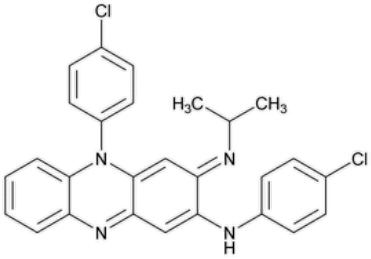
Status: Currently Official on 14-Feb-2025
Official Date: Official as of 01-May-2020
Document Type: USP Monographs
DocId: GUID-8784069D-3768-4BBD-AD6F-3B1AB16010A7_2_en-US
DOI: https://doi.org/10.31003/USPNF_M18360_02_01
DOI Ref: l1any

Clofazimine



$C_{27}H_{22}Cl_2N_4$ 473.40

2-Phenazinamine, *N*,5-bis(4-chlorophenyl)-3,5-dihydro-3-[(1-methylethyl)imino]-;

3-(*p*-Chloroanilino)-10-(*p*-chlorophenyl)-2,10-dihydro-2-(isopropylimino)phenazine CAS RN®: 2030-63-9; UNII: D959AE5USF.

DEFINITION

Clofazimine contains NLT 98.0% and NMT 102.0% of clofazimine ($C_{27}H_{22}Cl_2N_4$), calculated on the dried basis.

Change to read:

IDENTIFICATION

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

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

ASSAY

• **Procedure**

Buffer: 4.5 mg/mL of sodium dodecyl sulfate, 1.7 mg/mL of tetrabutylammonium hydrogen sulfate, and 1.8 mg/mL of disodium hydrogen phosphate in water. Adjust with dilute phosphoric acid (about 8.5%) to a pH of 3.0 in 90% of the volume before diluting with water to volume.

Mobile phase: Acetonitrile and *Buffer* (65:35)

Standard solution: 0.05 mg/mL of USP Clofazimine RS in *Mobile phase*

Sample solution: 0.05 mg/mL of Clofazimine in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 280 nm

Column: 4.6-mm × 25-cm; 5-µm packing L7

Flow rate: 1.0 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.5 for the clofazimine peak, *Standard solution*

Relative standard deviation: NMT 0.73% for the clofazimine peak, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of clofazimine ($C_{27}H_{22}Cl_2N_4$) in the portion of Clofazimine taken:

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

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

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

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

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

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.1%
- **Organic Impurities**

Buffer, Mobile phase, and **Chromatographic system:** Proceed as directed in the *Assay*.

System suitability solution: 0.5 mg/mL of USP Clofazimine RS and 1.5 µg/mL of USP Clofazimine Related Compound B RS in *Mobile phase*

Standard solution: 0.5 µg/mL of USP Clofazimine RS and 5.0 µg/mL of USP Clofazimine Related Compound B RS in *Mobile phase*

Sample solution: 0.5 mg/mL of Clofazimine in *Mobile phase*

System suitability

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

Suitability requirements

Resolution: NLT 2.0 between the clofazimine and clofazimine related compound B peaks, *System suitability solution*

Relative standard deviation: NMT 2.8% for the clofazimine peak and NMT 2.0% for the clofazimine related compound B peak, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of clofazimine related compound B in the portion of Clofazimine taken:

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

r_U = peak response of clofazimine related compound B from the *Sample solution*

r_S = peak response of clofazimine related compound B from the *Standard solution*

C_S = concentration of USP Clofazimine Related Compound B RS in the *Standard solution* (mg/mL)

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

Calculate the percentage of any individual unspecified impurity in the portion of Clofazimine taken:

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

r_U = peak response of any individual unspecified impurity from the *Sample solution*

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

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

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

Acceptance criteria: See *Table 1*. Disregard any impurity peaks less than 0.05%.

Table 1

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
Clofazimine related compound B	0.81	1.0
Clofazimine	1.00	—

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
Any individual unspecified impurity	—	0.10
Total impurities	—	2.0

SPECIFIC TESTS

• **Loss on Drying** ⟨731⟩

Analysis: Dry a sample at 105° for 3 h.

Acceptance criteria: NMT 0.5%

ADDITIONAL REQUIREMENTS

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

• **USP Reference Standards** ⟨11⟩

USP Clofazimine RS

USP Clofazimine Related Compound B RS

5-(4-Chlorophenyl)-3-(isopropylimino)-*N*-phenyl-3,5-dihydrophenazin-2-amine.

$C_{27}H_{23}ClN_4$ 438.95

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

Topic/Question	Contact	Expert Committee
CLOFAZIMINE	Documentary Standards Support	SM12020 Small Molecules 1

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 40(5)

Current DocID: GUID-8784069D-3768-4BBD-AD6F-3B1AB16010A7_2_en-US

DOI: https://doi.org/10.31003/USPNF_M18360_02_01

DOI ref: l1any