**Sodium (6)**

**Assay—**

Mobile phase—Dissolve 5.75 g of monobasic ammonium phosphate in 700 mL of water, add 3.2 mL of a 40% solution of tetrabutylammonium hydroxide, 280 mL of methanol, and 25 mL of tetrahydrofuran, and mix. Adjust with phosphoric acid to a pH of 4.5 ± 0.1, pass through a filter having a 0.5-µm or finer porosity, and degas. Make adjustments if necessary (see System Suitability Chromatography (621)).

Standard preparation—Quantitatively dissolve an accurately weighed quantity of USP Cefmetazole RS in Mobile phase to obtain a solution having a known concentration of about 200 µg of cefmetazole (C₁₅H₁₇N₇O₅S₃) per mL. [NOTE—Use this solution within 10 minutes.]

Resolution solution—Prepare a solution of USP Cefmetazole RS in 0.01 N sodium hydroxide containing about 1 mg per mL. Heat at 95° for 10 minutes. To 1 mL of this solution add 2 mL of Standard preparation, and dilute with Mobile phase to obtain 20 mL of solution. This solution contains cefmetazole and cefmetazole lactone (resolution compound).

Assay preparation—Transfer about 20 mg of Cefmetazole, accurately weighed, to a 100-ml volumetric flask, dilute with Mobile phase to volume, and mix. [NOTE—Use this solution within 10 minutes.]

Chromatographic system (see Chromatography (621))—The liquid chromatograph is equipped with a 214-nm detector and a 4.6-mm x 25-cm column that contains packing L1. The flow rate is about 2 mL per minute. Chromatograph the Resolution solution, and record the peak responses as directed for Procedure: the resolution, R, between cefmetazole and cefmetazole lactone is not less than 3.0. Chromatograph the Standard preparation, and record the peak responses as directed for Procedure: the column efficiency is not less than 1250 theoretical plates; the tailing factor is not less than 0.94 and not more than 1.6, and the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 10 µL) of the Standard preparation and the Assay preparation into the chromatograph, record the chromatograms, and measure the areas for the major peaks. Calculate the quantity, in µg, of cefmetazole (C₁₅H₁₇N₇O₅S₃) in each mg of Cefmetazole taken by the formula:

\[ \frac{100(C/M)(r_0/r_1)} {V} \]

in which C is the concentration, in µg per mL, of cefmetazole (C₁₅H₁₇N₇O₅S₃) in the Standard preparation; M is the quantity, in mg, of Cefmetazole taken to prepare the Assay preparation; and r₀ and r₁ are the cefmetazole peak responses obtained from the Assay preparation and the Standard preparation, respectively.

**Cefmetazole Injection**

Cefmetazole Injection is a sterile isoosmotic solution of Cefmetazole and Sodium Citrate in Water for Injection. It contains one or more buffer substances and a toxicity-adjusting agent. It contains not less than 90.0 percent and not more than 120.0 percent of the labeled amount of cefmetazole (C₁₅H₁₇N₇O₅S₃).

**Packaging and storage—**Preserve in Containers for Injections as described under Injections (1). Maintain in the frozen state.

**Labeling—**It meets the requirements for Labeling under Injections (1). The label states that it is to be thawed just prior to use, describes the conditions for proper storage of the resultant solution, and directs that the solution is not to be refrozen.

**USP Reference standards (11)—**

USP Cefmetazole RS
USP Endotoxin RS

**Identification—**The retention time of the major peak in the chromatogram of the Assay preparation corresponds to that observed in the chromatogram of the Standard preparation, as obtained in the Assay.

**Bacterial endotoxins (85)—**It contains not more than 0.2 USP Endotoxin Unit per mg of cefmetazole.

**Sterility (71)—**It meets the requirements when tested as directed for Membrane Filtration under Test for Sterility of the Product to be Examined, except to use water instead of Fluid A.

**pH (791)—**between 4.2 and 6.2.

**Particulate matter (788)—meets the requirements for small-volume injections.

**Assay—**

Mobile phase, Resolution solution, Standard preparation, and Chromatographic system—Proceed as directed in the Assay under Cefmetazole.

Assay preparation—Allow the contents of a container of Injection to thaw, and mix the resultant solution. Transfer an accurately measured volume of this solution, equivalent to about 40 mg of cefmetazole, to a 200-ml volumetric flask, dilute with Mobile phase to volume, and mix. [NOTE—Use this solution within 10 minutes.]

Procedure—Proceed as directed for Procedure in the Assay under Cefmetazole. Calculate the quantity, in mg, of cefmetazole (C₁₅H₁₇N₇O₅S₃) in each mL of the Injection by the formula:

\[ \frac{0.2(C/M)(r_0/r_1)} {V} \]

in which V is the volume, in mL, of Injection taken to prepare the Assay preparation, and the other terms are as defined therein.

**Cefmetazole Sodium**

C₁₅H₁₇N₇NaO₅S₃ 493.52
5-Thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid, 7-[[[(cyanomethyl)thio][acetyl]amino]-7-methoxy-3-[[1-methyl-1H-tetrazol-5-yl]thio][methyl]-8-oxo-, monosodium salt, (6R-cis)-.


Cefmetazole Sodium contains the equivalent of not less than 860 µg and not more than 1003 µg of cefmetazole (C₁₅H₁₇N₇O₅S₃) per mg, calculated on the anhydrous basis.

**Packaging and storage—**Preserve in tight containers.

**Labeling—**Where it is intended for use in preparing injectable dosage forms, the label states that it is sterile or must
be subjected to further processing during the preparation of injectable dosage forms.

