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.

DOXYCYCLINE HYCLATE

Catalog Number: 1226003 **Revision Date:** July 1, 2008

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Common Name: Doxycycline Hyclate

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 - Reproductive Hazard.

Adverse Effects: Adverse effects of tetracyclines may include increased sensitivity of skin to sunlight, dizziness, lightheadedness, unsteadiness, joint pain, cramps or burning of the stomach, diarrhea, nausea or vomiting, itching of the rectal or genital area, sore mouth or tongue, and discolored tongue. Possible allergic reaction to material if inhaled, ingested or in contact with skin.

Overdose Effects: n/f

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

Chronic: Possible hypersensitization; superinfections; antibiotic-associated colitis; thyroid, bone, or tooth discoloration; and liver toxicity.

Medical Conditions Aggravated by Exposure: Hypersensitivity to the material and porphyria.

Cross Sensitivity: Persons sensitive to one tetracycline may be sensitive to this material also.

Target Organs: Liver

For additional information on toxicity, see Section 11.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: Doxycycline Hyclate

Formula: (C22H24N2O8 . HCl)2 . C2H6O . H2O

n/f = not found

Synonym: Doxycycline hydrochloride hemiethanolate hemihydrate

Chemical Name: 2-Naphthacenecarboxamide, 4-(dimethylamino)-1,4,4a,5,5a,6,11,12a-octahydro-3,5,10,12,12a-pentahydroxy-6-methyl-1,11-dioxo-, monohydrochloride, compound with ethanol (2:1), monohydrate, [4S-(4alpha, 4a alpha, 5alpha, 5a alpha, 6alpha, 12a alpha)]-

CAS: 24390-14-5

RTECS Number: n/f

Chemical Family: Tetracycline derivative

Therapeutic Category: Antibacterial

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 readily absorbed from the gastrointestinal tract.

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

1. Immediately dilute with milk or water.
2. Tetracyclines are of low order of toxicity and in most cases gastrointestinal decontamination will not be required. If needed, administer activated charcoal as a slurry.
3. Antacids may be useful in managing gastric irritation.
4. For mild/moderate allergic reactions, administer antihistamines with or without inhaled beta agonists, corticosteroids, or epinephrine. For severe allergic reactions, treat with oxygen, aggressive airway management, antihistamines, epinephrine, corticosteroids, ECG monitoring, and intravenous fluids.
5. Doxycycline is not significantly removed by hemodialysis or peritoneal dialysis.
6. For Clostridium difficile associated diarrhea (CDAD), manage with fluids and electrolytes, protein supplementation, and treatment with an antibacterial drug clinically effective against Clostridium difficile colitis. [Meditext 2008 and PDR 2008]

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

n/f = not found

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. Store in a cold place.

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: Light yellow crystalline powder; essentially odorless

Odor Threshold: n/f

pH: 2.0 - 3.0 (1% aqueous solution)

Melting Range: 201° C (chars without melting)

Boiling Point: n/f

Flash Point: n/f

Autoignition Temperature: 900° C

Evaporation Rate: n/f

Upper Flammability Limit: 60 g/ft3

Lower Flammability Limit: 7 g/ft3

Vapor Pressure: <1 mm Hg

Vapor Density: n/f

Specific Gravity: n/f

Solubility in Water: Soluble

Fat Solubility: n/f

Other Solubility: Soluble in solutions of alkali hydroxides and carbonates; freely soluble in methanol; slightly soluble in alcohol; practically insoluble in chloroform and in ether

Partition Coefficient: n-octanol/water: n/f

Percent Volatile: <1 %

Reactivity in Water: n/f

Explosive Properties: n/f

Oxidizing Properties: n/f

Formula: (C22H24N2O8 . HCl)2 . C2H6O . H2O

Molecular Weight: 1025.89

n/f = not found

SECTION 10 - STABILITY AND REACTIVITY

Conditions to Avoid: Avoid exposure to light, heat, and moisture.

Incompatibilities: Strong oxidizing agents

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

Stable? Yes **Hazardous Polymerization?** No

SECTION 11 - TOXICOLOGICAL PROPERTIES

Oral Rat: LD50: 1700 mg/kg

Oral Mouse: LD50: 1890 mg/kg

Other Toxicity Data: Oral Dog LD50: >500 mg/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: No

Mutagenicity Data: Doxycycline was not mutagenic in an in vitro point mutation study with mammalian cells (CHO/HGPRT forward mutation assay) or in an in vivo micronucleus assay in CD-1 mice. It was weakly clastogenic in an in vitro study with Chinese hamster ovary cells for the potential to cause chromosomal aberrations.

Reproductive and Developmental Effects: Use of tetracyclines during the last half of pregnancy may cause permanent discoloration of the teeth, incomplete development or lack of enamel, and inhibition of skeletal growth in the fetus. In addition, fatty infiltration of the liver, leading to damage or failure, may occur in pregnant women. Tetracyclines administered early in pregnancy have been found to cause harm to the embryo.
Adverse effects on fertility and reproductive performance were observed in male rats administered oral doxycycline hyclate at doses as low as 50 mg/kg/day. There were no effects on the fertility of female rats administered oral doxycycline at doses up to 250 mg/kg/day. There was no evidence of an increase in birth defects in the offspring of pregnant rats, rabbits, or mice administered docycycline at doses more than 100 times those used clinically, or pregnant rats, rabbits, or monkeys administered doxycycline at doses 2 - 17 times the maximum human dose. Fetal toxicity occurred in pregnant mice fed 2.5 - 10 mg/gram doxycycline in their feed.

SECTION 12 - ECOLOGICAL INFORMATION

Ecological Information: This material has direct inhibitory effects on the activity of microorganisms. It may prevent denitrifying bacteria from oxidating ammonia, which is toxic to the aquatic environment.

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

n/f = not found

Packing Group: n/f

Additional Transport Information: n/f

SECTION 15 - REGULATORY INFORMATION

U.S. Regulatory Information: California Proposition 65: Developmental Toxicity

International Regulatory Information: Hazard Code: Xn
Risk Phrases: R20/21/22, R63

SECTION 16 - OTHER INFORMATION

Revision: 01-Jul-08

Previous Revision Date: 23-Jul-03

n/f = not found