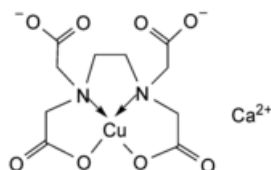




Edition: BP 2025 (Ph. Eur. 11.6 update)

Calcium Copperedetate

[General Notices](#)



$C_{10}H_{12}CaCuN_2O_8 \cdot 2H_2O$ 427.6

Action and use

Used in the treatment of copper deficiency.

Preparation

[Calcium Copperedetate Injection](#)

DEFINITION

Calcium Copperedetate is the dihydrate of calcium [ethylenediaminetetra-acetato(4-)-*N,N',O,O'*]copper(II). It contains not less than 9.1% and not more than 9.7% of calcium, Ca, and not less than 14.4% and not more than 15.3% of copper, Cu, both calculated with reference to the dried substance.

CHARACTERISTICS

A blue, crystalline powder.

Freely soluble in [water](#), the solution gradually precipitating the tetrahydrate; practically insoluble in [ethanol \(96%\)](#).

IDENTIFICATION

- A. Dissolve 0.2 g in 5 mL of [water](#) and add 1 mL of 6M [acetic acid](#) and 2 mL of [dilute potassium iodide solution](#). The solution remains clear and deep blue.
- B. Ignite 0.2 g, dissolve the residue in 3 mL of [2M hydrochloric acid](#), neutralise the solution with 5M [ammonia](#) and add 1 mL of 6M [acetic acid](#) and 2 mL of [dilute potassium iodide solution](#). A white precipitate is produced and iodine is liberated, colouring the supernatant liquid brown.
- C. Dissolve 0.5 g in 10 mL of [water](#), acidify with [2M hydrochloric acid](#), add 25 mL of a 10% v/v solution of [mercaptoacetic acid](#) and filter. Make the filtrate alkaline with 5M [ammonia](#) and add 5 mL of a 2.5% w/v solution of [ammonium oxalate](#). A white precipitate is produced which is soluble in [hydrochloric acid](#) but only sparingly soluble in 6M [acetic acid](#).

TESTS

Lead

Not more than 25 ppm of Pb when determined by the following method. Dissolve 1.25 g in 10 mL of [hydrochloric acid](#), dilute to 25 mL with [water](#) and determine by *atomic absorption spectrophotometry*, [Appendix II D](#), measuring at 283.3 nm and using a lead hollow-cathode lamp as the radiation source and [lead standard solution \(100 ppm Pb\)](#), diluted if necessary with [water](#), to prepare the [standard solutions](#).

Zinc

Not more than 200 ppm of Zn when determined by the following method. Dissolve 1.0 g in 20 mL of [hydrochloric acid](#), dilute to 200 mL with [water](#) and determine by *atomic absorption spectrophotometry*, [Appendix II D](#), measuring at 213.9 nm and using a zinc hollow-cathode lamp as the radiation source and [zinc standard solution \(5 mg/mL Zn\)](#), diluted if necessary with [water](#), to prepare the [standard solutions](#).

Loss on drying

When dried to [constant weight](#) at 105°, loses not more than 2.0% of its weight. Use 1 g.

ASSAY

For [copper](#)

Ignite 4 g at 600° to 700°, cool and heat the residue with 12 mL of a mixture of equal volumes of [hydrochloric acid](#) and [water](#) on a water bath for 15 minutes. Add 10 mL of [water](#), filter and dilute the filtrate to 100 mL with [water](#) (solution A); reserve a portion for the Assay for calcium. To 25 mL of solution A add 25 mL of [water](#) and 10 mL of [bromine solution](#), boil to remove the bromine, cool and add [dilute sodium carbonate solution](#) until a faint permanent precipitate is produced. Add 3 g of [potassium iodide](#) and 5 mL of 6M [acetic acid](#) and titrate the liberated iodine with 0.1M [sodium thiosulfate VS](#), using [starch mucilage](#) as indicator, until only a faint blue colour remains; add 2 g of [potassium thiocyanate](#) and continue the titration until the blue colour disappears. Each mL of 0.1M [sodium thiosulfate VS](#) is equivalent to 6.354 mg of Cu.

For [calcium](#)

To 5 mL of solution A add 10 mL of [water](#) and 10 mL of a 10% v/v solution of [mercaptoacetic acid](#), allow to stand until the precipitate has coagulated, dilute to 100 mL with [water](#), add 5 mL of 5M [sodium hydroxide](#) and titrate with 0.05M [disodium edetate VS](#), using [methyl thymol blue mixture](#) as indicator, until the solution becomes a full purple colour, adding the titrant slowly as the end point is approached. Each mL of 0.05M [disodium edetate VS](#) is equivalent to 2.004 mg of Ca.