

BAUSCH & LOMB

Pharmaceutical Division

MATERIAL SAFETY DATA SHEET

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Core No. 285

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Levobunolol Hydrochloride Ophthalmic Solution USP, 0.5%
Generic Name: Same
NDC No. 24208-505-05 (5 ml)
24208-505-10 (10 ml)
24208-505-15 (15 ml)

Legal Category: Prescription only medicine, filled inside plastic bottle suitable for dispensing, and overpacked inside a cardboard carton.

Drug Composition: Beta-adrenoceptor blocker (Reduces intraocular pressure in the eye)

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
Levobunolol HCL	27912-14-7	NE	NE	0.5
Polyvinyl Alcohol	9002-89-5	NE	NE	≥1

Ingredients <1% - Sodium Chloride, Sodium Phosphate, Edetate Disodium, Sodium Metabisulfite, Potassium Phosphate, Benzalkonium Chloride

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Plastic bottle in a cardboard box. Clear, colorless to light yellowish solution. Potent medication. Individuals with asthma, cardiac disease and diabetes may be more susceptible to systemic effects. Patients taking phenothiazine and beta-adrenergic compounds can experience additive low blood pressure effects. Persons with various strong allergies can have an anaphylactic reaction to this preparation. Toxic by ingestion.

POTENTIAL HEALTH HAZARDS

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

Eye: May cause irritation, slight burning sensation on application and hypersensitivity (anaphylactic), especially in individuals subject to allergies. Topically administered beta-adrenergic compounds can be absorbed systemically (whole body) and effects may include acute toxicity. Acute toxicity effects include severe respiratory distress (especially asthma sufferers), cardiac effects and heart failure. Symptoms of thyroid over activity (thyrotoxicosis) and low blood sugar (hypoglycemia) may be masked by the effects of levobunolol. It is not known whether levobunolol is excreted in the milk of nursing mothers. Systemic beta-blockers are known to be excreted in breast milk.

Skin: May cause irritation. Can cause hypersensitivity, including localized and generalized rash. Systemic absorption is possible with repeated or prolonged contact.(See Eye).

Ingestion: May cause irritation and hypersensitivity, especially in individuals with other allergies. Toxic by ingestion due to systemic absorption. Can also cause nausea and diarrhea.(See Eye).

Inhalation: May cause irritation and hypersensitivity. May cause systemic effects.(See Eye).

Chronic Effects: As with other topically administered ophthalmic drugs, levobunolol may be absorbed systemically. The same adverse reactions found with systemic administration of beta-adrenergic blocking agents may occur with topical administration. Severe respiratory and cardiac reactions, including death due to bronchospasm in patients with asthma, and death in association with cardiac failure have been reported with topical application of beta-adrenergic blocking agents. Levobunolol may mask signs (e.g. rapid heart beat) of thyrotoxicosis. This product

contains sodium metabisulfite which can cause allergic-type reactions in some individuals.

Target Organs: Eye, heart, skin, digestive and respiratory tract, brain and thyroid.

Medical Conditions Aggravated by Long Term Exposure: Patients with hypersensitivity to other beta-adrenergic agents may have reactions to levobunolol. Individuals with a hypersensitivity to any component of this product. Patients conditions which may be affected include bronchial asthma, severe chronic pulmonary disease and cardiac disease. Beta adrenergic agents can mask the symptoms of hypoglycemia in diabetic patients. Levobunolol can mask signs (e.g. tachycardia) of thyrotoxicosis.

4. FIRST AID MEASURES

Eyes: If not prescribed this medication, 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 give plenty of water and bland fluids. Seek professional assistance.

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

Note to Physicians:

- Non-cardioselective beta-adrenoceptor blockers reduce cardiac output.
- Patients conditions which may be affected include bronchial asthma, severe chronic pulmonary disease, sinus bradycardia, second and third degree atrioventricular block, overt cardiac failure, cardiogenic shock or hypersensitivity to any component of this product.
- Beta adrenergic agents may mask the symptoms of hypoglycemia in diabetic patients.
- Levobunolol can mask signs (e.g. tachycardia) of thyrotoxicosis.
- Persons with a history of serious anaphylactic reactions may be more reactive to repeated contact to levobunolol, either accidental, diagnostic, or therapeutic. Patients with hypersensitivity reactions may be unresponsive to the usual doses of epinephrine used to treat allergic reactions.

5. FIRE FIGHTING MEASURES

Flammable Properties: Flash point: NE Method: NE

Hazardous Products: Acetaldehyde, Crotonaldehyde, Acetone, Sulfur Dioxide

(SO₂) and toxic fumes.

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 to light yellowish 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: Acetaldehyde, Crotonaldehyde, Acetone, Sulfur Dioxide (SO₂) and toxic fumes.

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 #

27912-14-7 **Levobunolol Hydrochloride**

May cause irritation to the eye, skin, respiratory and digestive tract. Can cause hypersensitivity (anaphylactic) especially in individuals with a history of various strong allergic reactions. Systemic toxicity effects include inflammation and irritation of the eye, skin rash, itching or hives, headaches, vomiting, diarrhea, lethargy, lack of coordination and chest pain. Severe respiratory and cardiac reactions including death due to bronchospasm in patients with asthma; and death in association with cardiac failure, have been reported with topical application of beta-adrenergic

blocking agents. Symptoms of thyroid over activity (thyrotoxicosis) and low blood sugar (hypoglycemia) may be masked by the effects of levobunolol. Fetotoxicity has been demonstrated in rabbits when 200 and 700 times the recommended human dose was administered, but fetotoxicity has not occurred in rats when 1800 times the human recommended dose was administered. Oral-rat LD₅₀ 700 mg/kg. Intravenous-rat LD₅₀ 25 mg/kg. Oral-dog LD₅₀ 100 mg/kg.

9002-89-5 **Polyvinyl Alcohol**

Dust may cause irritation to eyes and respiratory tract. No known effects by skin contact or ingestion. Inhalation of dust can induce bronchitis or asthma attacks in some individuals. No known dermal effects due to acute exposure. Degradation products of stored material are methanol (PEL=260 mg/M³) and methyl acetate (TLV=200 ppm). Decomposition products are acetaldehyde, crotonaldehyde and acetone. Oral-rat LD₅₀ >10 mg/kg. Acetaldehyde: CAS# 75-07-0; TLV=100 ppm; Suspected Carcinogen. Crotonaldehyde: CAS# 4170-30-3; PEL=2 ppm; Suspected Carcinogen. Acetone: CAS# 67-64-1; TLV= 750 ppm.

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. 24208-505-05 (5 ml)
NDC No. 24208-505-10 (10 ml)
NDC No. 24208-505-15 (15 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: Not Listed

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.

NA - Not Applicable
NE - Not Established
< - Less Than
> - Greater Than