

Ophthalmic Ointment Monographs: Dexamethasone Sodium Phosphate Ophthalmic Ointment

Type of Posting	Revision Bulletin
Posting Date	29–Jul–2016
Official Date	01–Aug–2016
Expert Committee	Chemical Medicines Monographs 1 to 6
Reason for Revision	Compliance

In accordance with the Rules and Procedures of the 2015-2020 Council of Experts, the Chemical Medicines Expert Committees 1 to 6 has revised the monographs listed below. The purpose of the revision is to replace the requirement to comply with the entire content of the USP general chapter *Ophthalmic Products—Quality Tests <771>* with a requirement to comply only with the subsection for *Particulate and Foreign Matter* in *Ophthalmic Products—Quality Tests <771>*, and with the section for *Container Content* for those monographs where the requirement for Minimum Fill was deleted.

- Atropine Sulfate Ophthalmic Ointment
- Bacitracin Ophthalmic Ointment
- Bacitracin Zinc and Polymyxin B Sulfate Ophthalmic Ointment
- Bland Lubricating Ophthalmic Ointment
- Chloramphenicol and Polymyxin B Sulfate Ophthalmic Ointment
- Chloramphenicol Ophthalmic Ointment
- Chlortetracycline Hydrochloride Ophthalmic Ointment
- Ciprofloxacin Ophthalmic Ointment
- Dexamethasone Sodium Phosphate Ophthalmic Ointment
- Erythromycin Ophthalmic Ointment
- Gentamicin and Prednisolone Acetate Ophthalmic Ointment
- Gentamicin Sulfate Ophthalmic Ointment
- Hydrocortisone Acetate Ophthalmic Ointment
- Idoxuridine Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates, Bacitracin Zinc, and Hydrocortisone Acetate Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates and Bacitracin Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates and Bacitracin Zinc Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates and Dexamethasone Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates, Bacitracin Zinc, and Hydrocortisone Ophthalmic Ointment
- Neomycin and Polymyxin B Sulfates, Bacitracin, and Hydrocortisone Acetate Ophthalmic Ointment
- Neomycin Sulfate and Dexamethasone Sodium Phosphate Ophthalmic Ointment
- Neomycin Sulfate Ophthalmic Ointment
- Oxytetracycline Hydrochloride and Polymyxin B Sulfate Ophthalmic Ointment
- Sodium Chloride Ophthalmic Ointment
- Sulfacetamide Sodium and Prednisolone Acetate Ophthalmic Ointment
- Sulfacetamide Sodium Ophthalmic Ointment
- Tetracycline Hydrochloride Ophthalmic Ointment
- Tobramycin and Dexamethasone Ophthalmic Ointment
- Tobramycin Ophthalmic Ointment

The Revision Bulletins for the monographs listed above supersede the currently official version of these monographs. The Revision Bulletin will be incorporated in the *First Supplement to USP 40–NF 35*.

Should you have any questions, please contact Margareth R. C. Marques, M.Sc., Ph.D. (301-816-8106 or mrm@usp.org).

Dexamethasone Sodium Phosphate Ophthalmic Ointment

DEFINITION

Dexamethasone Sodium Phosphate Ophthalmic Ointment is a sterile ointment containing an amount of dexamethasone sodium phosphate ($C_{22}H_{28}FN_2O_8P$) equivalent to NLT 90.0% and NMT 115.0% of the labeled amount of dexamethasone phosphate ($C_{22}H_{30}FO_8P$).

IDENTIFICATION

• A. THIN-LAYER CHROMATOGRAPHY

Solution A: Dissolve 3.1 g of boric acid, 203 mg of magnesium chloride, and 860 mg of sodium hydroxide in water to make 1000 mL.

Solution B: 1 mg/mL of alkaline phosphatase enzyme in *Solution A*

Standard solution: 300 μ g/mL of USP Dexamethasone RS in methylene chloride

Sample solution: Transfer 5 mL of the *Sample solution* obtained in the *Assay* to a 50-mL glass-stoppered tube. Add 5 mL of *Solution B*, incubate at 37° for 45 min, then add 25 mL of methylene chloride, and shake for 2 min. Evaporate 15 mL of the methylene chloride extract on a steam bath to dryness. Dissolve the residue in 1 mL of methylene chloride.

Chromatographic system

(See *Chromatography* <621>, *Thin-Layer Chromatography*.)

