

CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET

TOLUENE

1. Identification

Product identifier: Toluene

Product Code Number: 2100

Trade Name: Toluene

Synonyms: Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol

Chemical Formula: C₆H₅CH₃

Product Use: Process chemical, Laboratory and scientific research and development

Restrictions on use: None known.

Company Identification: Corco Chemical Corporation
299 Cedar Lane
Fairless Hills, PA 19030
Phone: 215-295-5006
Fax: 215-295-0781

24 Hour Emergency Telephone Number:

CHEMTREC (U.S.): 1-800-424-9300

CHEMTREC (Outside U.S.): 1-703-527-3887

SDS Date of Preparation: 11/19/19

2. Hazard(s) identification

Classification of the Substance or Mixture:

Flammable Liquid Category 2

Aspiration Toxicity Category 1

Skin Irritant Category 2

Reproductive Toxicity Category 2

Specific Target Organ Toxicity Repeated Exposure Category 2

Specific Target Organ Toxicity Single Exposure Category 3 (Narcotic effects)

Label Elements:

Danger!

**Hazard Statements:**

H225 Highly flammable liquid and vapor.

H304 May be fatal if swallowed and enters airways.

H315 Causes skin irritation.

H336 May cause drowsiness or dizziness.

H361 Suspected of damaging the unborn child.

H373 May cause damage to central nervous system through prolonged or repeated exposure by inhalation.

Precautionary Statements:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat, sparks, open flames, and hot surfaces. No smoking.

P233 Keep container tightly closed.

P240 Ground or bond container and receiving equipment.

P241 Use explosion-proof electrical, ventilating, or lighting equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P260 Do not breathe mist or vapors.

P264 Wash thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves and protective clothing.

P308+P313 IF exposed or concerned: Get medical attention.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312 Call a POISON CENTER or doctor if you feel unwell.

P303+P361+P353 IN ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P332+P313 If skin irritation occurs: Get medical attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor.

P331 Do NOT induce vomiting.

P370+P378 In case of fire: Use water spray, dry chemical, alcohol foam, or carbon dioxide to extinguish.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards: None known.

3. Composition/information on ingredients

Ingredient	CAS Number	Percent	Hazardous Chemical
Toluene	108-88-3	100%	Yes

4. First-aid measures

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get medical attention.

Skin contact: Remove contaminated clothing and shoes. Flush skin thoroughly with water for several minutes. Get medical attention if irritation occurs. Launder clothing before re-use.

Eye contact: Rinse thoroughly with water. Get medical attention if irritation occurs and persists.

Ingestion: Aspiration hazard: do NOT induce vomiting. Keep the victim calm and warm. If conscious, rinse mouth with water. Never give anything by mouth to an unconscious or convulsing person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. Get immediate medical attention.

Most important symptoms/effects, acute and delayed: May cause moderate skin irritation. Inhalation of mists or vapors may cause headache, dizziness, nausea and other symptoms of central nervous system depression. Aspiration hazard: material may enter the lungs if swallowed and cause lung injury. This product contains toluene which is suspected of damaging the unborn child. Prolonged and/or repeated overexposure may cause visual, hearing, and central nervous system damage.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is required if swallowed.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media: Use water spray, alcohol-resistant foam, carbon dioxide and dry chemical.

Specific hazards arising from the chemical: Highly flammable liquid and vapors. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixtures with air in confined areas. Sensitive to static discharge.

Special protective equipment and precautions for fire-Fighters: Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Evacuate spill area and keep unprotected personnel away. Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Minimize generation of static electricity which may cause sparking. Prevent contact with the eyes, skin and clothing. Wear appropriate protective clothing. Do not breathe vapors or mists. Ventilate area with explosion proof equipment.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth,) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

7. Handling and storage

Precautions for safe handling: Prevent contact with the eyes, skin and clothing. Wear protective clothing and equipment as described in Section 8. Do not breathe vapors or mists. Use with adequate ventilation. Wash hands with soap and water after use. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use. Use with non-sparking tools and explosion proof equipment. Electrically bond and ground containers for transfer.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated location away from heat and open flames. Keep away from incompatible materials. Protect container from physical damage. Keep containers closed when not in use. Keep out of the reach of children.

8. Exposure controls/personal protection

Chemical Name	Exposure Limits
Toluene	20 ppm TWA ACGIH TLV 200 ppm TWA, 300 ppm Ceiling, 500 ppm STEL (10 min peak per 8hr shift) OSHA PEL

Appropriate engineering controls: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details. Use explosion-proof equipment.

Personal protective equipment:

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, an approved respirator with dust/mist cartridges or supplied air respirator should be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety glasses or goggles where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and chemical properties

Appearance: Clear, colorless liquid

Odor: Aromatic benzene-like

Odor Threshold: Not determined

pH: Not determined

% Volatiles by volume @ 21C (70F): 100

Melting point/freezing point: -95C (ca. -139F)

Initial boiling point and boiling range: 111C (232F)

Flash Point: 7C (45F) CC

Evaporation Rate (BuAC=1): 2.24

Flammability (solid, gas): Not applicable.

