



Material Safety Data Sheet

12601 Twinbrook Parkway
Rockville, MD 20852 USA

Telephone calls: (301) 881-0666
8:00am - 5:00pm EST Mon. - Fri.

Responsible Party: Reference Standards Technical Services

ATTENTION !

USP Reference Standards are sold for chemical test and assay purposes only, and NOT for human consumption. The information contained herein is applicable solely to the chemical substance when used as a USP Reference Standard and does not necessarily relate to any other use of the substance described, (i.e. at different concentrations, in drug dosage forms, or in bulk quantities). USP Reference Standards are intended for use by persons having technical skill and at their own discretion and risk. This information has been developed by USP staff from sources considered reliable but has not been independently verified by the USP. Therefore, the USP Convention cannot guarantee the accuracy of the information in these sources nor should the statements contained herein be considered an official expression. NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE is made with respect to the information contained herein.

RESIDUAL SOLVENT CLASS 2 - CHLOROBENZENE

Catalog Number: 1601361

Package Size: See label

Revision Date: September 29, 2003

This reference standard contains chlorobenzene 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. Chlorobenzene is toxic and an irritant.

SECTION 1 - IDENTIFICATION

Common Name: Chlorobenzene **Formula:** C₆H₅Cl (Chlorobenzene); C₂H₆OS (DMSO)
Synonym: Benzene chloride; chlorobenzol; monochlorobenzene
Chemical Name: Benzene, chloro- in dimethyl sulfoxide
CAS Number: 108-90-7 (Chlorobenzene); 67-68-5 (DMSO) **RTECS Number:** CZ0175000 (Chlorobenzene); PV6210000 (DMSO)
Chemical Family: Chlorinated hydrocarbon (Chlorobenzene)
Therapeutic Category: Residual solvent

SECTION 2 - INGREDIENT INFORMATION

<u>Principle Components</u>	<u>Percent</u>	<u>Exposure Limits</u>
Chlorobenzene	0.1800%	OSHA: TWA 75 ppm NIOSH: IDLH 1000 ppm ACGIH: TWA 10 ppm
Dimethyl sulfoxide	99.82%	

SECTION 3 - HEALTH HAZARD INFORMATION

Usual Adult Dose: n/f

RESIDUAL SOLVENT CLASS 2 - CHLOROBENZENE

Catalog Number: 1601361

Package Size: See label

Revision Date: September 29, 2003

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 from chlorobenzene exposure may include headache, dizziness, gastrointestinal complaints, shortness of breath, and rapid heart rate. Possible allergic reaction to material if inhaled, ingested or in contact with skin.
Overdose Effects:	High exposures to chlorobenzene may cause significant central nervous system depression, leading to unconsciousness, coma, and respiratory failure.
Acute:	Eye, skin, gastrointestinal and/or respiratory tract irritation; central nervous system depression.
Chronic:	Possible hypersensitization, irritation, headache, dizziness, sleepiness, and gastrointestinal disorders.
Inhalation:	Causes irritation and toxicity. 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 and toxicity. Avoid contact. Flush out mouth with water.
Medical Conditions Aggravated by Exposure:	Hypersensitivity to material and skin, liver, kidney, or chronic respiratory disease.
Cross Sensitivity:	n/f
Pregnancy Comments:	Chlorobenzene did not have toxic effects on the fetus in rats and rabbits in inhalation studies.
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 chlorobenzene overdose should be symptomatic and supportive and may include the following: <ol style="list-style-type: none">1. Monitor vital signs, including ECG and liver and kidney function. Biological monitoring for exposure may be accomplished by urinalysis for 4-chlorocatechol, a major chlorobenzene metabolite.2. Do not induce vomiting.3. It is not known if chlorobenzene is absorbed by activated charcoal.4. Ingestion may result in gastric burns; endoscopy may be indicated.5. Do not give oils by mouth because they may increase intestinal absorption.6. N-acetylcysteine and alprostadil have been used to treat chlorobenzene-induced liver injury. [Poindex 2003]

SECTION 5 - TOXICOLOGICAL INFORMATION

Oral Rat:	LD50: 1110 mg/kg (Chlorobenzene); 14500 mg/kg (DMSO)
Oral Mouse:	LD50: 2300 mg/kg (Chlorobenzene); 7920 mg/kg (DMSO)
Irritancy Data:	RTECS - Rabbit/skin,eye: mild (DMSO)
Target Organ(s):	Central nervous system, respiratory system, liver, kidneys (Chlorobenzene)
Listed as a Carcinogen?	NTP: No IARC: No OSHA: No
Other:	NTP Carcinogenesis studies (gavage): Male rats: equivocal evidence; Female rats, mice: negative (Chlorobenzene)

SECTION 6 - FIREFIGHTING MEASURES

RESIDUAL SOLVENT CLASS 2 - CHLOROBENZENE

Catalog Number: 1601361 Package Size: See label

Revision Date: September 29, 2003

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, light-resistant 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 all ignition sources. Ventilate enclosed spaces. Wipe up spillage. Avoid breathing vapors. Place spillage in appropriately labelled container for disposal. Wash spill site.
Disposal: Dispose of waste in accordance with all applicable Federal, State and local laws.

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: Colorless liquid.
Melting Point: n/f
Solubility in Water: n/f **Vapor Density:** n/f
Boiling Point: n/f **Evaporation Rate:** n/f
Specific Gravity: n/f **Reactivity in Water:** n/f
Vapor Pressure: n/f **% Volatile by Volume:** n/f