

- 452.160 Azithromycin oral dosage forms.
- 452.160a Azithromycin capsules.
- 452.160b Azithromycin for oral suspension.
- 452.175 Troleandomycin oral dosage forms.
- 452.175a Troleandomycin capsules.
- 452.175b Troleandomycin oral suspension.
- 452.175c Troleandomycin for oral suspension.
- 452.175d Troleandomycin chewable tablets.

**Subpart C—Injectable Dosage Forms**

- 452.225 Erythromycin ethylsuccinate injection.
- 452.230 Sterile erythromycin gluceptate.
- 452.232 Erythromycin lactobionate injectable dosage forms.
- 452.232a Erythromycin lactobionate for injection.
- 452.232b Sterile erythromycin lactobionate.

**Subpart D—Ophthalmic Dosage Forms**

- 452.310 Erythromycin ophthalmic ointment.

**Subpart E [Reserved]**

**Subpart F—Dermatologic Dosage Forms**

- 452.510 Erythromycin dermatologic dosage forms.
- 452.510a Erythromycin ointment.
- 452.510b Erythromycin topical solution.
- 452.510d Erythromycin-benzoyl peroxide topical gel.
- 452.510e Erythromycin topical gel.

**Subpart G [Reserved]**

**Subpart H—Rectal Dosage Forms**

- 452.710 Erythromycin suppositories.

**Subpart I [Reserved]**

**Subpart J—Certain Other Dosage Forms**

- 452.910 Erythromycin for prescription compounding.

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**Subpart A—Bulk Drugs**

**§ 452.10 Erythromycin.**

(a) *Requirements for certification*—(1) *Standards of identity, strength, quality, and purity.* Erythromycin is the odorless, white to grayish-white or slightly yellow compound of a kind of erythromycin or a mixture of two or more such compounds. It is so purified and dried that:

(i) It contains not less than 850 micrograms of erythromycin per milligram calculated on an anhydrous basis.

- (ii) [Reserved]
- (iii) Its moisture content is not more than 10 percent.
- (iv) Its pH is not less than 8.0 or more than 10.5.
- (v) Its residue on ignition is not more than 2.0 percent.
- (vi) Its heavy metals content is not more than 50 parts per million.
- (vii) It gives a positive identity test for erythromycin.
- (viii) It is crystalline.

(2) *Labeling.* It shall be labeled in accordance with the requirements of § 432.5 of this chapter.

(3) *Requests for certification; samples.* In addition to the requirements of § 431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, moisture, residue on ignition, heavy metals, pH, identity, and crystallinity.

(ii) Samples required: 10 packages, each containing not less than 500 milligrams.

(b) *Tests and methods of assay*—(1) *Potency.* Proceed as directed in § 436.105 of this chapter, preparing the sample for assay as follows: Dissolve an accurately weighed sample in sufficient methyl alcohol to give a concentration of 10 milligrams of erythromycin base per milliliter (estimated). Dilute this solution further with sufficient 0.1M potassium phosphate buffer, pH 8.0 (solution 3), to give a stock solution containing 1.0 milligram of erythromycin base per milliliter (estimated). Further dilute an aliquot of the stock solution with solution 3 to the reference concentration of 1.0 microgram of erythromycin base per milliliter (estimated).

(2) [Reserved]

(3) *Moisture.* Proceed as directed in § 436.201 of this chapter.

(4) *pH.* Proceed as directed in § 436.202 of this chapter, except standardize the pH meter with pH 7.0 and pH 10.0 buffers and prepare the sample as follows: Dissolve 200 milligrams of sample in 5 milliliters of reagent grade methyl alcohol. Add 95 milliliters of water and mix. Record the pH when an equilibrium value has been reached.

(5) *Residue on ignition.* Proceed as directed in § 436.207(a) of this chapter.

(6) *Heavy metals.* Proceed as directed in § 436.208 of this chapter.

(7) *Crystallinity*. Proceed as directed in § 436.203(a) of this chapter.

(8) *Identity test*. Proceed as directed in § 436.211 of this chapter, using the sample preparation method described in paragraph (b)(3) of that section.

[39 FR 19149, May 30, 1974, as amended at 42 FR 38564, July 29, 1977; 43 FR 9801, Mar. 10, 1978; 50 FR 19920, May 13, 1985]

#### § 452.15 Erythromycin estolate.

(a) *Requirements for certification—(1) Standards of identity, strength, quality, and purity*. Erythromycin estolate is the lauryl sulfate salt of the propionyl ester of a kind of erythromycin or a mixture of two or more such salts. It occurs as a white powder. It is soluble in alcohol, methyl alcohol, acetone, and chloroform, but is practically insoluble in water. It is so purified and dried that:

(i) It contains not less than 600 micrograms of erythromycin per milligram, calculated on an anhydrous basis.

(ii) Its free erythromycin content is not more than 3.0 percent.

(iii) Its moisture content is not more than 4.0 percent.

(iv) Its pH is not less than 4.5 nor more than 7.0.

(v) It gives positive identity tests for erythromycin estolate.

(vi) It is crystalline.

(2) *Labeling*. It shall be labeled in accordance with the requirements of § 432.5 of this chapter.

(3) *Requests for certification; samples*. In addition to the requirements of § 431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, free erythromycin content, moisture, pH, crystallinity, and identity.

(ii) Samples of the batch: A minimum of 10 containers, each containing not less than 300 milligrams.

(b) *Tests and methods of assay—(1) Potency*. Proceed as directed in § 436.105 of this chapter, preparing the sample for assay as follows: Dissolve an accurately weighed sample in sufficient methyl alcohol to give a concentration of 1.0 milligram of erythromycin base per milliliter (estimated). Immediately dilute this solution further with 0.1M potassium phosphate buffer, pH 8.0 (so-

lution 3), to give a concentration of 0.1 milligram of erythromycin per milliliter (estimated). Hydrolyze this solution in a 60° C. constant temperature water bath for 2 hours or at room temperature for 16 to 18 hours. Further dilute with solution 3 to the reference concentration of 1.0 microgram of erythromycin base per milliliter (estimated).

(2) *Free erythromycin content*. Proceed as directed in § 436.362 of this chapter.

(3) *Moisture*. Proceed as directed in § 436.201 of this chapter.

(4) *pH*. Proceed as directed in § 436.202 of this chapter, using an aqueous suspension containing 10 milligrams per milliliter.

(5) *Crystallinity*. Proceed as directed in § 436.203(a) of this chapter.

(6) *Identity test*. Proceed as directed in § 436.211 of this chapter, preparing the sample as described in paragraph (b)(1) of that section.

[39 FR 19149, May 30, 1974, as amended at 50 FR 19920, May 13, 1985; 53 FR 1920, Jan. 25, 1988]

#### § 452.25 Erythromycin ethylsuccinate.

(a) *Requirements for certification—(1) Standards of identity, strength, quality, and purity*. Erythromycin ethylsuccinate is the white, odorless, ethylsuccinate ester of erythromycin. It is so purified and dried that:

(i) It contains not less than 765 micrograms of erythromycin per milligram, calculated on an anhydrous basis.

(ii) [Reserved]

(iii) Its moisture content is not more than 3.0 percent.

(iv) Its pH is not less than 6.0 and not more than 8.5.

(v) Its residue on ignition is not more than 1.0 percent.

(vi) It gives a positive identity test for erythromycin ethylsuccinate.

(vii) It is crystalline.

(2) *Labeling*. It shall be labeled in accordance with the requirements of § 432.5(b) of this chapter.

(3) *Requests for certification; samples*. In addition to complying with the requirements of § 431.1 of this chapter, each such request shall contain: