Material Safety Data Sheet

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Responsible Party: Reference Standards Technical Services

RESIDUAL SOLVENT CLASS 2 - TETRAHYDROFURAN

Catalog Number: 1601770 **Package Size:** See label **Revision Date:** October 27, 2003

This reference standard contains tetrahydrofuran 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.
Tetrahydrofuran is an irritant.

SECTION 1 - IDENTIFICATION

Common Name: Tetrahydrofuran

Formula: C4H8O (Tetrahydrofuran); C2H6OS (DMSO)

Synonym: Diethylene oxide; THF

Chemical Name: Tetrahydrofuran in dimethyl sulfoxide

CAS Number: 109-99-9 (Tetrahydrofuran); 67-68-5 (DMSO)

RTECS Number: LU5950000 (Tetrahydrofuran); PV6210000 (DMSO)

Chemical Family: Cyclic ether (Tetrahydrofuran)

Therapeutic Category: Residual solvent

SECTION 2 - INGREDIENT INFORMATION

Principle Components	Percent	Exposure Limits
Tetrahydrofuran	0.36%	OSHA: TWA 200 ppm NIOSH: TWA 200 ppm; STEL 250 ppm; IDLH 2000 ppm ACGIH: TWA 200 ppm; STEL 250 ppm
Dimethyl sulfoxide	99.64%	n/f

SECTION 3 - HEALTH HAZARD INFORMATION

n/f = not found

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. Tetrahydrofuran may cause headache, nausea, dizziness, and central nervous system depression. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: Overdose of tetrahydrofuran may cause loss of consciousness, lowered blood pressure, and narcotic-like effects.

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

Chronic: Possible hypersensitization.

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; skin, respiratory, or neurological conditions.

Cross Sensitivity: n/f

Pregnancy Comments: Tetrahydrofuran administration to pregnant mice by inhalation resulted in reduced maternal and fetal body weights, resorptions, and nonsignificant but dose-related increase in sternebral ossification.

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 tetrahydrofuran overdose should be symptomatic and supportive and may include the following:

1. Do not induce vomiting because of the potential for central nervous system depression.
2. Following oral exposure, dilute with 4 to 8 ounces of milk or water.
3. For hypotension, infuse with isotonic fluid; administer dopamine or norepinephrine if hypotension persists.
4. Monitor liver and kidney function. [Poisindex 2003]

SECTION 5 - TOXICOLOGICAL INFORMATION

Oral Rat: LD50: 1650 mg/kg (Tetrahydrofuran); 14500 mg/kg (

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

Irritancy Data: RTECS - Rabbit/skin,eye: mild (DMSO)

Target Organ(s): Central nervous system (Tetrahydrofuran)

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

Other: Tetrahydrofuran: NTP Carcinogenesis studies: Male rats: some evidence; Female rats and male mice: no evidence; Female mice: clear evidence

SECTION 6 - FIREFIGHTING MEASURES

n/f = not found

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.

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 **Vapor Density:** n/f

Boiling Point: n/f **Evaporation Rate:** n/f

Specific Gravity: n/f **Reactivity in Water:** n/f

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

n/f = not found