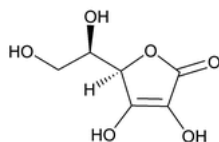


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Erythorbic Acid



$C_6H_8O_6$ 176.12

o-Araboascorbic acid;

D-Erythro-hex-2-enoic acid delta-lactone;

Isoascorbic acid, D-isoascorbic acid CAS RN[®]: 89-65-6.

DEFINITION

Erythorbic Acid contains NLT 99.0% and NMT 100.5% of $C_6H_8O_6$, calculated on the dried basis.

IDENTIFICATION

Change to read:

• A. [▲][SPECTROSCOPIC IDENTIFICATION TESTS \(197\)](#), [Infrared Spectroscopy: 197K](#) [▲] (CN 1-MAY-2020)

• B.

Sample solution: 20 mg/mL of Erythorbic Acid and water

Analysis: To 2 mL of *Sample solution* add a few drops of sodium nitroferricyanide TS and then add 1 mL of 0.1 N sodium hydroxide.

Acceptance criteria: A transient blue color immediately appears.

• C.

Analysis: Dissolve about 15 mg of Erythorbic Acid in 15 mL of trichloroacetic acid (1:20). Add about 200 mg of activated charcoal, and shake the mixture vigorously for 1 min. Pass through a small fluted filter, refilter if necessary to obtain a clear filtrate, agitate the mixture until the pyrrole is dissolved, and heat in a water bath at 50°.

Acceptance criteria: A blue color appears.

ASSAY

• PROCEDURE

Sample: 400 mg

Titrimetric system

(See [Titrimetry \(541\)](#).)

Mode: Direct titration

Titrant: 0.1 N iodine VS

Endpoint detection: Colorimetric

Analysis: Dissolve the *Sample* in a mixture of 100 mL of recently boiled and cooled water and 25 mL of 2 N sulfuric acid. Add 3 mL of starch TS, and titrate at once with 0.1 N iodine VS. Perform a blank determination.

Calculate the percentage of erythorbic acid ($C_6H_8O_6$) in the *Sample* taken:

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

V = *Titrant* volume consumed by the *Sample* (mL)

B = *Titrant* volume consumed by the *Blank* (mL)

N = *Titrant* actual normality (mEq/mL)

F = equivalency factor, 88.06 mg/mEq

W = weight of the *Sample* (mg)

Acceptance criteria: 99.0%–100.5% on the dried basis

IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#): NMT 0.3%

- **LIMIT OF LEAD**

[NOTE—Select reagents having as low a lead content as practicable, and store all solutions in borosilicate glass containers. Rinse all glassware thoroughly with warm 8 N nitric acid followed by deionized water.]

Standard stock solution: Dissolve 160 mg of lead nitrate in 100 mL of water containing 1 mL of nitric acid. Dilute with water to 1000 mL. On the day of use, transfer 10.0 mL of the above solution to a 100-mL volumetric flask, and dilute with water to volume. Each mL of this solution contains the equivalent of about 10 µg of lead.

[NOTE—Prepare the *Standard solutions* on the day of use.]

Standard solution A: 1 µg/mL of lead from the *Standard stock solution*

Standard solution B: 2 µg/mL of lead from the *Standard stock solution*

Standard solution C: 5 µg/mL of lead from the *Standard stock solution*

Sample solution: Transfer a weighed portion of about 10 g of Erythorbic Acid to an evaporating dish. Add 5 mL of 25% sulfuric acid, and distribute the sulfuric acid uniformly through the sample. Within a hood, place the dish on a steam bath to evaporate most of the water. Place the dish on a burner, and slowly pre-ash the sample by expelling most of the sulfuric acid. Place the dish in a muffle furnace at 525°, and ash the sample until the residue appears free from carbon. Cool, and cautiously wash down the inside of the evaporation dish with water. Add 5 mL of 1 N hydrochloric acid. Place the dish on a steam bath, and evaporate to dryness. Add 1.0 mL of 3 N hydrochloric acid and approximately 5 mL of water, and heat briefly on a steam bath to dissolve any residue. Transfer quantitatively to a 10-mL volumetric flask, and dilute with water to volume.

Blank: To an evaporating dish add 5 mL of 25% sulfuric acid, and distribute the sulfuric acid uniformly. Within a hood, place the dish on a steam bath to evaporate most of the water. Place the dish on a burner, and expel most of the sulfuric acid. Then place the dish in a muffle furnace at 525° for about the same amount of time as in the *Sample solution* preparation. Cool, and cautiously wash down the inside of the evaporation dish with water. Add 5 mL of 1 N hydrochloric acid. Place the dish on a steam bath, and evaporate to dryness. Add 1.0 mL of 3 N hydrochloric acid and approximately 5 mL of water, and heat briefly on a steam bath to dissolve any residue. Transfer quantitatively to a 10-mL volumetric flask, and dilute with water to volume.

Instrumental conditions

(See [Atomic Absorption Spectroscopy \(852\)](#).)

Mode: Atomic absorption

Lamp: Lead electrodeless discharge

Flame: Air–acetylene

Analytical wavelength: 283.3 nm

Slit width: 0.7 nm

Standard curve

Samples: *Standard solution A*, *Standard solution B*, *Standard solution C*, and *Blank*

Plot: Corrected absorbance values versus their corresponding concentration (µg/mL). [NOTE—Determine the corrected absorbance values by subtracting the absorbance of the *Blank* from the absorbance of the *Samples*.]

Analysis

Sample: *Sample solution*

From the *Standard curve*, determine the lead concentration in the *Sample solution*. Calculate the lead content, in ppm, in the portion of Erythorbic Acid taken:

$$\text{Result} = V \times C_s / W$$

V = volume of the *Sample solution* (mL)

C_s = concentration of lead in the *Sample solution* (µg/mL)

W = weight of Erythorbic Acid in the *Sample solution* (g)

Acceptance criteria: NMT 10 ppm

SPECIFIC TESTS

- [OPTICAL ROTATION, Specific Rotation \(781S\)](#): −16.5° to −18.0°

Sample solution: 100 mg/mL in water

- [LOSS ON DRYING \(731\)](#): Dry a sample in a vacuum over silica gel for 3 h: it loses NMT 0.4% of its weight.

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers.

- [USP REFERENCE STANDARDS \(11\)](#).

[USP Erythorbic Acid RS](#)