C_U = nominal concentration of diclofenac sodium in the *Sample solution* (mg/mL)

Acceptance criteria

Individual impurities: NMT 0.5% of diclofenac related compound A; NMT 1.0% of any other individual impurity

Total impurities: NMT 1.5%

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers.
- **USP REFERENCE STANDARDS** ⟨**11**⟩

USP Diclofenac Sodium RS

USP Diclofenac Related Compound A RS

N-(2,6-Dichlorophenyl)indolin-2-one.

$C_{14}H_9Cl_2NO$ 278.14

Diclofenac Sodium Extended-Release Tablets

DEFINITION

Diclofenac Sodium Extended-Release Tablets contain NLT 90.0% and NMT 110.0% of the labeled amount of diclofenac sodium ($C_{14}H_{10}Cl_2NNaO_2$).

IDENTIFICATION

- **A.** The retention time of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.
- **B. THIN-LAYER CHROMATOGRAPHIC IDENTIFICATION TEST** ⟨**201**⟩

Standard solution: 2.0 mg/mL of USP Diclofenac Sodium RS in methanol. [NOTE—Shake by mechanical means for 10 min before makeup to final volume.]

Sample solution: Equivalent to 2.0 mg/mL of diclofenac sodium from a portion of the powder (NL T 10 Tablets) in methanol. [NOTE—Sonicate for 10 min, and shake by mechanical means for 10 min before makeup to final volume. Centrifuge this solution, and use the clear supernatant.]

Developing solvent system: Methanol, toluene, and glacial acetic acid (8:12:0.1)

ASSAY

- **PROCEDURE**

[NOTE—Protect the *Standard solution*, *System suitability solution*, and *Sample solution* from light.]

Diluent: Methanol and water (7:3)

Buffer: 0.01 M phosphoric acid and 0.01 M monobasic sodium phosphate. Adjust with appropriate component to a pH of 2.5.

Mobile phase: Methanol and *Buffer* (7:3)

Standard solution: 0.5 mg/mL of USP Diclofenac Sodium RS in *Diluent*

Resolution solution: 20 µg/mL of diethyl phthalate, 7.5 µg/mL of USP Diclofenac Related Compound A RS, and 0.75 mg/mL of USP Diclofenac Sodium RS in *Diluent*

Sample solution: Powder NLT 20 Tablets, and transfer a weighed portion of the powder, equivalent to 100 mg of diclofenac sodium, to a 200-mL volumetric flask, and add 150 mL of *Diluent*. Heat on a steam bath for 3–5 min, and sonicate for 20 min. Cool to room temperature, and dilute with *Diluent* to volume. Place the flask in an ice bath for 45 min, shaking occasionally to precipitate out any undissolved waxy material. Pass a portion of the chilled solution through a filter of 0.45-µm or finer pore size. Allow the filtrate to reach room temperature before using.

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; packing L7

Flow rate: 1 mL/min

Injection size: 10 µL

System suitability

Samples: *Standard solution* and *Resolution solution*

[NOTE—The relative retention times for diethyl phthalate, diclofenac related compound A, and diclofenac are 0.5, 0.6, and 1.0, respectively.]

Suitability requirements

Resolution: NLT 2.2 between the diethyl phthalate and diclofenac related compound A peaks, and NL T 3.8 between the diclofenac related compound A and diclofenac peaks, *Resolution solution*

Relative standard deviation: NMT 2.0% for diclofenac, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of $C_{14}H_{10}Cl_2NNaO_2$ in the portion of Tablets taken:

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

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

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

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

C_U = nominal concentration of diclofenac sodium in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

- **DISSOLUTION** ⟨**711**⟩

Test 1

Medium: 0.05 M phosphate buffer, pH 7.5; 900 mL

Apparatus 2: 50 rpm; use wire sinkers.

Times: 1, 5, 10, 16, and 24 h

Detector: UV 276 nm

Standard solution: USP Diclofenac Sodium RS in *Medium*

Analysis: Pass portions of the solution under test through a suitable filter. Dilute with *Medium*, if necessary, to a concentration similar to that of the *Standard solution*.

Tolerances: The percentages of the labeled amount of $C_{14}H_{10}Cl_2NNaO_2$ dissolved at the times specified conform to *Acceptance Table 2*.

Time (h)	Amount Dissolved
1	15%–35%
5	45%–65%
10	65%–85%
16	75%–95%
24	NLT 80%

Test 2: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 2*.

Medium, Apparatus, and **Analysis:** Proceed as directed for *Dissolution Test 1*.

Times: 1, 2, 4, 6, and 10 h

Tolerances: The percentages of the labeled amount of $C_{14}H_{10}Cl_2NNaO_2$ dissolved at the times specified conform to *Acceptance Table 2*.

Time (h)	Amount Dissolved
1	NMT 28%
2	20%–40%
4	35%–60%
6	50%–80%
10	NLT 65%

Test 3: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 3*.
Medium and **Analysis:** Proceed as directed for *Dissolution Test 1*.
Apparatus 1: 100 rpm
Times: 2, 4, 8, and 16 h
Tolerances: The percentages of the labeled amount of $C_{14}H_{10}Cl_2NNaO_2$ dissolved at the times specified conform to *Acceptance Table 2*.

