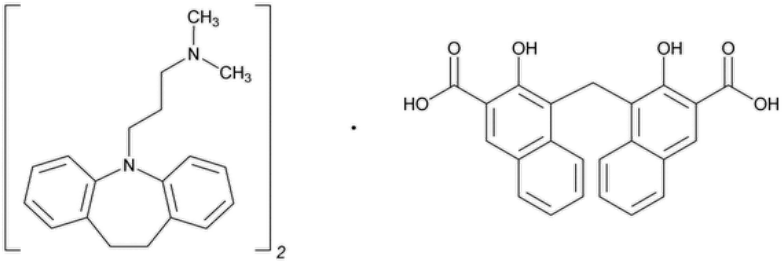
Status: Currently Official on 15-Feb-2025
Official Date: Official as of 01-May-2020
Document Type: USP Monographs
DocId: GUID-C9246CF0-C0BD-455F-BEFD-BB1999EF680C_4_en-US
DOI: https://doi.org/10.31003/USPNF_M40100_04_01
DOI Ref: s5q1s

Imipramine Pamoate



$(C_{19}H_{24}N_2)_2 \cdot C_{23}H_{16}O_6$ 949.18

Naphthalenecarboxylic acid, 4,4'-methylenebis[3-hydroxy-, compd. with 5*H*-dibenz[*b,f*]azepine-5-propanamine, 10,11-dihydro-*N,N*-dimethyl-, 2-(1:2);

5-[3-(Dimethylamino)propyl]-10,11-dihydro-5*H*-dibenz[*b,f*]azepine compound (2:1) with 4,4'-methylenebis(3-hydroxy-2-naphthoic acid);

3-[10,11-Dihydro-5*H*-dibenzo[*b,f*]azepin-5-yl)-*N,N*-dimethylpropan-1-amine 4,4'-methylenebis(3-hydroxy-2-naphthoate) salt (2:1) CAS RN®: 10075-24-8; UNII: MC34P30298.

DEFINITION

Imipramine Pamoate contains NLT 98.0% and NMT 102.0% of imipramine pamoate [$(C_{19}H_{24}N_2)_2 \cdot C_{23}H_{16}O_6$], calculated on anhydrous basis.

IDENTIFICATION

Change to read:

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

• **B.** The retention times of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the *Assay*.

ASSAY

• **Procedure**

Buffer: 5.2 g/L of dibasic potassium phosphate in water

Solution A: Acetonitrile and *Buffer* (15:85). Adjust with phosphoric acid to a pH of 8.0.

Solution B: Acetonitrile and *Buffer* (38:62). Adjust with phosphoric acid to a pH of 8.0.

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	90	10
10	70	30
20	35	65
30	35	65
31	90	10
35	90	10

Diluent: Acetonitrile and water (75:25)

Standard stock solution: 2 mg/mL of USP Imipramine Pamoate RS in *Diluent*

Standard solution: 0.2 mg/mL of USP Imipramine Pamoate RS from *Standard stock solution* in *Solution A*

Sample stock solution: 2 mg/mL of Imipramine Pamoate in *Diluent*

Sample solution: 0.2 mg/mL of Imipramine Pamoate from *Sample stock solution* in *Solution A*

Chromatographic system

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

Mode: LC

Detector: UV 269 nm

Column: 4.6-mm × 15-cm; 5-µm packing L1

Autosampler temperature: 10°

Flow rate: 1.5 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

[Note—Approximate relative retention times for pamoic acid and imipramine are 0.3 and 1.0, respectively.]

Suitability requirements

Resolution: NLT 2.0 between pamoic acid and imipramine

Tailing factor: NMT 1.8 for imipramine

Relative standard deviation: NMT 2.0% for imipramine

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of imipramine pamoate $[(C_{19}H_{24}N_2)_2 \cdot C_{23}H_{16}O_6]$ in the portion of Imipramine Pamoate taken:

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

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

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

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

C_U = concentration of Imipramine Pamoate in the *Sample solution* (mg/mL)

Acceptance criteria: 98.0%–102.0% on the anhydrous basis

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.10%
- **Organic Impurities**

Buffer: 5.2 g/L of dibasic potassium phosphate in water

Solution A: Acetonitrile and *Buffer* (38:62). Adjust with phosphoric acid to a pH of 7.9.

Solution B: Acetonitrile and *Buffer* (70:30). Adjust with phosphoric acid to a pH of 6.0.

Mobile phase: See *Table 2*.

Table 2

Time (min)	Solution A (%)	Solution B (%)
0	100	0
15	100	0
50	0	100
60	0	100
61	100	0

Time (min)	Solution A (%)	Solution B (%)
75	100	0

Diluent: Acetonitrile and water (75:25)

System suitability solution: 0.5 mg/mL of USP Imipramine Pamoate RS, 0.02 mg/mL of USP Depramine RS, and 0.02 mg/mL USP Iminodibenzyl RS in *Diluent*

Standard solution: 0.002 mg/mL of USP Imipramine Pamoate RS in *Diluent*

Sample solution: 2 mg/mL of Imipramine Pamoate in *Diluent*

Chromatographic system

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

Mode: LC

Detector: UV 220 nm

Column: 4.6-mm × 15-cm; 5-µm packing L1

Temperatures

Column: 40°

Autosampler: 10°

Flow rate: 1.0 mL/min

Injection volume: 10 µL

System suitability

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

[NOTE—See *Table 3* for relative retention times.]

Suitability requirements

Resolution: NLT 5.0 between imipramine and depramine, *System suitability solution*

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

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Imipramine Pamoate taken:

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

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

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

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

C_U = concentration of Imipramine Pamoate in the *Sample solution* (mg/mL)

Acceptance criteria: See *Table 3*. Disregard peaks that are less than 0.05% of the imipramine peak.

Table 3

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
Pamoic acid (Pamoate)[a]	0.2	—
Desipramine[b]	0.5	0.10
Depramine	0.7	0.10
Imipramine	1.0	—
Iminodibenzyl	3.7	0.10

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
Any individual, unspecified impurity	—	0.10
Total impurities	—	0.75

[a] Pamoic acid is not an impurity. It is listed for identification purposes only.

[b] 10,11-Dihydro-5-[3-(methylamino)propyl]-5*H*-dibenz[*b,f*]azepine.

SPECIFIC TESTS

• **Water Determination,** *Method I* ⟨921⟩: NMT 2.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers, and store at controlled room temperature.

• **USP Reference Standards** ⟨11⟩

USP Depramine RS
3-(5*H*-Dibenzo[*b,f*]azepin-5-yl)-*N,N*-dimethylpropan-1-amine.
$C_{19}H_{22}N_2$ 278.39

USP Iminodibenzyl RS
10,11-Dihydro-5*H*-dibenzo[*b,f*]azepine.
$C_{14}H_{13}N$ 195.28

USP Imipramine Pamoate RS

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

Topic/Question	Contact	Expert Committee
IMIPRAMINE PAMOATE	Documentary Standards Support	SM42020 Small Molecules 4

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 39(5)

Current DocID: GUID-C9246CF0-C0BD-455F-BEFD-BB1999EF680C_4_en-US
DOI: https://doi.org/10.31003/USPNF_M40100_04_01
DOI ref: s5q1s