



# Material Safety Data Sheet

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Responsible Party: Reference Standards Technical Services

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## RESIDUAL SOLVENT CLASS 2 - TOLUENE

Catalog Number: 1601805

Package Size: See label

Revision Date:

October 27, 2003

This reference standard contains toluene in dimethyl sulfoxide (DMSO). The mixture has not been tested to determine specific physical hazards, but it is considered potentially combustible. DMSO is an irritant and is rapidly absorbed through the skin. It may carry dissolved chemicals into the body through this route. Toluene is toxic and an irritant.

### SECTION 1 - IDENTIFICATION

**Common Name:** Toluene

**Formula:** C7H8 (Toluene); C2H6OS (DMSO)

**Synonym:** Methyl benzene

**Chemical Name:** Toluene in dimethyl sulfoxide

**CAS Number:** 108-88-3 (Toluene); 67-68-5 (DMSO)

**RTECS Number:** XS5250000 (Toluene); PV6210000 (DMSO)

**Chemical Family:** Hydrocarbon (Toluene)

**Therapeutic Category:** Residual solvent

### SECTION 2 - INGREDIENT INFORMATION

<u>Principle Components</u>	<u>Percent</u>	<u>Exposure Limits</u>
Toluene	0.445%	OSHA: TWA 200 ppm; CL 300 ppm; Peak 500 ppm (10-min. max.) NIOSH: TWA 100 ppm; STEL 150 ppm; IDLH 500 ppm ACGIH: TWA 50 ppm (skin)
Dimethyl sulfoxide	99.555%	n/f

### SECTION 3 - HEALTH HAZARD INFORMATION

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**Usual Adult Dose:** n/f

**Adverse Effects:** Adverse effects of DMSO may include redness, itching, or rash on skin; garlic-like taste or odor on breath and skin; swelling of face; troubled breathing; shortness of breath; and nasal congestion. Adverse effects of toluene may include headache, nausea, loss of appetite, lack of energy, depression, loss of coordination, memory loss, insomnia, dilated pupils, increased reaction time, drowsiness, and dizziness. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

**Overdose Effects:** Toluene overdose may cause loss of consciousness and coma. Respiratory failure or sudden ventricular fibrillation may lead to death.

**Acute:** Eye, skin, gastrointestinal and/or respiratory tract irritation; central nervous system depression.

**Chronic:** Possible hypersensitization; damage to nervous system, kidneys, liver, or heart.

**Inhalation:** Causes irritation. Avoid inhalation. Remove to fresh air.

**Eye:** Causes irritation. Avoid contact. Flush with copious quantities of water for at least 15 minutes.

**Skin:** Causes irritation. Avoid contact. Flush with copious quantities of soap and water. DMSO readily penetrates the skin and can enhance absorption of other chemicals.

**Ingestion:** Causes irritation. Avoid ingestion. Flush out mouth with water.

**Medical Conditions Aggravated by Exposure:** Hypersensitivity to material; central nervous system, liver, or heart conditions.

**Cross Sensitivity:** n/f

**Pregnancy Comments:** In most animal studies toluene was not found to cause birth defects, but it did cause toxic effects on the fetus. Children born to mothers who abused toluene during pregnancy have characteristic physical and developmental abnormalities as well as growth and developmental delays. Chronic high-level exposure from abuse may not appropriately represent occupational exposure. An epidemiological study of women working in laboratories did not find an increased risk of birth defects with occupational exposure to toluene.

**Pregnancy Category:** n/f

### SECTION 4 - FIRST AID MEASURES

**General:** Remove from exposure. Remove contaminated clothing. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention. If person is not breathing give artificial respiration. If breathing is difficult give oxygen. Obtain medical attention.

**Overdose Treatment:** Treatment of toluene exposure should be symptomatic and supportive and may include the following:

1. Support respiratory and cardiovascular function.
2. If a patient is symptomatic admission is indicated. Asymptomatic patients can be observed for 6 hours and discharged if they remain asymptomatic.
3. Toluene may be measured in the breath and blood; hippuric acid and cresol metabolites may be measured in the urine. Obtain a baseline CBC and monitor renal and hepatic function tests, urinalysis (including urine pH) electrolytes, and CPK. Monitor arterial blood gases in symptomatic patients.
4. Induced vomiting is not indicated due to possible aspiration and rapid onset of toxicity. Consider aspiration of gastric contents if the patient has ingested a large quantity of toluene; weigh potential toxicity of the amount ingested against risk of aspiration. Charcoal adsorption has not been studied, but other hydrocarbons are adsorbed; charcoal may induce vomiting and increase aspiration risk.
5. Monitor for respiratory distress. If symptomatic, obtain chest x-ray; if severe, monitor arterial blood gases. PEEP, CPAP, or ECMO may be necessary. If CNS depressed, intubation, assisted ventilation, or supplemental oxygen may be required. Monitor cardiac function and avoid epinephrine.
6. In patients with initial symptoms of aspiration (coughing, choking), observe respiratory status for 6 hours. If symptoms continue or progress, obtain a chest x-ray and monitor arterial blood gases.
7. Cardiac function should be monitored. Epinephrine and other catecholamines should be used cautiously, because of the possibility of a lowered myocardial threshold due to the arrhythmogenic effects of such agents.
8. Monitor fluid and electrolyte status carefully. Correct hypokalemia with intravenous potassium.

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Hypocalcemia may ensue following fluid and electrolyte replenishment. This should be corrected with intravenous calcium.

9. Metabolic acidosis is usually accompanied by severe hypokalemia. Administration of bicarbonate should be avoided as bicarbonate may worsen hypokalemia by causing intracellular shifting of potassium.  
10. Early aggressive fluid replacement is the mainstay of therapy and may help prevent renal insufficiency. Diuretics such as mannitol or furosemide may be needed to maintain urine output. Urinary alkalization is not routinely recommended. [Poisindex 2003]

### SECTION 5 - TOXICOLOGICAL INFORMATION

**Oral Rat:** LD50: 636 mg/kg (Toluene); 14500 mg/kg (DMSO)

**Oral Mouse:** LD50: 7920 mg/kg (DMSO)

**Irritancy Data:** Rabbit/skin: moderate, mild; Pig/skin: mild; Rabbit/eye: severe (Toluene); Rabbit/skin,eye: mild (DMSO)

**Target Organ(s):** Central nervous system, liver, kidneys (Toluene)

**Listed as a Carcinogen?** NTP: No IARC: No OSHA: No

**Other:** Toluene is not classifiable as to its carcinogenicity in humans.

### SECTION 6 - FIREFIGHTING MEASURES

**Flash Point:** n/f

**Upper Flammable Limit:** n/f

**Auto-Ignition Temperature:** n/f

**Lower Flammable Limit:** n/f

**Extinguisher Media:** Water spray, dry chemical, carbon dioxide or foam as appropriate for surrounding fire and materials.

**Fire and Explosion Hazards:** This material is expected to be combustible. Vapors may form explosive mixtures with air. Vapors may travel to sources of ignition and flash back.

**Firefighting Procedures:** As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

### SECTION 7 - PHYSICAL HAZARDS

**Conditions to Avoid:** Avoid exposure to light.

**Incompatibilities:** n/f

**Decomposition Products:** When heated to decomposition material emits toxic fumes. Emits toxic fumes under fire conditions.

**Stable?** Yes **Hazardous Polymerization?** No

### SECTION 8 - HANDLING / SPILL / DISPOSAL MEASURES

**Handling:** As a general rule, when handling USP Reference Standards avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Wash thoroughly after handling.

**Storage:** Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

**Spill Response:** Wear approved respiratory protection, chemically compatible gloves and protective clothing. Remove ignition sources. Ventilate enclosed spaces. Absorb with suitable material. Do not flush into a confined space such as a sewer. Avoid breathing vapors. Place spillage and all contaminated cleanup materials in an appropriately-labelled container for disposal. Wash spill site.

**Disposal:** Dispose of waste in accordance with all applicable Federal, State and local laws.

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## SECTION 9 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- Respiratory Protection:** Use a NIOSH approved respirator, if it is determined to be necessary by an industrial hygiene survey involving air monitoring.
- Ventilation:** Recommended.
- Gloves:** Chemically compatible
- Eye Protection:** Safety Goggles
- Protective Clothing:** Protect exposed skin.

## SECTION 10 - PHYSICAL AND CHEMICAL PROPERTIES

**NOTE:** The data reported below is general information, and is not specific to the USP Reference Standard Lot provided!

**Appearance and Odor:** Clear liquid.

**Melting Point:** n/f

**Solubility in Water:** n/f

**Boiling Point:** n/f

**Specific Gravity:** n/f

**Vapor Pressure:** n/f

**Vapor Density:** n/f

**Evaporation Rate:** n/f

**Reactivity in Water:** n/f

**% Volatile by Volume:** n/f