Ascorbic acid (Acidum ascorbicum)

Molecular formula. $\mathrm{C_6H_8O_6}$

Relative molecular mass. 176.1

Graphic formula.



Chemical name. L-Ascorbic acid; CAS Reg. No. 50-81-7.

Description. Colourless crystals or a white or almost white, crystalline powder; odourless or almost odourless.

Solubility. Freely soluble in water; soluble in ethanol (~750 g/l) TS; practically insoluble in ether R.

Category. Antiscorbutic.

Storage. Ascorbic acid should be kept in a tightly closed, non-metallic container, protected from light.

Additional information. Ascorbic acid in solution deteriorates rapidly in contact with air; it has an acid taste. Even in the absence of light, Ascorbic acid is gradually degraded on exposure to a humid atmosphere, the decomposition being faster at higher temperatures.

Requirements

Definition. Ascorbic acid contains not less than 99.0% and not more than 100.5% of C₆H₈O₆.

Identity tests

A. Dissolve 0.1 g in 2 mL of water, add a few drops of nitric acid (~130 g/l) TS and a few drops of silver nitrate (40 g/l) TS; a dark grey precipitate is produced.

B. Dissolve 0.04 g in 4 mL of water, add 0.1 g of sodium hydrogen carbonate R and about 20 mg of ferrous sulfate R, shake and allow to stand; a deep violet colour is produced, which disappears on the addition of 5 mL of sulfuric acid (~100 g/l) TS.

C. Melting temperature, about 190°C with decomposition.

Specific optical rotation. Use a 50 mg/mL solution; $\begin{bmatrix} \alpha \end{bmatrix}_{D}^{20} = +20.5^{\circ}$ to +21.5°.

Heavy metals. Use 1.0 g for the preparation of the test solution as described under <u>2.2.3 Limit test for heavy metals</u>, Procedure 3; determine the heavy metals content according to Method A; not more than 20 μ g/g.

Clarity and colour of solution. A solution of 0.50 g in 10 mL of water is clear and not more intensely coloured than standard colour solution Rd1 when compared as described under <u>1.11.1 Colour of liquids</u>.

Readily carbonizable substances. Dissolve 0.10 g in 10 mL of sulfuric acid (~1760 g/L) TS. After 15 minutes the solution is not more intensely coloured than standard colour solutions Yw1 or Gn1 when compared as described under <u>1.11.1 Colour of liquids</u>.

Sulfated ash. Not more than 1.0 mg/g.

Assay. Dissolve about 0.20 g, accurately weighed, in a mixture of 25 mL of carbon-dioxide-free water R and 25 mL of sulfuric acid (~100 g/l) TS. Titrate the solution at once with iodine (0.05 mol/l) VS using starch TS as indicator, added towards the end of the titration, until a persistent blue colour is obtained. Each mL of iodine (0.05 mol/l) VS is equivalent to 8.806 mg of $C_6H_8O_6$.