

# CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

## SAFETY DATA SHEET

### TOLUENE

#### 1. IDENTIFICATION

Product identifier: TOLUENE

Product Code Number: 2100

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

Trade Name:

TOLUENE

Synonyms:

Methacide, Methylbenzene,  
Methylbenzol, Phenylmethane,  
Toluol

Chemical Formula:

C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub>

Product Use:

Process chemical, Laboratory and  
scientific research and development

#### 2. HAZARD(S) IDENTIFICATION

Physical hazards:	Flammable liquids	Category 2
Health hazards:	Acute toxicity, oral	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Reproductive toxicity	Category 1A

Specific target organ toxicity, single exposure	Category 1 (central nervous system)
Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Specific target organ toxicity, single exposure	Category 3 narcotic effects
Specific target organ toxicity, repeated exposure	Category 1 (central nervous system, kidney, liver)

OSHA hazard(s)    Not classified

Label elements:



Signal word    **Danger**

**Hazard statement:** Highly flammable liquid and vapor. Harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. May cause Drowsiness or dizziness. May damage fertility or the unborn child. Causes damage to organs (central nervous system). Causes damage to organs (central nervous system, kidney, liver) through prolonged or repeated exposure. Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

**Precautionary statement:**

**Prevention:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. 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. Do not breathe mist or

vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:** In case of fire: Use appropriate media for extinction. Eliminate all ignition sources if safe to do so. Call a POISON CENTER or doctor/physician if you feel unwell. If on skin (or hair). Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Rinse mouth. Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention.

**Storage:** Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place.

**Emergency Overview:** Causes irritation to eyes, skin, and respiratory tract. Breathing vapors may cause drowsiness and dizziness. May be absorbed through intact skin. Aspiration hazard. May be harmful if swallowed. Can enter lungs and cause damage. May cause central nervous system effects. Possible risk to unborn children. May cause liver and kidney damage. Highly flammable liquid and vapor. Static electrical hazard. Target Organs: Kidneys, central nervous system, liver, respiratory system eyes, and skin.

### 3. Composition/information on ingredients

<u>Ingredient</u>	<u>CAS Number</u>	<u>EC Number</u>	<u>Percent</u>	<u>Hazardous</u>	<u>Chemical Characterization</u>
Toluene	108-88-3	203-625-9	100%	Yes	Substance

### 4. First-aid measures

**Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.

**Skin contact:** Take off immediately all contaminated clothing. Wash off with soap and plenty of water. If skin irritation occurs: Get medical advice/attention.

**Eye contact** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

**Ingestion:** Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Aspiration may cause pulmonary edema and pneumonitis.

**Most important symptoms/effects, acute and delayed:** Irritation of eyes and mucous membranes. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Proteinuria. Irritant effects. Prolonged exposure may cause chronic effects.

**Notes to Physician:** Causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine and pseudoepinephrine.

## **5. Fire-fighting measures**

**Suitable extinguishing media:** Water fog. Foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical:** This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. By heating and fire, harmful vapors/gases may be formed. Material will float and may ignite on surface of water.

**Special protective equipment and precautions for firefighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighter's protective clothing will only provide limited protection.

**Fire-fighting equipment/instructions:** In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.

**Specific methods:** In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other

involved materials. Move container from fire area if it can be done without risk.

**Flammability:** Highly flammable liquid and vapor (GHS Category 2)  
**Auto-ignition**  
**Temperature:** 480o C (896o F)  
**Flash Point:** 4o C (39.2o F)  
**Flammable Limits:** Lower Limit – 1.1 vol %  
Upper Limit – 7.1 vol %

National Fire Protective Association: Health - 2, Flammability - 3, Reactivity – 0

## 6. Accidental release measures

Use water spray to reduce vapors. Water spray may reduce vapors but still not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Do not use sawdust or any combustible material. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

**Environmental precautions:** Contact local authorities in case of spillage to drain/aquatic environment. Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment. Use appropriate containment to avoid environmental contamination. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

## 7. Handling and storage

**Precautions for Safe Handling and Conditions for Safe Storage, Including Any Incompatibilities:** Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid.) Observe all warnings and precautions listed for the product.

**Storage:** Keep in a flammables area away in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from sources of ignition. Separate from oxidizing materials.

## 8. Exposure controls/personal protection

**Engineering Controls:** Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower.

**Appearance:** Clear, colorless liquid

**Odor:** Aromatic benzene-like l or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Personal Protection:** Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**Ventilation System:** 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.

**Exposure Limits:**

ACGIH – 20 ppm TWA

NIOSH – 100 ppm TWA; 375 mg/m<sup>3</sup>; 500 ppm IDLH

OSHA Final PELs – 200 ppm; 300 ppm Ceiling

OSHA Vacated PELs: 100 ppm TWA; 375 mg/m<sup>3</sup>

## 9. Physical and chemical properties

<b>Appearance:</b>	Clear, colorless liquid
<b>Odor:</b>	Aromatic benzene-like
<b>Odor Threshold:</b>	Not determined
<b>pH:</b>	Not determined
<b>% Volatiles by volume @ 21C (70F):</b>	100
<b>Melting Point:</b>	-95C (ca. -139F)
<b>Boiling Point / Boiling Range:</b>	111C (232F)
<b>Flash Point:</b>	7C (45F) CC
<b>Evaporation Rate (BuAC=1):</b>	2.24
<b>Flammability: Upper / Lower</b>	Flammable Liquid and Vapor!

