Milligrams of ticarcillin or clavulanic acid activity per milliliter

\[ \frac{A_u \times P_s \times d}{A_s \times 1,000} \]

where:

- \( A_u \) = Area of the ticarcillin or clavulanic acid peak in the chromatogram of the sample (at a retention time equal to that observed for the standard);
- \( A_s \) = Area of the ticarcillin or clavulanic acid peak in the chromatogram of the ticarcillin or clavulanic acid working standard;
- \( P_s \) = Ticarcillin or clavulanic acid activity in the ticarcillin-clavulanic acid working standard solution in micrograms per milliliter; and
- \( d \) = Dilution factor of the sample.

(2) Sterility. Proceed as directed in §436.20 of this chapter, using the method described in §436.20(e)(1).

(3) Pyrogens. Proceed as directed in §436.32(a) of this chapter, except inject a sufficient volume of the undiluted solution to deliver 100 milligrams of ticarcillin per kilogram.

(4) pH. Proceed as directed in §436.202 of this chapter, using the undiluted solution.

(5) Identity. The high-performance liquid chromatogram of the sample determined as directed in paragraph (b)(1) of this section compares qualitatively to that of the ticarcillin and clavulanic acid working standard.

[55 FR 5840, Feb. 20, 1990]

Subparts D-J—[Reserved]

Subpart K—Bulk Drug Formulations for Repacking or for Manufacturing Use

§440.1080a Sterile penicillin G potassium buffered.

(a) Requirements for certification—(1) Standards of identity, strength, quality, and purity. Penicillin G potassium, buffered, is a dry mixture of penicillin G potassium and the buffer sodium citrate in a quantity not less than 4.0 percent and not more than 5.0 percent by weight of its total solids. It may contain citric acid in a quantity not more than 0.15 percent of its total solids in place of a corresponding amount of sodium citrate. The sodium citrate and citric acid used in making the batch must conform to all U.S.P. specifications. It is so purified and dried that:

(i) Its potency is not less than 1,355 units and not more than 1,595 units per milligram.
(ii) It is sterile.
(iii) It is nonpyrogenic.
(iv) [Reserved]
(v) Its loss on drying is not more than 1.5 percent.
(vi) Its pH is not less than 6.0 and not more than 8.5.
(vii) Its penicillin G content is not less than 76.3 percent and not more than 89.8 percent.
(viii) It is crystalline.

(2) Labeling. It shall be labeled in accordance with the requirements of §432.5 of this chapter.

(3) Requests for certification; samples. In addition to complying with the requirements of §431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, sterility, pyrogens, loss on drying, pH, penicillin G content, and crystallinity.
(ii) Samples required:

(a) For all tests except sterility: 10 packages, each containing approximately 300 milligrams.
(b) For sterility testing: 20 packages, each containing approximately 600 milligrams.

(b) Tests and methods of assay—(1) Potency—(i) Sample preparation. Dissolve an accurately weighed sample in sufficient 1.0 percent potassium phosphate buffer, pH 6.0 (solution 1), to give a stock solution of convenient concentration.

(ii) Assay procedures. Assay for potency by any of the following methods; however, the results obtained from the iodometric assay shall be conclusive.

(a) Microbiological agar diffusion assay. Proceed as directed in §436.105 of this chapter, diluting an aliquot of the stock solution with solution 1 to the reference concentration of 1.0 unit of penicillin G per milliliter (estimated).

(b) Iodometric assay. Proceed as directed in §436.204 of this chapter, diluting an aliquot of the stock solution with solution 1 to the prescribed concentration.

(c) Hydroxylamine colorimetric assay. Proceed as directed in §436.205 of this chapter, diluting an aliquot of the
§ 440.1081a Sterile penicillin G sodium, buffered.

(a) Requirements for certification—(1) Standards of identity, strength, quality, and purity. Penicillin G sodium, buffered, is a dry mixture of penicillin G sodium and the buffer sodium citrate in a quantity not less than 4.0 percent and not more than 5.0 percent by weight of its total solids. It may contain citric acid in a quantity not more than 0.15 percent of its total solids in place of a corresponding amount of sodium citrate. The sodium citrate and citric acid used in making the batch must conform to all U.S.P. specifications. It is so purified and dried that:

(i) Its potency is not less than 1,420 units and not more than 1,667 units per milligram.

(ii) It is sterile.

(iii) It is nonpyrogenic.

(iv) [Reserved]

(v) Its loss on drying is not more than 1.5 percent.

(vi) Its pH is not less than 6.0 and not more than 7.5.

(vii) Its penicillin G content is not less than 80 percent and not more than 93.8 percent.

(viii) It is crystalline.

(ix) It passes the test for heat stability if it does not show a loss of more than 10 percent of its original potency.

(2) Sterility. Proceed as directed in §436.20 of this chapter, using the method described in paragraph (e)(1) of that section.

(3) Pyrogens. Proceed as directed in §436.32(b) of this chapter, using a solution containing 20,000 units of penicillin G per milliliter.

(4) [Reserved]

(5) Loss on drying. Proceed as directed in §436.200(b) of this chapter.

(6) pH. Proceed as directed in §436.202 of this chapter, using an aqueous solution containing 60 milligrams per milliliter.

(7) Penicillin G content. Proceed as directed in §436.316 of this chapter.

(b) Tests and methods of assay—(1) Potency—(i) Sample preparation. Dissolve an accurately weighed sample in sufficient 1.0 percent potassium phosphate buffer, pH 6.0 (solution 1), to give a stock solution of convenient concentration.

(ii) Assay procedures. Assay for potency by any of the following methods; however, the results obtained from the iodometric assay shall be conclusive.

(a) Microbiological agar diffusion assay. Proceed as directed in §436.105 of this chapter, diluting an aliquot of the stock solution with solution 1 to the reference concentration of 1.0 unit of penicillin G per milliliter (estimated).

(b) Iodometric assay. Proceed as directed in §436.204 of this chapter, diluting an aliquot of the stock solution with solution 1 to the prescribed concentration.

(c) Hydroxylamine colorimetric assay. Proceed as directed in §436.205 of this chapter, diluting an aliquot of the stock solution with solution 1 to the prescribed concentration.

(2) Sterility. Proceed as directed in §436.20 of this chapter, using the method described in paragraph (e)(1) of that section.

(3) Pyrogens. Proceed as directed in §436.32(b) of this chapter, using a solution containing 20,000 units of penicillin G per milliliter.

(4) [Reserved]

(5) Loss on drying. Proceed as directed in §436.200(b) of this chapter.
(6) **pH.** Proceed as directed in §436.202 of this chapter, using an aqueous solution containing 60 milligrams per milliliter.

(7) **Penicillin G content.** Proceed as directed in §436.316 of this chapter.

(8) **Crystallinity.** Proceed as directed in §436.203(a) of this chapter.

(9) **Heat stability.** Proceed as directed in §436.214 of this chapter.