

BRIEFING

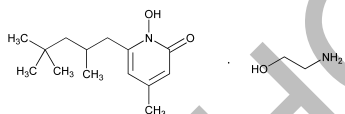
Piroctone Olamine. This monograph was posted on the USP Website as a draft USP Pending Standard for public comment. No comments were received. The MD-ODD reviewed the draft and approved the monograph as an Authorized USP Pending Standard. The liquid chromatographic procedure used in the test for *Related compounds* is based on analyses performed with the Merck KGaA Chromolith Performance RP-18e brand of L1 column. The typical retention times reported for piroctone olamine, piroctone related compound A, and piroctone related compound B are about 9.8, 5.3, and 12.5 minutes, respectively.

(MD-ODD: F. Mao) RTS—C41802

Add the following:

■ **Piroctone Olamine**

v. 1 Authorized September 20, 2007



$C_{14}H_{23}NO_2 \cdot C_2H_7NO$ 298.42

2(1*H*)-Pyridinone, 1-hydroxy-4-methyl-6-(2,4,4-trimethylpentyl)-, compound with 2-aminoethanol (1 : 1).

1-Hydroxy-4-methyl-6-(2,4,4-trimethylpentyl)-2(1*H*)-pyridone compound with 2-aminoethanol (1 : 1)
[68890-66-4].

» Piroctone Olamine contains not less than 98.0 percent and not more than 101.5 percent of $C_{14}H_{23}NO_2 \cdot C_2H_7NO$, calculated on the dried basis.

Packaging and storage—Preserve in well-closed, light-resistant containers. Store at room temperature.

USP Reference standards (11)—*USP Piroctone Olamine RS*. *USP Piroctone Related Compound A RS*. *USP Piroctone Related Compound B RS*.

Identification—

A: *Infrared Absorption* (197K).

B: *Ultraviolet Absorption* (197U)—

Solution: 30 µg per mL.

Medium: 0.1 N solution of sodium hydroxide in methanol.

Absorptivity at the absorbance maximum of about 317 nm, calculated on the dried basis, is between 21.4 and 23.6.

pH (791): between 8.5 and 10.0, in a suspension of 10 mg per mL of water.

Loss on drying (731)—Dry about 1 g in vacuum at a pressure between 11 and 18 mm of mercury at room temperature for 6 hours: it loses not more than 0.3% of its weight.

Residue on ignition (281): not more than 0.2%.

Heavy metals, Method II (231): not more than 10 ppm.

Related compounds—

Solution A—Mix 50 mg of EDTA with 1 mL phosphoric acid, and dilute with water to 1 L. Adjust with sodium hydroxide to a pH of 2.4, and filter.

Solution B—Use acetonitrile.

Diluent—Prepare a mixture of acetonitrile and *Solution A* (60 : 40).

Standard solution—Dissolve accurately weighed quantities of USP Piroctone Olamine RS, USP Piroctone Related Compound A RS, and USP Piroctone Related Compound B RS in *Diluent*, and sonicate, if necessary, to obtain a solution having known concentrations of about 0.004 mg per mL each.

Test solution—Dissolve an accurately weighed quantity of Piroctone Olamine in *Diluent*, and sonicate, if necessary, to obtain a solution having a known concentration of about 1.6 mg per mL.

Chromatographic system (see *Chromatography* (621))—The liquid chromatograph is equipped with a 210-nm detector, a 303-nm detector, and a 4.6-mm × 10-cm column that contains packing L1. The flow rate is about 1.5 mL per minute. The chromatograph is programmed as follows.

2 / Piroctone Olamine

Time (minutes)	Solution A (%)	Solution B (%)	Elution
0–8	60	40	isocratic
8–16	60→30	40→70	linear gradient
16–17	30→60	70→40	linear gradient
17–20	60	40	equilibration

Chromatograph 10 µL of the *Standard solution*, and record the peak areas as directed for *Procedure*: the resolution, *R*, between piroctone olamine and piroctone related compound A is not less than 8.0; the resolution, *R*, between piroctone olamine and piroctone related compound B is not less than 8.0; and the relative standard deviation of the piroctone olamine peak for replicate injections is not more than 10.0%. [NOTE—Piroctone related compound A and piroctone related compound B are detected at 210 nm and 303 nm, respectively. The relative retention times given in *Table 1* are measured with respect to piroctone olamine.]

Procedure—Separately inject equal volumes (about 10 µL) of the *Standard solution* and the *Test solution* into the chromatograph, and record the chromatograms. Calculate the percentage of piroctone related compound A and piroctone related compound B in the portion of Piroctone Olamine taken by the formula:

$$100(C_s / C_v)(r_v / r_s)$$

in which *C_s* is the corresponding concentration, in mg per mL, of piroctone related compound A or B in the *Standard solution*; *C_v* is the concentration, in mg per mL, of the *Test solution*; and *r_v* and *r_s* are the peak areas of the corresponding piroctone related compounds obtained from the *Test solution* and the *Standard solution*, respectively. Calculate the percentage of any unspecified impurity in the portion of Piroctone Olamine taken by the formula:

$$100(r_i / r_s)$$

in which *r_i* and *r_s* are the peak areas of any unspecified impurity and the sum of all peak areas obtained from the *Test solution*, respectively. The limits are given in *Table 1*.

Table 1

Name	Relative Retention Time	Limit (%)
Piroctone related compound A ¹	0.54	0.50
Piroctone related compound B ²	1.28	0.50
Individual unspecified impurity	—	1.0
Total impurities	—	1.0

¹ 2-[5-Methyl-3-(2,4,4-trimethylpentyl)-4,5-dihydroisoxazol-5-yl]acetic acid, ethanolamine salt. [C₁₄H₂₅NO₃ · C₂H₇NO, 316.44].

² 4-Methyl-6-(2,4,4-trimethylpentyl)-2H-pyran-2-one [C₁₄H₂₂O₂, 222.32].

Monoethanolamine content—Dissolve 0.2 g of Piroctone Olamine, accurately weighed, in glacial acetic acid. Titrate with 0.1 N perchloric acid VS, determining the endpoint potentiometrically (see *Titrimetry* <541>). Each mL of 0.1 N perchloric acid is equivalent to 6.108 mg of monoethanolamine. The content of monoethanolamine is not less than 201 mg per g and not more than 209 mg per g of Piroctone Olamine found in the *Assay*, calculated on the dried basis.

Assay—Dissolve 200 mg of Piroctone Olamine, accurately weighed, in 20 mL of methanol. Add 20 mL of water, mix, and titrate with 0.1 N sodium hydroxide VS, determining the endpoint potentiometrically (see *Titrimetry* <541>). Each mL of 0.1 N sodium hydroxide is equivalent to 29.84 mg of C₁₄H₂₃NO₂ · C₂H₇NO. ■