Material Safety Data Sheet

12601 Twinbrook Parkway,
Rockville, MD 20852 USA

Phone Calls: 301-816-8129
8 a.m. to 5 p.m. EST Mon. - Fri.

ATTENTION !

RESIDUAL SOLVENT CLASS 2 - METHANOL

Catalog Number: 1601623 **Revision Date:** July 31, 2008

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Common Name: Methanol

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

EMERGENCY OVERVIEW - Poison, Combustible, Irritant

This reference standard contains methanol in dimethyl sulfoxide (DMSO). The mixture has not been tested to determine specific physical hazards, but is considered potentially combustible. DMSO is an irritant and is rapidly absorbed through the skin and mucous membranes and may enhance skin absorption of other chemicals. Methanol is a poison and an irritant.

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 or shortness of breath; nasal congestion; gastrointestinal disturbances; drowsiness; and headache. Adverse effects of methanol may include headache, dizziness, vomiting, severe abdominal pain, back pain, trouble breathing, restlessness, cold clammy extremities, and blurred or dim vision with dilated unreactive pupils. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: In methanol toxicity, narcotic effects occur first, followed by a latent period of 10 to 48 hours, then more severe central nervous system effects; vision disturbances including irreversible blindness; seizures; metabolic acidosis; rapid, shallow breathing; fast or slow heartbeat; severe low blood pressure; coma; and death.

Acute: Eye, skin, gastrointestinal and/or respiratory tract irritation.

Chronic: Possible hypersensitization; nervous system, gastrointestinal, and vision problems.

Medical Conditions Aggravated by Exposure: Hypersensitivity to material and skin, kidney, liver, eye, respiratory, or neurological conditions.

Cross Sensitivity: n/f

Target Organs: Nervous system, eyes, respiratory system, gastrointestinal tract (methanol)

For additional information on toxicity, see Section 11.

n/f = not found

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: Methanol

Formula: See Composition

Synonym: Methyl alcohol; wood alcohol

Chemical Name: Methanol in dimethyl sulfoxide

CAS: See Composition

RTECS Number: See Composition

Chemical Family: Alcohol (Methanol)

Therapeutic Category: Residual solvent

Composition: Methanol (CH_4O; CAS # 67-56-1; RTECS # PC1400000): 1.5%
Dimethyl sulfoxide (C_2H_6OS; CAS # 67-68-5; RTECS # PV6210000): 98.5%

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 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 methanol and cause systemic toxicity.

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 of overdose may include the following:
1. Do not induce vomiting. Consider administration of activated charcoal to prevent absorption.
2. Acidosis may not develop until 18 to 48 hours post-ingestion. Temporize with IV sodium bicarbonate; monitor arterial blood gasses to guide dosing. Patients with metabolic acidosis need antidotal therapy (ethanol or fomepizole) and hemodialysis.
3. For seizures, administer intravenous diazepam or lorazepam. If seizures recur, consider phenobarbital. Monitor for hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation. Evaluate for hypoglycemia, electrolyte imbalances, and hypoxia.
4. Monitor arterial blood gasses, electrolytes, acid-base status, CBC (especially MCV) and renal function tests. Monitor blood levels of methanol and formate. [Meditext 2008]

SECTION 5 - FIREFIGHTING MEASURES

Extinguisher Media: Alcohol foam or other appropriate media.

Fire and Explosion Hazards: DMSO is combustible. It reacts violently with many acyl, aryl and non-metal halides, boron compounds and metal salts of oxoacids.

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 an appropriately-labelled container for disposal. Wash spill site.

n/f = not found

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, light-resistant 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 glasses or goggles

Protective Clothing: Protect exposed skin.

Exposure Limits: Methanol:
OSHA: 200 ppm
NIOSH: 200 ppm; STEL 250 ppm (skin); IDLH 6000 ppm
ACGIH: 200 ppm; STEL 250 ppm (skin)
Dimethyl sulfoxide:
AIHA: 250 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

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

n/f = not found

Oxidizing Properties: n/f

Formula: See Composition

Molecular Weight: n/f

n/f = not found

SECTION 10 - STABILITY AND REACTIVITY

Conditions to Avoid: Avoid exposure to light.

Incompatibilities: Strong oxidizing agents, strong reducing agents, acids, acid chlorides, acid anhydrides, alkali hydrides, halides, boron compounds, metal salts of oxoacids.