**USP Reference standards** (11)—
USP Cefmetazole RS
USP Endotoxin RS

**Identification**—
A: Infrared Absorption (197M).
B: The retention time of the major peak in the chromatogram of the Assay preparation corresponds to that in the chromatogram of the Standard preparation, as obtained in the Assay.

**pH** (791): between 4.2 and 6.2, in a solution (1 in 10).

**Water, Method I (921):** not more than 0.5%.

**Other requirements**—Where the label states that Cefmetazole Sodium is sterile, it meets the requirements in the tests for Sterility (71) and for Bacterial endotoxins under Cefmetazole for Injection. Where the label states that Cefmetazole Sodium must be subjected to further processing during the preparation of injectable dosage forms, it meets the requirements in the test for Bacterial endotoxins under Cefmetazole for Injection.

**Assay**—
Mobile phase, Standard preparation, Resolution solution, and Chromatographic system—Proceed as directed in the Assay under Cefmetazole.

**Assay preparation**—Transfer about 21 mg of Cefmetazole Sodium, accurately weighed, to a 100-mL volumetric flask, dilute with Mobile phase to volume, and mix. [NOTE—Use this solution within 10 minutes.]

**Procedure**—Proceed as directed in the Assay under Cefmetazole. Calculate the quantity, in µg, of Cefmetazole (C18H16N6Na2O8S3) per mg of Cefmetazole Sodium taken by the formula:

\[
100(C/M)(r_U / r_S)
\]

in which C is the concentration, in µg per mL, of cefmetazole (C18H16N6Na2O8S3) in the Standard preparation; M is the quantity, in mg, of Cefmetazole Sodium taken to prepare the Assay preparation; r_U and r_S are the cefmetazole peak responses obtained from the Assay preparation and the Standard preparation, respectively.

**Cefmetazole for Injection**

» Cefmetazole for Injection contains an amount of Cefmetazole Sodium equivalent to not less than 90.0 percent and not more than 120.0 percent of the labeled amount of cefmetazole (C18H16N6Na2O8S3).

**Packaging and storage**—Preserve in Containers for Sterile Solids as described under Injections (1).

**USP Reference standards** (11)—
USP Cefmetazole RS
USP Endotoxin RS

**Bacterial endotoxins** (85)—It contains not more than 0.2 USP Endotoxin Unit per mg of cefmetazole.

**Sterility** (71)—It meets the requirements when tested as directed for Membrane Filtration under Test for Sterility of the Product to be Examined.

**Particulate matter** (788): meets the requirements for small-volume injections.

**Other requirements**—It meets the requirements in the tests for Identification, pH, and Water under Cefmetazole Sodium. It meets also the requirements for Uniformity of Dosage Units (905) and for Labeling under Injections (1).

**Assay**—
Mobile phase, Standard preparation, Resolution solution, and Chromatographic system—Proceed as directed in the Assay under Cefmetazole.

**Assay preparation 1** (where it is represented as being in a single-dose container)—Constitute Cefmetazole for Injection in a volume of water, accurately measured, corresponding to the volume of solvent specified in the labeling. Withdraw all of the withdrawable contents, using a suitable hypodermic needle and syringe, and quantitatively dilute with Mobile phase to obtain a solution containing about 0.2 mg of cefmetazole per mL. [NOTE—Use this solution within 10 minutes.]

**Assay preparation 2** (where the label states the quantity of cefmetazole in a given volume of constituted solution)—Constitute Cefmetazole for Injection in a volume of water, accurately measured, corresponding to the volume of solvent specified in the labeling. Quantitatively dilute an accurately measured volume of the constituted solution with Mobile phase to obtain a solution containing about 0.2 mg of cefmetazole per mL. [NOTE—Use this solution within 10 minutes.]

**Procedure**—Proceed as directed in the Assay under Cefmetazole. Calculate the quantity, in mg, of cefmetazole (C18H16N6O8S3) withdrawn from the container, or in the portion of constituted solution taken by the formula:

\[
(L/D)(C/1000)(r_U / r_S)
\]

in which L is the labeled quantity, in mg, of cefmetazole in the container, or in the volume of constituted solution taken; D is the concentration, in mg per mL, of cefmetazole (C18H16N6O8S3) per mL; Assay preparation 1 or Assay preparation 2, based on the labeled quantity in the container or in the portion of constituted solution taken, respectively; C is the concentration, in µg per mL, of cefmetazole (C18H16N6O8S3) in the Standard preparation; and r_U and r_S are the cefmetazole peak responses obtained from the relevant Assay preparation and the Standard preparation, respectively.

**Cefonicid Sodium**

**C18H18N6O8S3** 586.53

5-Thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid, 7-[(hydroxyphenylacetyl)amino]-8-oxo-3-[[1-(sulfomethyl)-1H-tetrazol-5-yl]thio[methyl]disodium salt, [6R-[6a, 7(R*)]]-
(6R,7R)-[7-[(R)-Mandelamido]-8-oxo-3-[[1-(sulfomethyl)-1H-tetrazol-5-yl]thio[methyl]-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid, disodium salt 61270-78-8].

» Cefonicid Sodium contains the equivalent of not less than 832 µg and not more than 970 µg of cefonicid (C18H18N6O8S3) per mg, calculated on the anhydrous basis.

**Packaging and storage**—Preserve in tight containers.

**Labeling**—Where it is intended for use in preparing injectable dosage forms, the label states that it is sterile or must be subjected to further processing during the preparation of injectable dosage forms.

**USP Reference standards** (11)—
USP Cefonicid Sodium RS
USP Endotoxin RS