Mercuric oxycyanide (Hydrargyri oxycyanidum)

Chemical name. Mercuric oxycyanide; CAS Reg. No. 73360-53-9

Description. A white or almost white, crystalline powder; odourless.

Solubility. Soluble in 20 parts of water; sparingly soluble in ethanol (~750 g/l) TS.

Category. Antiseptic (for topical use).

Storage. Mercuric oxycyanide should be kept in a tightly closed container, protected from light.

Additional information. Mercuric oxycyanide is slowly discoloured by light. It might explode on triturating or mixing with other substances. The solution should not be heated on an open flame.

Requirements

Definition. Mercuric oxycyanide is a mixture of approximately 1 part of $Hg(CN)_2$,HgO and 2 parts of $Hg(CN)_2$.

Mercuric oxycyanide contains not less than 14.5% and not more than 17.2% of HgO, and not less than 82.5% and not more than 85.5% of $Hg(CN)_2$.

Identity tests

A. Immerse a small piece of copper plate in a 0.05 g/mL solution for some minutes, remove, wash with water, and rub the plate with paper; a bright silvery surface is produced.

B. To a 0.05 g/mL solution add potassium iodide (80 g/l) TS; a yellow solution is produced which on the addition of ammonia (~100 g/l) TS gives a reddish brown precipitate.

C. To 1 mL of a 0.05 g/mL solution add 0.05 g of ferrous sulfate R and sufficient sodium hydroxide (~80 g/l) TS to precipitate the iron as hydroxide. Boil the mixture and acidify with hydrochloric acid (~70 g/l) TS; a blue colour or precipitate is produced.

Chlorides. Dissolve 1.75 g in 20 mL of water, add 10 mL of sodium hydroxide (~80 g/l) TS and 25 mL of formaldehyde TS, and boil gently for 10 minutes. Cool, filter, wash the precipitate with water, combine the filtrate and washings, neutralize with nitric acid (~130 g/l) TS and add sufficient water to produce 100 mL. Proceed as described under 2.2.1 Limit test for chlorides, using 40 mL of this solution and 6 mL of nitric acid (~130 g/l) TS. To prepare the standard opalescence mix 10 mL of sodium hydroxide (~80 g/l) TS with 12.25 mL of hydrochloric acid ClTS, and boil the mixture gently for 10 minutes. Cool, filter, wash the filter with water, combine the filtrate and washings, neutralize with nitric acid (~130 g/l) TS, and add sufficient water to produce 100 mL. Proceed as described under 2.2.1 Limit test for chlorides, using 40 mL of this solution and 6 mL of nitric acid (~130 g/l) TS; the chloride content is not more than 0.35 mg/g.

Clarity of solution. A solution of 0.050 g in 10 mL of water is clear.

Sulfated ash. Carry out the ignition under a hood; not more than 2.5 mg/g.

Loss on drying. Dry to constant weight at 105°C; it loses not more than 10 mg/g.

pH value. pH of a 0.05 g/mL solution in carbon-dioxide-free water R, 7.4-8.0.

Assay

For mercuric oxide. Dissolve about 0.5 g, accurately weighed, in 50 mL of water, add 1 g of sodium chloride R and titrate with hydrochloric acid (0.1 mol/l) VS using methyl orange/ethanol TS as indicator. Repeat the operation without the substance being examined and make any necessary corrections. Each mL of hydrochloric acid (0.1 mol/l) VS is equivalent to 10.83 mg of HgO. (Keep the solution for the assay for mercuric cyanide).

For mercuric cyanide. Use the solution obtained from the assay for mercuric oxide, add 3 g of potassium iodide R, and continue to titrate with hydrochloric acid (0.1 mol/l) VS. Each mL of hydrochloric acid (0.1 mol/l) VS is equivalent to 12.63 mg of $Hg(CN)_2$.