



Material Safety Data Sheet

12601 Twinbrook Parkway,
Rockville, MD 20852 USA

Phone Calls: 301-881-0666
8 a.m. to 5 p.m. EST Mon. - Fri.

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RESIDUAL SOLVENTS CLASS 2 - MIXTURE B

Catalog Number: 1601292

Revision Date:

January 19, 2004

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Common Name: Residual Solvents Class 2 - Mixture B

Manufacturer: U. S. Pharmacopeia

Responsible Party: Reference Standards Technical Services

Mailing Address: 12601 Twinbrook Parkway, Rockville, MD 20852 USA

Phone: 301-816-8129

Hours: 8 a.m. to 5 p.m. EST Mon. - Fri.

Product Use: USP Reference Standards and Authentic Substances are used for chemical tests and assays in analytical, clinical, pharmaceutical, and research laboratories.

SECTION 2 - HAZARD INFORMATION

This reference standard contains residual solvents in DMSO. Specific hazards are not determined but it is expected to be combustible. DMSO is an irritant, is rapidly absorbed through skin, and may carry chemicals into the body via this route. Residual solvents are toxic, irritant, and possible carcinogens.

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. Exposure to the residual solvents may cause central nervous system depression with headache, dizziness, drowsiness, and gastrointestinal disturbances. Chloroform may cause insufficient oxygen in the blood and liver damage. Hexane, methylbutylketone, and trichloroethylene may cause nerve damage. Pyridine, nitromethane, and trichloroethylene may cause liver or kidney damage. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: Overexposure or exposure to high levels of residual solvents may cause narcotic-like effects, seizures, loss of consciousness, cardiac problems, respiratory arrest, coma, and death. Aspiration of hexane may lead to chemical pneumonia or pulmonary edema. If it vaporizes in the lungs and dilutes oxygen to a critical level, asphyxiation, brain damage, and cardiac arrest may result.

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

Chronic: Possible hypersensitization and cancer.

Medical Conditions Aggravated by Exposure: Hypersensitivity to material.

Cross Sensitivity: n/f

Target Organs: Central nervous system

For additional information on toxicity, see Section 11.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**Common Name:** Residual Solvents Class 2 - Mixture B**Formula:** See Composition**Synonym:** n/f**Chemical Name:** n/f**CAS:** See Composition**RTECS Number:** See Composition**Chemical Family:** n/f**Therapeutic Category:** Residual solvents**Composition:** Chloroform (CHCl₃; CAS # 67-66-3; RTECS # FS9100000): 300 ppm
1,2-Dimethoxyethane (C₄H₁₀O₂; CAS # 110-71-4; RTECS # KI1451000): 500 ppm
Hexane (C₆H₁₄; CAS # 110-54-3; RTECS # MN9275000): 1450 ppm
Methylbutylketone (C₆H₁₂O; CAS # 591-78-6; RTECS # MP1400000): 250 ppm
Nitromethane (CH₃NO₂; CAS # 75-52-5; RTECS # PA9800000): 250 ppm
Pyridine (C₅H₅N; CAS # 110-86-1; RTECS # UR8400000): 1000 ppm
Tetralin (C₁₀H₁₂; CAS # 119-64-2; RTECS # QK3850000): 500 ppm
Trichloroethylene (C₂HCl₃; CAS # 79-01-6; RTECS # KX4550000): 400 ppm
DMSO (C₂H₆OS; CAS # 67-68-5; RTECS # PV621000): balance**SECTION 4 - FIRST AID MEASURES****Inhalation:** Causes irritation. Avoid inhalation. Remove to fresh air.**Eye:** Causes irritation. Avoid contact. Flush with copious quantities of water.**Skin:** Causes irritation. Avoid contact. Wash with copious quantities of soap and water for at least 15 minutes. DMSO readily penetrates skin and may enhance skin absorption of other chemicals.**Ingestion:** Causes irritation. Avoid ingestion. Flush out mouth with water.**General First Aid Procedures:** 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.**Note to Physicians****Overdose Treatment:** Treatment should be symptomatic and supportive. Induced vomiting is not recommended because of the potential for seizures and central nervous system depression. Support respiratory and cardiac function. Some overdose symptoms may be delayed.**SECTION 5 - FIREFIGHTING MEASURES****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 6 - ACCIDENTAL RELEASE MEASURES****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 a thick plastic hazardous waste disposal bag or leakproof container and label it CAUTION: HAZARDOUS CHEMICAL WASTE. Wash spill site.

SECTION 7 - HANDLING AND STORAGE

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.

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering Controls: Engineering controls such as exhaust ventilation are recommended.

Respiratory Protection: Use a NIOSH approved respirator, if it is determined to be necessary by an industrial hygiene survey involving air monitoring.