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

Stable? Yes **Hazardous Polymerization?** No

SECTION 11 - TOXICOLOGICAL PROPERTIES

Oral Rat: LD50: 5628 mg/kg (Methanol); 14500 mg/kg (DMSO)

Oral Mouse: LD50: 7300 mg/kg (Methanol); 7920 mg/kg (DMSO)

Other Toxicity Data: Methanol:
Oral Monkey LD50: 7000 mg/kg
Oral Rabbit LD50: 14200 mg/kg
Inhalation Rat LC50: 64000 ppm/4 hr
Inhalation Rabbit LC50: 81000 mg/m3/14 hr
Dermal Rabbit LD50: 15800 mg/kg

Dimethyl sulfoxide:
Inhalation Rat LC50: >2.0 mg/L/40 hour
Dermal Mouse LD50: 50 grams/kg
Dermal Rat LD50: 40 grams/kg

Irritancy Data: Methanol:
Rabbit/skin (Standard Draize, 20 mg/24 hr): moderate
Rabbit/eye (Standard Draize, 100 mg/24 hr): moderate

Dimethyl sulfoxide:
Rabbit/skin (Standard Draize, 500 mg/24 hr): mild
Rabbit/skin (Open Draize, 10 mg/24 hour): mild
Rabbit/eye (Standard Draize, 500 mg/24 hr): mild

Corrosivity: n/f

Sensitization Data: Dimethyl sulfoxide:
Guinea pig Buehler test: not sensitizing

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

Other Carcinogenicity Data: Rats and mice exposed to up to 1000 ppm methanol 20 hr/day for 24 and 18 months, respectively, showed no evidence of carcinogenicity.

Mutagenicity Data: Methanol:
Methanol inhalation did not induce chromosome damage in mice and it was inactive in the Ames/Salmonella microsome assay with and without activation. It caused chromosomal aberrations in yeast and grasshoppers.
Dimethyl sulfoxide:
Dimethyl sulfoxide did not show a potential to induce gene mutations in bacterial or yeast cells, and was not mutagenic in in vivo studies in Drosophila. Dimethyl sulfoxide did not induce micronuclei or sister-chromatid exchange in mice or chromosomal aberrations or sister chromatid exchange in mammalian cells, but did induce an increase in chromosomal aberrations in rats. [EPA 2007]

Reproductive and Developmental Effects: Methanol:
High levels of methanol (1840 and 537 mg/L) caused oral clefts and neural tube defects in offspring of exposed rats and mice. In rats, inhalation exposures of 20000 ppm for 7 hr/day during gestation caused maternal toxicity and increased the incidence of birth defects in the offspring. [NOAEL = 5000 ppm (maternal and developmental toxicity)] In mice, inhalation exposures of 5000 ppm and higher for 7 hr/day during gestation increased

the incidence of cleft palate and brain defects in the offspring. [NOAEL = 1000 ppm (developmental toxicity)]

Dimethyl sulfoxide:
Examination of the reproductive system during a 13-week inhalation repeated-dose toxicity study in rats revealed no abnormalities on estrus cycle in females, sperm count, motility or morphology in males, or on the reproductive organs of both sexes. In two oral developmental toxicity studies in rats, maternal effects included decreased food consumption and decreased body weight gain. Developmental effects included decreased fetal weights, higher rates of early resorptions per animal, increased total post-implantation loss, dilated renal pelvis, dilated ureters and reduced or delayed ossification of ribs. All of the fetal effects except dilated renal pelvis occurred at levels that demonstrated maternal toxicity. [EPA 2007]

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: Methanol is of low toxicity to aquatic organisms and will biodegrade rapidly.

SECTION 13 - DISPOSAL CONSIDERATIONS

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

SECTION 14 -TRANSPORT INFORMATION

Shipping Name: Methanol 1.5% solution

Class: 6.1

UN Number: UN1230

Packing Group: II

Additional Transport Information: n/f

SECTION 15 - REGULATORY INFORMATION

U.S. Regulatory Information: n/f

International Regulatory Information: Methanol:
EINECS # 200-659-6
Dimethyl sulfoxide:
EINECS # 200-664-3

SECTION 16 - OTHER INFORMATION

Revision: 31-Jul-08

Previous Revision Date: 09-Oct-03