layer from the *Standard solution* and *Sample solution* against the aqueous layer from the *Blank*.

Calculate the percentage of citric acid in the portion of Monoglyceride Citrate taken:

$$\text{Result} = (A_U/A_S) \times (V \times C_S/W) \times 100$$

A_U = absorbance of the *Sample solution*
A_S = absorbance of the *Standard solution*
V = volume of the *Sample solution* (mL)
C_S = concentration of USP Citric Acid RS in the *Standard solution* (mg/mL)
W = weight of Monoglyceride Citrate taken to prepare the *Sample solution* (mg)

Acceptance criteria: 14.0%–17.0% on the anhydrous basis

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.3%, determined on 1 g
- **Heavy Metals,** *Method II* ⟨**231**⟩**:** NMT 10 ppm

SPECIFIC TESTS

- **Fats and Fixed Oils,** *Acid Value* ⟨**401**⟩**:** 70–100
- **Fats and Fixed Oils,** *Saponification Value* ⟨**401**⟩**:** 260–265
- **Water Determination,** *Method I* ⟨**921**⟩**:** NMT 0.2%

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in well-closed containers. No storage requirements specified.
- **USP Reference Standards** ⟨**11**⟩
  USP Citric Acid RS

Monosodium Glutamate

DEFINITION

Monosodium Glutamate contains NLT 99.0% and NMT 100.5% of $C_5H_8NNaO_4 \cdot H_2O$.

IDENTIFICATION

- **A.**
  Sample solution: 1 in 30
  Analysis: To 1 mL of the *Sample solution* add 1 mL of ninhydrin TS and 100 mg of sodium acetate, and heat in a boiling water bath for 10 min.
  Acceptance criteria: An intense, violet blue color is formed.
- **B.**
  Sample solution: 1 in 10
  Analysis: To 10 mL of the *Sample solution* add 5.6 mL of 1 N hydrochloric acid.
  Acceptance criteria: A white, crystalline precipitate of glutamic acid is formed on standing. Precipitation is promoted by agitation. When 6 mL of 1 N hydrochloric acid is added to the turbid solution, the glutamic acid dissolves on stirring.
- **C. Identification Tests—General,** *Sodium* ⟨**191**⟩**:** It meets the requirements of the pyroantimonate precipitate test.

ASSAY

- **Procedure**
  Sample: 250 mg
  Titrimetric system
  (See *Titrimetry* ⟨541⟩.)
  Mode: Direct titration
  Titrant: 0.1 N perchloric acid VS
  Blank: 100 mL of glacial acetic acid with a few drops of water
  Endpoint detection: Potentiometric
  Analysis: Wet the *Sample* with a few drops of water. Dissolve in 100 mL of glacial acetic acid. Titrate with 0.1 N perchloric acid VS. Perform a blank determination.
  Calculate the percentage of monosodium glutamate ($C_5H_8NNaO_4 \cdot H_2O$) in the *Sample* taken:

$$\text{Result} = [(V - B) \times N \times F \times 100]/W$$

V = volume of *Titrant* consumed by the *Sample* (mL)
B = volume of *Titrant* consumed by the *Blank* (mL)
N = actual normality of the *Titrant* (mEq/mL)
F = equivalency factor, 93.56 mg/mEq
W = weight of the *Sample* (mg)

Acceptance criteria: 99.0%–100.5%

IMPURITIES

- **Chloride and Sulfate,** *Chloride* ⟨**221**⟩**:** A 280-mg portion shows no more chloride than corresponds to 1.0 mL of 0.020 N hydrochloric acid (0.25%).
- **Lead** ⟨**251**⟩**:** NMT 10 ppm
- **Heavy Metals,** *Method II* ⟨**231**⟩**:** NMT 20 ppm

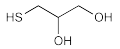
SPECIFIC TESTS

- **Clarity and Color of Solution**
  Sample solution: 1.0 g in 10 mL of water
  Standard solution: To 0.2 mL of a solution of sodium chloride containing 10 µg/mL of chloride ion (Cl), add 20 mL of water, and mix. Then add 1 mL of 5 N nitric acid, 0.2 mL of dextrin solution (1 in 50), and 1 mL of silver nitrate TS, and allow to stand for 15 min.
  Analysis: Compare the *Sample solution* with the *Standard solution* (see *Spectrophotometry and Light-Scattering—Visual Comparison* ⟨851⟩).
  Acceptance criteria: The *Sample solution* is colorless and has no more turbidity than the *Standard solution*.
- **Optical Rotation,** *Specific Rotation* ⟨**781S**⟩
  Sample solution: 100 mg/mL in 2 N hydrochloric acid
  Acceptance criteria: +24.8° to +25.3°, determined at 20°
- **pH** ⟨**791**⟩**:** 6.7–7.2, in a solution (1 in 20)
- **Loss on Drying** ⟨**731**⟩**:** Dry a sample at 100° for 5 h: it loses NMT 0.5% of its weight.

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight containers.

Monothioglycerol



$C_3H_8O_2S$ 108.16
1,2-Propanediol, 3-mercapto-.
3-Mercapto-1,2-propanediol [96-27-5].

» Monothioglycerol contains not less than 97.0 percent and not more than 101.0 percent of $C_3H_8O_2S$, calculated on the anhydrous basis.

Packaging and storage—Preserve in tight containers.

Specific gravity ⟨841⟩: between 1.241 and 1.250.

Refractive index ⟨831⟩: between 1.521 and 1.526.

pH ⟨791⟩: between 3.5 and 7.0, in a solution (1 in 10).

Water, *Method II* ⟨921⟩: not more than 5.0%.

Residue on ignition ⟨281⟩: not more than 0.1%.

Selenium ⟨291⟩: 0.003%, a 200-µL test specimen being used.

Heavy metals, *Method II* ⟨231⟩: 0.002%.

Assay—Dissolve about 400 mg of Monothioglycerol, accurately weighed, in 50 mL of water, and titrate with 0.1 N iodine VS, adding 3 mL of starch TS as the endpoint is approached. Each mL of 0.1 N iodine is equivalent to 10.82 mg of $C_3H_8O_2S$.