensitizer.
Carcinogenicity Product	: This substance has no evidence of carcinogenic properties .
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans DIOXANE	: No carcinogenic components identified.
US. National Toxicology Program (NTP) Report on Carcinogens DIOXANE	: No carcinogenic components identified.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050	: No carcinogenic components identified.
Germ cell mutagenicity	
In vitro Product	: No mutagenic components identified.
In vivo Product	: No mutagenic components identified.
Reproductive toxicity Product	: May damage fertility or the unborn child.
Specific target organ toxicity - single exposure Product	: Narcotic effect. Respiratory tract irritation.
Specific target organ toxicity - repeated exposure Product	: Peripheral nervous system Central nervous system. Kidneys. auditory organs.
Aspiration hazard Product	: May be fatal if swallowed and enters airways.
Other effects	: No data available.

12. Ecological Information

Ecotoxicity

Acute hazards to the aquatic environment :

Fish Product	: No data available .
Specified substance(s):	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 12.6 mg/l Mortality
TOLUENE	LC 50 (Coho salmon,silver salmon (Oncorhynchus kisutch),

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Aquatic invertebrates Product : 96 h): 5.5 mg/l Mortality .
Specified substance(s): : No data available.
TOLUENE : EC 50 (Brine shrimp (Artemia sp.), 24 h): 22.1 - 54.1 mg/l Intoxication
: EC 50 (Water flea (Daphnia magna), 48 h): 5.46 - 9.83 mg/l Intoxication .

Chronic hazards to the aquatic environment :

Fish Product : No data available.
Aquatic invertebrates Product : No data available.
Toxicity to Aquatic Plants : No data available.
Product:
Persistence and degradability
Biodegradation Product : Expected to be readily biodegradable.
BOD/COD ratio Product : No data available.
Bioaccumulative potential
Bioconcentration factor (BCF) : Bioaccumulation is unlikely to be significant because of the low water solubility of this product.
Product
Partition coefficient n-octanol / water (log Kow) Product : Log Kow: 2.73
Mobility in soil : The product is insoluble in water and will spread on the water surface .
Other adverse effects : Toxic to aquatic organisms.

13. Disposal consideration

Disposal instructions : Discharge, treatment, or disposal may be subject to national, state, or local laws.
Contaminated packaging : Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
DOT	UN 1294	Toluene	3	II	No
IMDG	UN 1294	Toluene	3	II	No
IATA	UN 1294	Toluene	3	II	No

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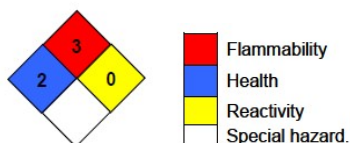
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15. Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture
No Data Available.

16. Other Information**NFPA Hazard ID**

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue Date :01/01/2020

Version : 01

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