



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.

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.

FUROSEMIDE

Catalog Number: 1287008

Revision Date:

January 24, 2005

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Common Name: Furosemide

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

Adverse Effects: Adverse effects may include increased urination, dry mouth, increased thirst, irregular heartbeat, mood or mental changes, muscle cramps or pain, nausea or vomiting, unusual tiredness or weakness, weak pulse, blurred vision, diarrhea, headache, increased sensitivity of skin to sunlight, loss of appetite, dizziness and stomach cramps or pain. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: Overdose may cause dehydration, blood volume reduction, low blood pressure, and electrolyte imbalance. Hearing loss occurs rarely and in some cases may be irreversible.

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

Chronic: Possible hypersensitization and fluid and electrolyte imbalance.

Medical Conditions Aggravated by Exposure: Hypersensitivity to material, active alcoholism, anuria, systemic lupus erythematosus, and severe kidney function impairment.

Cross Sensitivity: Persons sensitive to sulfonamides (including thiazide diuretics) may be sensitive to this material also.

Target Organs: Kidneys

For additional information on toxicity, see Section 11.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: Furosemide

FUROSEMIDE

Catalog Number: 1287008

Revision Date:

January 24, 2005

Formula: C₁₂H₁₁CIN₂O₅S

Synonym: Frusemide

Chemical Name: Benzoic acid, 5-(aminosulfonyl)-4-chloro-2-[(2-furanylmethyl)amino]-

CAS: 54-31-9

RTECS Number: CB2625000

Chemical Family: Aromatic sulfanilamide derivative (sulfonamide)

Therapeutic Category: Diuretic

Composition: Pure Material

SECTION 4 - FIRST AID MEASURES

Inhalation: May cause irritation. Remove to fresh air.

Eye: May cause irritation. Flush with copious quantities of water.

Skin: May cause irritation. Flush with copious quantities of water.

Ingestion: May cause irritation. Flush out mouth with water. This material is absorbed from the gastrointestinal tract. Its onset of action is 20 to 60 minutes, and its duration of action is 6 to 8 hours.

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 for the overdose of furosemide should be symptomatic and supportive and may include the following:

1. Replace excessive fluid and electrolyte losses.
2. Monitor serum electrolytes, carbon dioxide levels, and blood pressure.
3. Hemodialysis does not accelerate furosemide elimination. [PDR 2004]

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 assumed to be combustible. As with all dry powders it is advisable to ground mechanical equipment in contact with dry material to dissipate the potential buildup of static electricity.

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. Wipe up spillage or collect spillage using a high efficiency vacuum cleaner. Avoid breathing dust. Place spillage in appropriately-labelled container for disposal. 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, 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. In the event that a respirator is not required, an approved dust mask should be used.

Gloves: Chemically compatible

Eye Protection: Safety glasses or goggles

Protective Clothing: Protect exposed skin.

Exposure Limits: n/f

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: White to slightly yellow crystalline powder; odorless.

Odor Threshold: n/f

pH: n/f

Melting Range: 203 - 206° C

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: Practically insoluble.

Fat Solubility: n/f

Other Solubility: Practically insoluble in dichloromethane; very slightly soluble in chloroform; sparingly soluble in alcohol; slightly soluble in ether; soluble or freely soluble in acetone and in dimethylformamide; soluble in methyl alcohol.

Partition Coefficient: n-octanol/water: 2.03

Percent Volatile: n/f

Reactivity in Water: n/f

Explosive Properties: n/f

Oxidizing Properties: n/f

Formula: C₁₂H₁₁ClN₂O₅S

Molecular Weight: 330.75

FUROSEMIDE

Catalog Number: 1287008

Revision Date:

January 24, 2005

SECTION 10 - STABILITY AND REACTIVITY

Conditions to Avoid: Avoid exposure to light.

Incompatibilities: Strong oxidizing agents.

Decomposition Products: When heated to decomposition material emits very toxic fumes of Cl-, NOx, and SOx. Emits toxic fumes under fire conditions.

Stable? Yes **Hazardous Polymerization?** No

SECTION 11 - TOXICOLOGICAL PROPERTIES

Oral Rat: LD50: 2600 mg/kg

Oral Mouse: LD50: 2 grams/kg

Other Toxicity Data: Oral Rabbit: LD50: 800 mg/kg
Oral Dog: LD50: 2 grams/kg

Irritancy Data: n/f

Corrosivity: n/f

Sensitization Data: n/f

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

Other Carcinogenicity Data: This material is not classifiable as to its carcinogenicity in humans.
NTP Carcinogenesis Studies (Feed): Male rat - Equivocal evidence; Female mice - Some evidence;
Female rat, male mice - No evidence

Mutagenicity Data: Mutagenic in mouse lymphocyte test with activation. Positive in cytogenetic analysis tests with human leucocytes and with hamster fibroblast, lung, and ovary cells. Positive for sister chromatid exchange in hamster ovary cells.

Reproductive and Developmental Effects: Adequate and well-controlled pregnancy studies in humans have not been done. Studies in mice and rabbits have shown that furosemide causes an increased incidence of a kidney problem in the fetus. In rabbits, unexplained maternal deaths and miscarriage have occurred at doses 2 to 8 times the maximum recommended human dose.

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: n/f

SECTION 13 - DISPOSAL CONSIDERATIONS

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

SECTION 14 - TRANSPORT INFORMATION

Shipping Name: n/f

Class: n/f

UN Number: n/f

Packing Group: n/f

Additional Transport Information: n/f

SECTION 15 - REGULATORY INFORMATION

U.S. Regulatory Information: n/f

International Regulatory Information: EINECS # 200-203-6

FUROSEMIDE**Catalog Number:** 1287008**Revision Date:**January 24, 2005

SECTION 16 - OTHER INFORMATION

Revision: 24-Jan-05**Previous Revision Date:** 09-Jan-01