

BAUSCH & LOMB

Pharmaceutical Division

MATERIAL SAFETY DATA SHEET

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1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Flunisolide Nasal Solution USP, 0.025%
Generic Name: Flunisolide Nasal Solution USP, 0.025%
NDC No. 24208-344-25 (25 ml)

Legal Category: Prescription only medicine, filled in 25 mL bottle with spray attachment and overpacked inside a cardboard carton.

Drug Composition: Glucocorticoid; anti-inflammatory

BAUSCH & LOMB PHARMACEUTICALS, INC.

8500 Hidden River Parkway

Tampa, FL 33637

Information: (800) 323-0000 (M-F) 8am-5pm EST

Emergency: (800) 227-1427 24 hrs

2. COMPOSITION/INFORMATION ON INGREDIENTS

Description	CAS #	TLV (mg/m ³)	PEL (mg/m ³)	% Content
Flunisolide	3385-03-3	NE	NE	0.025
Propylene Glycol	57-55-6	NE	NE	> 1
Polyethylene Glycol	25322-68-3	NE	NE	> 1
Purified Water	7732-18-5	NE	NE	> 1

Ingredients <1% - Citric Acid, Sodium Citrate, Edetate Disodium Dihydratre, Benzalkonium Chloride

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear colorless solution in plastic bottle with spray attachment. Presents little or no hazards if spilled and no unusual hazard if involved in fire.

POTENTIAL HEALTH HAZARDS

Carcinogenicity: (NTP) No (IARC) NO (OSHA) No

Eye: May cause irritation. This preparation is for nasal application only. Do not spray into the eyes.

Skin: May cause irritation.

Ingestion: Flunisolide is absorbed into the circulatory system. Use of excessive doses of Flunisolide may suppress hypothalamic-pituitary-adrenal function. Flunisolide should be used with caution, if at all, in-patients with active or quiescent tuberculosis infection of the respiratory tract or in untreated fungal, bacterial or systemic viral infections or ocular herpes simplex.

Inhalation: General: Symptomatic relief may not occur in some patients for as long as 2 weeks. Although systemic effects are minimal at recommended doses, flunisolide should not be continued beyond 3 weeks in the absence of significant symptomatic improvement. In clinical studies with flunisolide administered intranasally, the development of localized infections of the nose and pharynx with *Candida albicans* has occurred only rarely. When such an infection develops it may require treatment with appropriate local therapy or discontinuance of treatment with flunisolide.

Because of the inhibitory effect of corticosteroids on wound healing, in patients who have experienced recent nasal septal ulcers, recurrent epistaxis, nasal surgery or trauma, a nasal corticosteroid should be used with caution until healing has occurred.

Chronic Effects: Flunisolide, infused intravenously, at doses up to 4 mg/kg in mice, rats and dogs (approximately 45, 300 and 90 times, respectively, the maximum recommended daily intranasal dose in adults and children on a mg/m² basis) was without lethality.

Target Organs: Skin

Medical Conditions Aggravated by Long Term Exposure: Adverse reactions reported in controlled clinical trials and long-term open studies in 595 patients treated with flunisolide nasal solution are described below. Of these patients, 409 were treated for 3 months or longer, 323 for 6 months or longer, 259 for 1 year or longer, and 91 for 2 years or longer.

In general, side effects elicited in the clinical studies have been primarily associated with the nasal mucous membranes. The most frequent complaints were those of mild transient nasal burning and stinging, which were reported in approximately 45% of the patients treated with flunisolide nasal solution in placebo-controlled and long-term studies. These complaints do not usually interfere with treatment; in only 3% of patients was it necessary to decrease dosage or stop treatment because of these symptoms. Approximately the same incidence of mild transient nasal burning and stinging was reported in patients on placebo as was reported in patients treated with flunisolide nasal solution in controlled studies, implying that these complaints may be related to the vehicle or the delivery system. The incidence of complaints of nasal burning and stinging decreased with increasing duration of treatment.

