

D. MONOGRAPHS

Adipic Acid



$\text{C}_6\text{H}_{10}\text{O}_4$

Mol. Wt. 146.14

1,6-hexanedioic acid

[124-04-9]

Content Adipic Acid contains 99.6 - 101.0% of adipic acid ($\text{C}_6\text{H}_{10}\text{O}_4$).

Description Adipic Acid occurs as white crystals or crystalline powder. It is odorless and has an acid taste.

Identification (1) Adjust the pH of 5 ml of Adipic Acid solution (1 : 20) to about 7 with ammonia TS, and add 2 - 3 drops of ferric chloride solution (1 : 10). A brown precipitate is formed.

(2) Transfer 50 mg of Adipic Acid into a test tube, add 50 mg of resorcinol and 1 ml of sulfuric acid, and shake. Heat at 130 °C for 10 minutes. Add dropwise sodium hydroxide solution (3 : 10) while cooling to make alkaline. Add water to make 10 ml. A red-purple color develops.

Purity (1) Melting point 151.5 - 154.0 °C.

(2) Heavy metals Not more than 10 µg/g as Pb.

Test Solution To 2.0 g of Adipic Acid, add 2 ml of hydrochloric acid and 0.4 ml of nitric acid. Evaporate to dryness on a water bath, add 1 ml of diluted hydrochloric acid (1 : 4) and 15 ml of water to the residue, and dissolve by heating. Cool, add 1 drop of phenolphthalein TS, and add dropwise ammonia TS until a slightly pink color develops. Add 2 ml of diluted acetic acid (1 : 20), filter if necessary, and add water to make 50 ml.

Control Solution Measure exactly 2 ml of Lead Standard Solution, add 2 ml of diluted acetic acid (1 : 20) and water to make 50 ml.

(3) Arsenic Not more than 4.0 µg/g as As_2O_3 (0.50 g, Method 3, Apparatus B).

Water Content Not more than 0.20% (1 g, direct titration).

Assay Weigh accurately about 1.5 g of Adipic Acid, and dissolve in 75 ml of freshly boiled and cooled water. Titrate with 0.5 mol/l sodium hydroxide (indicator: 2 drops of phenolphthalein TS).

1 ml of 0.5 mol/l sodium hydroxide = 36.54 mg of $\text{C}_6\text{H}_{10}\text{O}_4$