Gloves: Chemically compatible

Eye Protection: Safety Goggles

Protective Clothing: Protect exposed skin.

Exposure Limits: Chloroform:

OSHA: TWA 2 ppm; CL 50 ppm

NIOSH: STEL 2 ppm; IDLH 500 ppm

ACGIH: TWA 10 ppm

Hexane:

OSHA: TWA 500 ppm

NIOSH: TWA 50 ppm; IDLH 1100 ppm

ACGIH: TWA 50 ppm (skin)

Methylbutylketone:

OSHA: TWA 25 ppm (skin)

NIOSH: TWA 0.1 ppm (skin); IDLH 200 ppm

ACGIH: TWA 5 ppm (skin)

Nitromethane:

OSHA: TWA 100 ppm

NIOSH: IDLH 750 ppm

ACGIH: TWA 20 ppm

Pyridine:

OSHA: TWA 5 ppm

NIOSH: TWA 5 ppm; IDLH 1000 ppm

ACGIH: TWA 5 ppm

Trichloroethylene:

OSHA : TWA 100 ppm; CL 200 ppm; peak 300 ppm (5 min. every 2 hr.)

NIOSH: TWA 25 ppm; IDLH 1000 ppm

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Properties as indicated on the MSDS are general and not necessarily specific to the USP Reference Standard Lot provided.

Appearance and Odor: Clear liquid.

Odor Threshold: n/f

pH: n/f

Melting Range: n/f

Boiling Point: n/f

Flash Point: n/f

Autoignition Temperature: n/f

Evaporation Rate: n/f

Upper Flammability Limit: n/f

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Lower Flammability Limit: n/f**Vapor Pressure:** n/f**Vapor Density:** n/f**Specific Gravity:** n/f**Solubility in Water:** n/f**Fat Solubility:** n/f**Other Solubility:** n/f**Partition Coefficient: n-octanol/water:** n/f**Percent Volatile:** n/f**Reactivity in Water:** n/f**Explosive Properties:** n/f**Oxidizing Properties:** n/f**Formula:** See Composition**Molecular Weight:** n/f

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SECTION 10 - STABILITY AND REACTIVITY

Conditions to Avoid: n/f

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 11 - TOXICOLOGICAL PROPERTIES

Oral Rat: LD50: 14500 mg/kg (DMSO); 695 mg/kg (Chloroform); 25 grams/kg (Hexane); 2590 mg/kg (Methylbutylketone); 940 mg/kg (Nitromethane); 891 mg/kg (Pyridine); 1620 microliters/kg (Tetralin); 4920 mg/kg (Trichloroethylene)

Oral Mouse: LD50: 7920 mg/kg (DMSO); 36 mg/kg (Chloroform); 3200 mg/kg (1,2-Dimethoxyethane); 2430 mg/kg (Methylbutylketone); 950 mg/kg (Nitromethane); 1500 mg/kg (Pyridine); 2402 mg/kg (Trichloroethylene)

Other Toxicity Data: n/f

Irritancy Data: RTECS - Rabbit/skin: mild; Rabbit/eye: mild (DMSO); Rabbit/skin: mild; Rabbit/eye: moderate (Chloroform); Rabbit/eye: mild (Hexane); Rabbit/skin,eye: mild (Methylbutylketone); Rabbit/skin: mild (Pyridine); Rabbit/skin: severe; Human/skin: reaction not reported (Tetralin); Rabbit/skin: severe; Rabbit/eye: moderate (Trichloroethylene)

Corrosivity: n/f

Sensitization Data: n/f

Listed as a Carcinogen by: **NTP:** Yes **IARC:** Yes **OSHA:** No

Other Carcinogenicity Data: Chloroform and trichloroethylene are listed as possible carcinogens by NTP and IARC. Nitromethane is listed as a possible carcinogen by IARC.

Mutagenicity Data: n/f

Reproductive and Developmental Effects: Studies in hamsters, rats, and mice have shown that DMSO causes abnormal development when administered by injection at high doses; however, DMSO did not cause reproductive problems in animals when administered in oral or topical doses. Adverse reproductive effects have been seen in animal studies of some residual solvents.

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: n/f

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal: Place material in a thick plastic hazardous waste disposal bag or leakproof container and label it CAUTION: HAZARDOUS CHEMICAL WASTE. Dispose of waste in accordance with all applicable Federal, State and local laws.

SECTION 14 - TRANSPORT INFORMATION

Shipping Name: Toxic liquid, organic, n.o.s. (Chloroform/Trichloroethylene solution)

Class: 6.1

UN Number: UN2810

Packing Group: III

Additional Transport Information: n/f

SECTION 15 - REGULATORY INFORMATION

U.S. Regulatory Information: n/f

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International Regulatory Information: n/f

SECTION 16 - OTHER INFORMATION

Revision: 19-Jan-04

Previous Revision Date: None