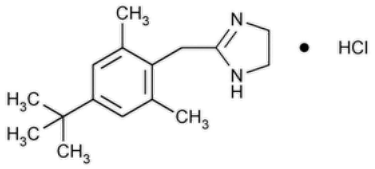
Status: Currently Official on 18-Feb-2025
Official Date: Official as of 01-May-2020
Document Type: USP Monographs
DocId: GUID-7C877C1B-6949-4F30-AFF5-F734780AC860_3_en-US
DOI: https://doi.org/10.31003/USPNF_M89270_03_01
DOI Ref: ii7fs

Xylometazoline Hydrochloride



$C_{16}H_{24}N_2 \cdot HCl$ 280.84

1*H*-Imidazole, 2-[[4-(1,1-dimethylethyl)-2,6-dimethylphenyl]methyl]-4,5-dihydro-, monohydrochloride;

2-(4-*tert*-Butyl-2,6-dimethylbenzyl)-2-imidazoline monohydrochloride CAS RN®: 1218-35-5; UNII: X5S84033NZ.

DEFINITION

Change to read:

Xylometazoline Hydrochloride contains ▲NLT 98.0% and NMT 102.0%▲ (USP 1-Aug-2019) of xylometazoline hydrochloride ($C_{16}H_{24}N_2 \cdot HCl$), calculated on the dried basis.

IDENTIFICATION

Change to read:

• **A.** ▲**Spectroscopic Identification Tests** ⟨197⟩, *Infrared Spectroscopy*: **197M**▲ (CN 1-May-2020) , ▲⟨197K⟩, or ⟨197A⟩▲ (USP 1-Aug-2019)

Change to read:

• **B.** ▲The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.▲ (USP 1-Aug-2019)

Add the following:

▲• **C.** **Identification Tests—General** ⟨191⟩, *Chemical Identification Tests, Chloride*

Sample solution: 5 mg/mL of Xylometazoline Hydrochloride in water

Acceptance criteria: Meets the requirements of the silver nitrate precipitate test▲ (USP 1-Aug-2019)

ASSAY

Change to read:

• **Procedure**

▲**Solution A:** 1.4 g/L of monobasic potassium phosphate. Adjust with phosphoric acid to a pH of 3.0.

Solution B: Acetonitrile

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	70	30
5	70	30
20	15	85
35	15	85
37	70	30
45	70	30

System suitability solution: 0.02 mg/mL each of USP Xylometazoline Hydrochloride RS and USP Xylometazoline Related Compound A RS in water

Standard solution: 0.1 mg/mL of USP Xylometazoline Hydrochloride RS in water

Sample solution: 0.1 mg/mL of Xylometazoline Hydrochloride in water

Chromatographic system

(See *Chromatography ⟨621⟩, System Suitability*.)

Mode: LC

Detector: UV 220 nm

Column: 4.6-mm × 25-cm; 5-µm packing L1

Flow rate: 1 mL/min

Injection volume: 10 µL

System suitability

Samples: *System suitability solution* and *Standard solution*

[Note—The relative retention times are given in *Table 2*.]

Suitability requirements

Resolution: NLT 2.0 between xylometazoline related compound A and xylometazoline, *System suitability solution*

Tailing factor: NMT 2.0, *Standard solution*

Relative standard deviation: NMT 0.73%, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of xylometazoline hydrochloride ($C_{16}H_{24}N_2 \cdot HCl$) in the portion of Xylometazoline Hydrochloride taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of xylometazoline from the *Sample solution*

r_S = peak response of xylometazoline from the *Standard solution*

C_S = concentration of USP Xylometazoline Hydrochloride RS in the *Standard solution* (mg/mL)

C_U = concentration of Xylometazoline Hydrochloride in the *Sample solution* (mg/mL)

Acceptance criteria: 98.0%–102.0% on the dried basis▲ (USP 1-Aug-2019)

IMPURITIES

• **Residue on Ignition ⟨281⟩:** NMT 0.1%

Change to read:

• **Organic Impurities**

▲**Solution A, Solution B, Mobile phase, System suitability solution,** and **Chromatographic system:** Proceed as directed in the *Assay*.

Sensitivity solution: 0.5 µg/mL of USP Xylometazoline Hydrochloride RS in water

Standard solution: 0.002 mg/mL of USP Xylometazoline Hydrochloride RS in water

Sample solution: 1.0 mg/mL of Xylometazoline Hydrochloride in water

System suitability

Samples: *System suitability solution*, *Sensitivity solution*, and *Standard solution*

[Note—The relative retention times are given in *Table 2*.]

Suitability requirements

Resolution: NLT 2.0 between xylometazoline related compound A and xylometazoline, *System suitability solution*

Tailing factor: NMT 2.0, *Standard solution*

Relative standard deviation: NMT 5.0%, *Standard solution*

Signal-to-noise ratio: NLT 10, *Sensitivity solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Xylometazoline Hydrochloride taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (1/F) \times 100$$

r_U = peak response of each impurity from the *Sample solution*

r_S = peak response of xylometazoline from the *Standard solution*

C_S = concentration of USP Xylometazoline Hydrochloride RS in the *Standard solution* (mg/mL)

C_U = concentration of Xylometazoline Hydrochloride in the *Sample solution* (mg/mL)

F = relative response factor for the corresponding impurity (see *Table 2*)

Acceptance criteria: See *Table 2*. The reporting threshold is 0.05%.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Xylometazoline related compound A	0.89	0.67	0.2
Xylometazoline	1.0	—	—
Any individual unspecified impurity	—	1.0	0.10
Total impurities	—	—	0.5

▲ (USP 1-Aug-2019)

SPECIFIC TESTS

Change to read:

• **pH** ⟨791⟩

▲**Sample solution:** 50 mg/mL of Xylometazoline Hydrochloride in water

Acceptance criteria: 5.0–6.6▲ (USP 1-Aug-2019)

• **Loss on Drying** ⟨731⟩

Analysis: Dry at 105° for 4 h.

Acceptance criteria: NMT 0.5%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight, light-resistant containers.

Change to read:

• **USP Reference Standards** ⟨11⟩

USP Xylometazoline Hydrochloride RS

▲ USP Xylometazoline Related Compound A RS

N-(2-Aminoethyl)-2-[4-(*tert*-butyl)-2,6-dimethylphenyl]acetamide.

$C_{16}H_{26}N_2O$ 262.39▲ (USP 1-Aug-2019)

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
XYLOMETAZOLINE HYDROCHLORIDE	Documentary Standards Support	SM52020 Small Molecules 5
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM52020 Small Molecules 5

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 44(3)

Current DocID: GUID-7C877C1B-6949-4F30-AFF5-F734780AC860_3_en-US

DOI: https://doi.org/10.31003/USPNF_M89270_03_01

DOI ref: ii7fs