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Calcium Chloride

$CaCl_2 \cdot 2H_2O$ 147.01

Calcium chloride dihydrate CAS RN®: 10035-04-8.

$CaCl_2$ 110.98

Anhydrous CAS RN®: 10043-52-4.

DEFINITION

Calcium Chloride contains an amount of $CaCl_2$ equivalent to NLT 99.0% and NMT 107.0% of $CaCl_2 \cdot 2H_2O$.

IDENTIFICATION

- **A. Identification Tests—General, *Calcium*⟨191⟩**

  Sample solution: 100 mg/mL

  Acceptance criteria: Meets the requirements

- **B. Identification Tests—General, *Chloride*⟨191⟩**

  Sample solution: 100 mg/mL

  Acceptance criteria: Meets the requirements

ASSAY

- **Procedure**

  Sample solution: Dissolve 1 g of Calcium Chloride in a mixture of water and 3 N hydrochloric acid (100:5). Transfer the solution to a 250-mL volumetric flask, and dilute with water to volume.

  Analysis: Pipet 50 mL of the *Sample solution* into a suitable container, and add 100 mL of water, 15 mL of 1 N sodium hydroxide, and 300 mg of hydroxy naphthol blue. Titrate with 0.05 M edetate disodium VS until the solution is deep blue. Each mL of 0.05 M edetate disodium is equivalent to 7.351 mg of calcium chloride dihydrate ($CaCl_2 \cdot 2H_2O$).

  Acceptance criteria: 99.0%–107.0% of $CaCl_2 \cdot 2H_2O$

IMPURITIES

Change to read:

- ▲**Aluminum ⟨206⟩, *Procedure 1*▲** (CN 1-Jun-2023)

[Note—Perform if labeled as intended for use in hemodialysis.]

Test preparation: Use a 2.0-g sample.

Acceptance criteria: NMT 1 ppm

- **Iron, Aluminum, and Phosphate**

  Sample solution: 50 mg/mL

  Analysis: Add 2 drops of 3 N hydrochloric acid and 1 drop of phenolphthalein TS to the *Sample solution*. Then add ammonium chloride–ammonium hydroxide TS, dropwise, until the solution is faintly pink. Add 2 drops in excess, and heat the liquid to boiling.

  Acceptance criteria: No turbidity or precipitate is produced.

- **Limit of Magnesium and Alkali Salts**

  Sample solution: 20 mg/mL

  Analysis: To 50 mL of *Sample solution* add 500 mg of ammonium chloride. Heat the solution, and boil for 1 min. Rapidly add 40 mL of oxalic acid TS, and stir vigorously until precipitation is well established. Add immediately to the warm mixture 2 drops of methyl red TS and then 6 N ammonium hydroxide, dropwise, until the mixture is just alkaline. Cool to room temperature. Transfer to a 100-mL graduated cylinder, dilute with water to 100 mL, mix, and allow to stand for 4 h or overnight. Filter, and to 50 mL of the clear filtrate in a platinum dish, add 0.5 mL of sulfuric acid, and evaporate the mixture on a steam bath to a small volume. Carefully heat over a free flame to dryness, and continue heating to complete decomposition and volatilization of ammonium salts. Finally, ignite the residue to constant weight.

  Acceptance criteria: The weight of the residue is NMT 5 mg (1.0%).

SPECIFIC TESTS

- **pH ⟨791⟩**

  Sample solution: 50 mg/mL

  Acceptance criteria: 4.5–9.2

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight containers.
- **Labeling:** Where Calcium Chloride is intended for use in hemodialysis, it is so labeled.

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
CALCIUM CHLORIDE	Documentary Standards Support	SM52020 Small Molecules 5

Chromatographic Database Information: Chromatographic Database

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