<b>Flammability or Explosive Limits:</b>	uel: 19; lel: 3.3
<b>Vapor Pressure (mm Hg):</b>	22 @ 20C (68F)
<b>Vapor Density (Air=1):</b>	3.14
<b>Relative Density:</b>	0.865 g/mL at 25C (77F)
<b>Solubility:</b>	0.05 gm/100gm water @ 20C (68F)
<b>Partition Coefficient:</b>	n-octanol / water: Not determined
<b>Auto-ignition Temperature:</b>	422C (792F)
<b>Decomposition Temperature:</b>	Not determined
<b>Viscosity:</b>	0.59 cps 20o C
<b>Conductivity:</b>	Nonconductive; Conductivity = <1 pS/m; Dielectric Constant = 2.38; Relaxation Time Constant = 21 seconds

## 10. Stability and reactivity

**Reactivity:** Not available.

**Chemical stability:** Risk of explosion. Material is stable under normal conditions.

**Possibility of hazardous reactions:** Hazardous polymerization does not occur.

**Conditions to avoid:** Heat, flames and sparks. Avoid temperatures exceeding the flash point. Containers may burst when heated.

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

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

## 11. Toxicological information

**Routes of Entry:** Inhalation, skin absorption, skin contact

**Acute Exposure Hazards:**

**INHALATION HAZARD:** Causes respiratory tract irritation. 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.

**INGESTION HAZARD:** May cause effects similar to those for inhalation. May cause central nervous system depression. Aspiration into lungs may cause chemical pneumonitis, which may be fatal. May be harmful if swallowed.

**SKIN CONTACT HAZARD:** Causes skin irritation. May be absorbed through intact skin. Repeated or prolonged exposure may cause drying and cracking of skin.

**EYE CONTACT HAZARD:** Causes eye irritation. Vapors may cause eye irritation.

**Chronic Exposure Hazards:** 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.

**Animal Toxicity:**

- Draize test, rabbit, eye: 870 ug Mild;
- Draize test, rabbit, eye: 2 mg/24H Severe;
- Draize test, rabbit, skin: 435 mg Mild;
- Draize test, rabbit, skin: 500 mg Moderate;
- Draize test, rabbit, skin: 20 mg/24 hr Moderate;
- Inhalation, mouse: LC50 = 400 ppm/42H;
- Inhalation, mouse: LC50 = 30,000 mg/m<sup>3</sup>/2H;
- Inhalation, mouse: LC50 = 19,900 mg/m<sup>3</sup>/7H;
- Inhalation, mouse: LC50 = 10,000 mg/m<sup>3</sup>;
- Inhalation, rat: LC50 = 49 mg/m<sup>3</sup>/4H;
- Oral, rat: LD50 = 636 mg/kg;
- Skin, rabbit: LD50 = 14,100 mg/kg;

**Carcinogenicity:** Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65  
**Epidemiology:** No information available.

**Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen**

<b>Ingredient</b>	<b>Known</b>	<b>Anticipated</b>	<b>IARC Category</b>
Toluene (108-88-3)	No	No	None

**12. Ecological information**

**Ecotoxicity:**

- Bluegill: LC50 = 17 mg/L/24H;
- Shrimp: LC50 = 4.3 ppm/96H;
- Fathead minnow: LC50 = 36.2 mg/L/96H;
- Sunfish (Fresh water): TLM = 1180 mg/L/96H



**Environmental Fate:** When released to soil, product is expected to evaporate and be microbially biodegraded. In water, product is expected to biodegrade and volatilize.

**Mobility in Soil:** When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is expected to leach into groundwater.

**Physical:** Photochemically produced hydroxyl radicals degrade this material.

**Bioaccumulative Potential:** This material is not expected to significantly bioaccumulate.

### **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:** UN1294

**UN Proper Shipping Name:** TOLUENE

**Packing Group:** II

**DOT / IMDG / IATA**



**Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)**  
**Transport Hazard Class(es): 3**

**Maritime Transport IMDG/GGVSea Transport Hazard Class(es): 3**  
**EMS Number: F-E, S-D**

**Marine Pollutant: No**

**Air Transport ICAO-TI and IATA-DGR Transport Hazard Class(es): 3**

**Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code**

## **15. Regulatory information**

### **US Federal Regulations:**

**TSCA: CAS# 108-88-3 is listed on the TSCA Inventory.**

**Health and Safety Reporting List: Effective 10/4/82, Sunset 10/4/92.**

**Chemical Test Rules: CAS# 108-88-3: Not listed.**

**Section 12b: Not listed.**

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

**CERCLA Hazardous Substances: CAS# 108-88-3; 1000 lbs/454 kg final RQ**

**SARA Section 302: Does not have a TPQ**

**SARA Codes: CAS# 108-88-3– immediate, fire**

**Section 313: Toluene (CAS# 108-88-3) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.**

**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# 108-88-3is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts California Prop 65: California No Significant Risk Level: Not listed**

### **Canada:**

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

**WHMIS: This material has a WHMIS classification of B2, D2A, D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.**

**Ingredient Disclosure List: CAS# 108-88-3is listed on Canada's Ingredient Disclosure List. DSCL (EEC): Hazard Symbols: Xn, T, F**

**Risk Phrases: R11 – Highly Flammable; R38 – Irritating to skin; R40/20 – Harmful: danger of serious damage to health by prolonged exposure through inhalation; R63**

– Possible risk of harm to the unborn child; R65 – Harmful: may cause lung damage if swallowed; R67 – vapors may cause drowsiness and dizziness.

Safety Phrases: S36/37 – Wear suitable protective clothing and gloves; S46 – If swallowed, seek medical advice immediately and show this container or label; S62 – If swallowed, do not induce vomiting, seek medical advice immediately and show this container or label. WGK (Water Danger/protection): CAS# 108-88-3: 2.

## 16. Other information

**Disclaimer - The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.**

Created: 8/1/14