Ferric Citrate

iron(Ⅲ) salt of 2-hydroxy-1,2,3-propanetricarboxylic acid

**Content**  Ferric Citrate contains 16.5 - 18.5% of iron (Fe=55.85).

**Description**  Ferric Citrate occurs as a brown powder or as transparent, red-brown laminae.

**Identification**  Ferric Citrate responds to all tests for Ferric Salt and to test (2) for Citrate as described in the Qualitative Tests.

**Purity**

1. **Clarity of solution**  Almost clear.

Weigh 1.0 g of Ferric Citrate, add 20 ml of water, and dissolve by heating in a water bath.

2. **Sulfate**  Not more than 0.48% as SO₄.

**Test Solution**  Weigh 0.40 g of Ferric Citrate, dissolve in 50 ml of water, and add water to make 100 ml. Measure 10 ml of this solution, add 1 ml of diluted hydrochloric acid (1:4) and 0.1 g of hydroxylamine hydrochloride, and boil for 1 minute. After cooling, add water to make 50 ml.

**Control Solution**  To 0.40 ml of 0.005 mol/l sulfuric acid, add 1 ml of diluted hydrochloric acid (1:4) and water to make 50 ml.

3. **Ammonium salt**  Weigh 1.0 g of Ferric Citrate, add 10 ml of water and 5 ml of potassium hydroxide solution (1:15), and boil. No odor of ammonia is evolved.

4. **Heavy metals**  Not more than 20 µg/g as Pb.

**Test Solution**  Weigh 1.0 g of Ferric Citrate, transfer into a porcelain dish, dissolve with 3 ml of aqua regia, and evaporate to dryness in a water bath. Dissolve the residue with 5 ml of diluted hydrochloric acid (1:2), and transfer the solution into a separating funnel. Wash the porcelain dish twice with 5 ml of diluted hydrochloric acid (1:2) each time, and transfer the washings into the separating funnel. Wash the water layer twice with 40 ml of ether each time and again once with 20 ml of ether. Discard the washings, dissolve 0.05 g of hydroxylamine hydrochloride in the water layer, heat in a water bath for 10 minutes, add 1 drop of phenolphthalein TS, and add aqueous ammonia until a pink color develops. After cooling, add dropwise diluted hydrochloric acid (1:2) until the solution becomes almost colorless, add 4 ml of diluted acetic acid (1:20), shake well, and add water to make 50 ml. Filter if necessary.

**Control Solution**  Measure 2.0 ml of Lead Standard Solution, transfer into a
porcelain dish, add 1 ml of sulfuric acid, and proceed in the same manner as for the test solution.

(5) Arsenic Not more than 4.0 µg/g as As₂O₃.

Test Solution Weigh 1.0 g of Ferric Citrate, add 5 ml of water, 1 ml of sulfuric acid, and 10 ml of sulfurous acid, evaporate to about 2 ml, and add water to make 10 ml. Perform the test, using 5 ml of this solution.

Apparatus Apparatus B.

Assay Weigh accurately about 1 g of Ferric Citrate, transfer into a flask with a ground-glass stopper, add 5 ml of hydrochloric acid and 30 ml of water, dissolve by heating, and cool. Add 4 g of potassium iodide, immediately stopper tightly, and allow to stand for 15 minutes in a dark place. Add 100 ml of water, and titrate the liberated iodine with 0.1 mol/l sodium thiosulfate (indicator: starch TS). Perform a blank test in the same manner, and make any necessary correction.

1 ml of 0.1 mol/l sodium thiosulfate = 5.585 mg of Fe