Upper / Lower Flammability or Explosive Limits: uel: 19; lel: 3.3

Vapor Pressure (mm Hg): 22 @ 20C (68F)

Vapor Density (Air=1): 3.14

Relative Density: 0.865 g/mL at 25C (77F)

Solubility: 0.05 gm/100gm water @ 20C (68F)

Partition Coefficient: n-octanol / water: Not determined

Auto-ignition Temperature: 422C (792F)

Decomposition Temperature: Not determined

Viscosity: 0.59 cps 20o C

Conductivity: Nonconductive; Conductivity = <1 pS/m;

Dielectric Constant = 2.38; Relaxation Time

Constant = 21 seconds

10. Stability and reactivity

Reactivity: Not reactive under normal conditions of use.

Chemical stability: Stable under ordinary conditions of use and storage.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Keep away from heat, sparks, flames and other sources of ignition.

Incompatible materials: Strong oxidizing agents. Nitric and Sulfuric acids, Chlorine, Nitrogen Tetraoxide; will attack some forms of plastics, rubber, coatings.

Hazardous decomposition products: Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Potential Health Effects:

Inhalation: Inhalation of high concentrations (>200 ppm) of toluene are clearly associated with central nervous system encephalopathy, headache depression, weakness, exhaustion, impaired coordination, transient memory loss, and impaired reaction time.

Skin Contact: May cause moderate skin irritation with dryness.

Eye Contact: Direct contact with eyes may cause mild eye irritation with redness, tearing and stinging with possible eye damage.

Ingestion: Aspiration into the lungs during ingestion or vomiting may cause serious lung damage which may be fatal. Ingestion may cause mucous membrane and gastrointestinal irritation, abdominal spasms, sore throat, vomiting, diarrhea, visual disturbances and nervous system depression with symptoms of headache, dizziness, nausea, narcosis and unconsciousness.

Chronic Exposure: Repeated or prolonged exposure may cause dermatitis and defatting of skin. Repeated exposure in combination with constant, loud noise can produce hearing loss and dizziness. Chronic hydrocarbon abuse, such as sniffing glue or light hydrocarbons as contained in this material, has been associated with irregular hear rhythms and potential cardiac arrest. Toluene abuse has been linked with kidney disease, as evidenced by blood, protein, and pus in the urine, accompanied by elevated serum creatinine, decreased urinary output, and metabolic and renal tubular acidosis. Although kidney toxicity is not common in cases of occupational toluene exposure, there has been at least one report of renal toxicity following a 40-year occupational exposure to toluene. Toluene does not cause severe bone marrow injury characteristic to benzene poisoning.

Intentional abuse of toluene vapors has been linked to damage to the brain, liver, and kidneys, as well as to death. Repeated inhalation exposure to animals causes histological changes in the brain, degeneration of heart tissue, and possible immune system effects.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

Carcinogenicity: None of the components of this product are listed as a carcinogen or suspected carcinogen by OSHA, IARC, and NTP.

Reproductive Effects: Reproductive harm is expected from this product.

Mutagenic Effects: Not expected to cause mutagenic activity.

Acute Toxicity:

Toluene: Oral Rat LD50- >5,000 mg/kg; Inhalation rat LC50- 28.1 mg/L/4hr; Skin rabbit LD50- >5,000 mg/kg

12. Ecological information

Exotoxicity:

Product	Species	Test Results
Toluene	Coho salmon	5.5 mg/L 96 hr LC50
	Fathead minnows	34.27 mg/L 96 hr LC50

This material is expected to be toxic to aquatic life and harmful to the aquatic environment with long lasting effects. Releases to the environment should be avoided.

Persistence and Degradability: Toluene: Readily biodegradable in adapted domestic sewage– 86% after 20 days.

Bioaccumulative Potential: Toluene: 3 days Golden Ide – BCF 90. Bioaccumulation is expected to be low to moderate in aquatic organisms.

Mobility in Soil: Toluene is expected to have high to moderate mobility in soil.

Other adverse effects: Not applicable

13. Disposal considerations

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded

material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is a “U” listed waste (U220).

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

14. Transportation Information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
US DOT	UN1294	Toluene	3	II	Not applicable
IMDG	UN1294	Toluene	3	II	Not applicable
IATA	UN1294	Toluene	3	II	Not applicable

* **Hazardous Substance (49CFR172.101):** Toluene (RQ1,000 lbs)- (1,000 lbs. product)

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: Not applicable

15. Regulatory information

US federal regulations:

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substance List (40 CFR 302.4)

This product has a Reportable Quantity (RQ) of 1,000 lbs. (based on the RQ for Toluene of 1,000 lbs present at 100%). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:

SARA 311/312

Refer to Section 2 for OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements:

Toluene 108-88-3 100%

SARA 302 Extremely hazardous substance

None

Clean Air Act: CAS# 108-88-3 is listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 108-88-3 is listed as a Hazardous Substance. It is a Priority Pollutant. It is a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 108-88-3 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This product can expose you to chemicals including Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Canada:

DSL/NDSL: CAS# 108-88-3 is listed on Canada's DSL list.

16. Other information

Date of Current Revision: 11/19/19

Revision Summary: Updated all sections.

Date of Previous Revision: N/A

Disclaimer - The information in the SDS is based on the data available at the time. While believed to be accurate, Corco does not claim it to be all inclusive. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.