Other side effects reported at a frequency of 5% or less were: nasal congestion, sneezing, epistaxis and/or bloody mucous, nasal irritation, watery eyes, sore throat, nausea and/or vomiting, and headaches. As with other nasally inhaled corticosteroids, nasal septal perforations have been reported in rare instances with the use of flunisolide nasal solutions. Temporary or permanent loss of the sense of smell and taste have also been reported with the use of flunisolide nasal solutions.

Systemic corticosteroid side effects were not reported during the controlled clinical trials. If recommended doses are exceeded, or if individuals are particularly sensitive, symptoms of hypercorticism, i.e., Cushing's syndrome, could occur.

4. FIRST AID MEASURES

Eyes: Rinse immediately with copious amounts of water for at least 20 minutes. Contact a physician.

Skin: Remove all contaminated clothing and wash skin with copious amounts of water for at least 20 minutes. Contact physician if skin becomes irritated.

Ingestion: Wash out mouth and drink plenty of water and bland fluids. The use of an emetic drug and/or gastric lavage is advisable. Do not give anything to an unconscious person. Contact physician.

Inhalation: Remove person to fresh air, and if breathing stops, use artificial respiration. Contact physician.

Note to Physicians: Pregnancy Category C. As with other corticosteroids, flunisolide has been shown to be teratogenic and fetotoxic in rabbits and rats at oral doses of 40 and 200 mcg/kg/day respectively (approximately 2 and 4 times, respectively, the maximum recommended daily intranasal dose in adults on a mg/m² basis). There are no adequate and well-controlled studies in pregnant women. Flunisolide should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. It is not known whether this drug is excreted in human milk. Because other corticosteroids are excreted in human milk, caution should be exercised when flunisolide is administered to nursing women.

Because of the inhibitory effect of corticosteroids on wound healing, in patients who have experienced recent nasal septal ulcers, recurrent epistaxis, nasal surgery or trauma, a nasal corticosteroid should be used with caution until healing has occurred.

Although systemic effects have been minimal with recommended doses, this potential increases with excessive dosages. Therefore, larger than recommended doses should be avoided. Additional details are available on the package insert or in the Physicians Desk Reference.

5. FIRE FIGHTING MEASURES

Flammable Properties: Flash point: NE Method: NE

Hazardous Products: Emits toxic fumes, Carbon Monoxide (CO), Carbon Dioxide (CO₂), and Hydrogen Fluoride (HF).

Extinguishing Media: Dry chemical, carbon dioxide, halon, water spray or fog, and foam on surrounding materials.

Fire Fighting Instructions: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool. Do not spray water into the burning material.

6. ACCIDENTAL RELEASE MEASURES

Large/Small Spills: Use personal protective equipment. Contain the spill to prevent drainage into sewers, drains or streams. Use absorbent material to solidify the spill. Shovel or scoop up solidified waste. Dispose of material according to Federal, State and Local regulations.

7. HANDLING AND STORAGE

Handling: Avoid contact with product and use caution to prevent puncturing containers. No special protective equipment or procedures are required in the

clinical or home environment.

Storage: Store product upright in original containers with the cap tightly closed at a controlled room temperature 15⁰-30⁰ C (59⁰- 86⁰ F). **KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Engineering Controls: In the manufacturing plant, provide adequate ventilation for the raw material handling and compounding process which will maintain the dust and vapor levels below the TLV, STEL, and PEL values for the ingredients. Ventilation fans should be explosion proof. Use adequate personal protective equipment e.g. NIOSH-approved respirators, goggles or safety glasses, gloves and protective clothing. Ensure training in the handling of chemical material and use current Material Safety Data Sheets.

Eye Protection: (29 CFR 1910.133) Recommend goggles or chemical safety glasses.

Skin Protection: Thick impermeable gloves and protective clothing.