Time (h)	Amount Dissolved
2	22%–42%
4	34%–61%
8	52%–82%
16	NLT 73%

Test 4: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 4*.
Medium and **Analysis:** Proceed as directed for *Test 1*.
Apparatus 1: 100 rpm
Times: 2, 4, 8, and 16 h
Tolerances: The percentages of the labeled amount of $C_{14}H_{10}Cl_2NNaO_2$ dissolved at the times specified conform to *Acceptance Table 2*.

Time (h)	Amount Dissolved
2	20%–40%
4	35%–55%
8	60%–85%
16	NLT 85%

- **UNIFORMITY OF DOSAGE UNITS ⟨905⟩:** Meet the requirements

IMPURITIES
Organic Impurities
- **PROCEDURE**

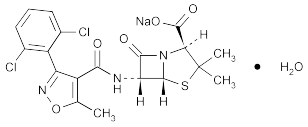
Diluent, Buffer, Mobile phase, Resolution solution, Sample solution, Chromatographic system, and **System suitability:** Proceed as directed in the *Assay*.
Standard stock solution: 0.8 mg/mL of USP Diclofenac Related Compound A RS in *Diluent*
Standard solution: 4 µg/mL of USP Diclofenac Related Compound A RS, made by diluting a measured volume of *Standard stock solution* with *Diluent*
System suitability solution: 0.5 mg/mL of USP Diclofenac Sodium RS in *Diluent*
System suitability
Samples: *Resolution solution* and *System suitability solution*
[NOTE—The relative retention times for diethyl phthalate, diclofenac related compound A, and diclofenac are 0.5, 0.6, and 1.0, respectively.]
Suitability requirements
Resolution: NLT 2.2 between the diethyl phthalate and diclofenac related compound A peaks; and NL T 3.8 between the diclofenac related compound A and the diclofenac peaks, *Resolution solution*
Standard deviation: NMT 2.0% for the diclofenac peak, *System suitability solution*
Analysis
Samples: *Sample solution* and *Standard solution*
Calculate the percentage of each impurity in the portion of Tablets taken:

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

r_U = peak response for any impurity from the *Sample solution*
r_S = peak response for USP Diclofenac Related Compound A RS from the *Standard solution*
C_S = concentration (mg/mL) of USP Diclofenac Related Compound A RS in the *Standard solution*
C_U = concentration (mg/mL) of diclofenac sodium in the *Sample solution*
Acceptance criteria
Total impurities: NMT 1.5%

ADDITIONAL REQUIREMENTS
- **PACKAGING AND STORAGE:** Preserve in well-closed containers. Store at controlled room temperature, and protect from light.
- **LABELING:** When more than one *Dissolution* test is given, the labeling states the test used only if *Test 1* is not used.
- **USP REFERENCE STANDARDS ⟨11⟩**
USP Diclofenac Sodium RS
USP Diclofenac Related Compound A RS
N-(2,6-Dichlorophenyl)indolin-2-one.
$C_{14}H_9Cl_2NO$ 278.14

Dicloxacillin Sodium



$C_{19}H_{16}Cl_2N_3NaO_5S \cdot H_2O$ 510.32
4-Thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid, 6-[[[3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl]carbonyl]amino]-3,3-dimethyl-7-oxo-, monosodium salt, monohydrate, [2 *S*-(2α,5α,6β)]-.
Monosodium (2 *S*,5*R*,6*R*)-6-[3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolecarboxamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo [3.2.0]heptane-2-carboxylate monohydrate [13412-64-1].
Anhydrous 492.32 [343-55-5].

» Dicloxacillin Sodium contains the equivalent of not less than 850 µg of dicloxacillin ($C_{19}H_{17}Cl_2N_3O_5S$) per mg.

Packaging and storage—Preserve in tight containers.

USP Reference standards ⟨11⟩—
USP Dicloxacillin Sodium RS
Identification—

A: *Infrared Absorption ⟨197K⟩*.

B: Ignite about 100 mg: a 1 in 20 solution of the residue in acetic acid responds to the tests for *Sodium ⟨191⟩*.

Crystallinity ⟨695⟩: meets the requirements.
pH ⟨791⟩: between 4.5 and 7.5, in a solution containing 10 mg per mL.
Water, *Method I ⟨921⟩*: between 3.0% and 5.0%.
Dimethylaniline ⟨223⟩: meets the requirement.
Assay—

Diluent—Dissolve 5.44 g of monobasic potassium phosphate in water to make 2000 mL of solution, and adjust with 8 N potassium hydroxide to a pH of 5.0 ± 0.1.

Mobile phase—Prepare a suitable filtered mixture of *Diluent* and acetonitrile (1500:500). Make adjustments if necessar y (see *System Suitability* under *Chromatography ⟨621⟩*). Increasing the acetonitrile concentration decreases the retention time of dicloxacillin.

Standard preparation—Dissolve an accurately weighed quantity of USP Dicloxacillin Sodium RS in *Diluent* to obtain a solution having a known concentration of about 1.1 mg per mL. [NOTE—Use this *Standard preparation* promptly, or refrigerate and use on the day prepared.]