Adsorbent: 0.25-mm layer of chromatographic silica gel (20-cm \times 20-cm plate)

Application volume: 5 μ L

Developing solvent system: Chloroform, acetone, and water (50:50:1)

Spray reagent: Dilute sulfuric acid (1 in 2)

Analysis

Samples: *Standard solution* and *Sample solution*

Allow the spots to dry, and develop the chromatogram in a tank completely lined with a strip of filter paper, using the *Developing solvent system*, until the solvent front has moved about three-fourths of the length of the plate. Remove the plate from the developing tank, mark the solvent front, and allow the spots to dry. Spray the plate with *Spray reagent*, and heat at 105° until brown or black spots appear.

Acceptance criteria: The R_f value of the principal spot of the *Sample solution* corresponds to that of the *Standard solution*.

Add the following:

• **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.

• (IRA 1-May-2015)

ASSAY

Change to read:

• PROCEDURE

Buffer: 6.9 g/L of monobasic sodium phosphate in water

Mobile phase: Methanol and *Buffer* (52:48)

Diluent: Dissolve 0.29 g of dibasic sodium phosphate in 450 mL of water, and add 550 mL of alcohol.

Standard solution: •33 μ g/mL of freshly prepared USP Dexamethasone Sodium Phosphate RS in *Solution A* • (IRA 1-May-2015)

Sample solution: Nominally 30 μ g/mL of dexamethasone phosphate prepared as follows. Transfer a portion of Ophthalmic Ointment, equivalent to 3 mg of dexamethasone phosphate, to a 150-mL beaker. Add 65 mL of *Diluent*, and heat just to boiling. Pour the contents of the beaker into a 125-mL separator containing 45 mL of isoctane. After shaking for 1 min, decant the lower layer into a 100-mL volumetric flask with the aid of a glass funnel. Rinse the 150-mL beaker with two 15-mL portions of *Diluent*, extracting the remaining isoctane in the separator with each portion, and decanting the lower layer from each extraction into the 100-mL volumetric flask. Dilute with *Diluent* to volume, and pass through a membrane filter.

Chromatographic system

(See *Chromatography* <621>, *System Suitability*.)

Mode: LC

Detector: UV 254 nm

Column: 4-mm \times 30-cm; packing L1

Flow rate: 1.5 mL/min

Injection volume: 20 μ L

System suitability

Sample: *Standard solution*

[NOTE—The retention time for dexamethasone phosphate is about 8.5 min.]

Suitability requirements

Relative standard deviation: NMT 1.5%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of dexamethasone phosphate ($C_{22}H_{30}FO_8P$) in the portion of Ophthalmic Ointment taken:

$$\bullet \text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times 100 \bullet \text{ (IRA 1-May-2015)}$$

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

C_S = concentration of •USP Dexamethasone Sodium Phosphate RS • (IRA 1-May-2015) in the *Standard solution* (μ g/mL)

C_U = nominal concentration of dexamethasone phosphate in the *Sample solution* (μ g/mL)

• M_{r1} = molecular weight of dexamethasone phosphate, 472.44

M_{r2} = molecular weight of dexamethasone sodium phosphate, 516.40 • (IRA 1-May-2015)

Acceptance criteria: 90.0%–115.0%

PERFORMANCE TESTS

Delete the following:

• **MINIMUM FILL <755>:** Meets the requirements

▲USP39

SPECIFIC TESTS

Delete the following:

• **METAL PARTICLES IN OPHTHALMIC OINTMENTS <751>:** Meets the requirements

▲USP39

2 Dexamethasone

Change to read:

▲ **OTHER REQUIREMENTS:** It meets the requirements for Particulate and Foreign Matter and Container Contents (RB 1-Aug-2016) in *Ophthalmic Products—Quality Tests (771)*, *Drug Product Quality, Universal Tests, Particulate and Foreign Matter and Container Contents*. (RB 1-Aug-2016)

▲^{USP39}

- **STERILITY TESTS (71):** Meets the requirements

ADDITIONAL REQUIREMENTS

Change to read:

- **PACKAGING AND STORAGE:** Preserve in collapsible ophthalmic ointment tubes. Store between 8° and 27°.
 - (IRA 1-May-2015)

Change to read:

- **USP REFERENCE STANDARDS (11)**
 - USP Dexamethasone RS
 - USP Dexamethasone Sodium Phosphate RS (IRA 1-May-2015)