Respiratory Protection: (29 CFR 1910.134) NIOSH approved respirator, with organic vapor, acid gas and HEPA filter recommended for handling raw materials.

Warning: Do not use air purifying respirators in oxygen depleted environments. No respiratory protection is required in the clinical or home environment.

Other: None

Ventilation: Recommended

Contaminated Equipment: Wash contaminated clothing separately. Wash equipment with soap and water. Release rinse water into an approved wastewater system or according to Federal, State and Local regulations.

9. CHEMICAL & PHYSICAL PROPERTIES

Appearance & Odor:	Clear, colorless solution.		
Boiling Point:	NE	Evaporation Rate:	NE
Specific Gravity:	1.0	Vapor Density:	NE
Vapor Pressure:	NE	Viscosity:	NE
Water Solubility:	Miscible	Percent Volatile by Volume:	<1

10. STABILITY AND REACTIVITY

Chemical Stability: Stable

Conditions to avoid: Extreme heat or cold.

Incompatibility: This product has the incompatibilities of water e.g. strong acids, bases, alkali metals, alkali hydrides and silver preparations.

Hazardous Decomposition Products: Emits toxic fumes, Carbon Monoxide (CO), Carbon Dioxide (CO₂), and Hydrogen Fluoride (HF).

Hazardous Polymerization: Should not occur.

11. TOXICOLOGY INFORMATION

Summary of Risks: Toxicological information refers to raw materials product. Concentrations and toxicological effects are substantially reduced in the product. For more detailed information see MSDS on chemical material.

CAS # 3385-03-3 FLUNISOLIDE

Flunisolide has been shown to be teratogenic and fetotoxic in rabbits and rats at oral doses of 40 and 200 mcg/kg/day respectively (approximately 2 and 4 times, respectively, the maximum recommended daily intranasal dose in adults on a mg/m² basis). May cause irritation to nasal passages. Oral-rat LD₅₀ >500 ug/kg, Skin – Subcutaneous – rat LD₅₀ >46 mg/kg.

57-55-6

Propylene Glycol

May cause irritation to respiratory tract, digestive tract, eyes and skin. Prolonged or repeated contact can produce hypersensitivity (anaphylactic) in some individuals causing headache, nausea, dullness, abdominal spasms, vomiting and unconsciousness. Repeated exposure may also cause nystagmus and lymphocytosis. High vapor concentration exposure may cause central nervous system depression with headaches, dizziness and drowsiness. This material is adsorbed by inhalation, ingestion, and through the skin. Kidney injury and blood disorders may occur. Combustible liquid. Oral- rat LD₅₀- 20 g/kg, Skin-rabbit LD₅₀- 20800 mg/kg.

12. ECOLOGICAL INFORMATION

Chemical Fate Information: Product administered to patients presents a negligible impact on the environment.

13. DISPOSAL INFORMATION

Dispose of material according to Federal, State, and Local regulations. The method typically used is incineration.

EPA Designations: RCRA Hazardous Waste: Not Listed

SARA Title III: Not Listed

14. TRANSPORTATION INFORMATION

Transportation Data: Not classified as hazardous by DOT regulations.

15. REGULATORY INFORMATION

DOT Designations: Not classified as hazardous by DOT regulations.

EPA Designations: RCRA Hazardous Waste
(40 CFR 261.33) Not Listed

FDA Designations: Prescription only medication.
NDC No. 24208-344-25 (25 ml)

OSHA Designations: (29 CFR 1910.1000, Table Z)
Not Listed

SARA Title III: Not listed under Section 313 of Toxic Release Reporting.

CALIFORNIA PROPOSITION 65: This product contains chemical(s) known to the State of California to cause reproductive / developmental toxicity: CAS# 3385-03-3 listed as Flunisolide.

16. OTHER INFORMATION

None

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all-inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

NE- Not Established

< - Less Than

> - Greater Than