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Zinc Oxide

ZnO 81.38

Zinc oxide CAS RN[®]: 1314-13-2; UNII: SOI2LOH54Z.

DEFINITION

Zinc Oxide, freshly ignited, contains NLT 98.0% and NMT 102.0% of zinc oxide (ZnO).

IDENTIFICATION

- **A.** When strongly heated, it assumes a yellow color that disappears on cooling.
- **B.** The retention time of the zinc peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

ASSAY

PROCEDURE

Proceed as directed in [Zinc Determination \(591\), Ion Chromatographic Method](#).

Diluent: 0.2% (w/v) [hydrochloric acid](#)

Standard solution: 20 µg/mL of [USP Zinc Oxide RS](#) in *Diluent*, prepared as directed in the chapter

Sample solution: 20 µg/mL of Zinc Oxide from the freshly ignited Zinc Oxide in *Diluent*, prepared as directed in the *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of zinc oxide (ZnO) in the portion of Zinc Oxide taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of zinc from the *Sample solution*

r_S = peak response of zinc from the *Standard solution*

C_S = concentration of [USP Zinc Oxide RS](#) in the *Standard solution* (µg/mL)

C_U = concentration of Zinc Oxide in the *Sample solution* (µg/mL)

Acceptance criteria: 98.0%–102.0% on the ignited basis

IMPURITIES

Change to read:

- **▲** [ARSENIC \(211\), Procedures, Procedure 1](#) ▲ (CN 1-JUN-2023) : NMT 6 ppm

LEAD

Sample solution: Add 2 g to 20 mL of water, stir well, and add 5 mL of [glacial acetic acid](#). Warm on a steam bath until dissolved.

Analysis: Add 5 drops of [potassium chromate TS](#).

Acceptance criteria: No turbidity or precipitate is produced.

IRON AND OTHER HEAVY METALS

Sample solution: Use the solution from *Carbonate and Color of Solution*.

Analysis: Cool 2 separate 5-mL aliquots of the *Sample solution*. Add potassium ferrocyanide TS to the first aliquot, and add [sodium sulfide TS](#) to the second aliquot.

Acceptance criteria: White precipitates are formed in both aliquots.

- [Loss on Ignition \(733\)](#)

Sample: 2 g

Analysis: Ignite the *Sample* at 500° to constant weight.

Acceptance criteria: NMT 1.0%

SPECIFIC TESTS

ALKALINITY

Analysis: Mix 1.0 g with 10 mL of hot water, add 2 drops of [phenolphthalein TS](#), and pass through a suitable filter of appropriate pore size.

Acceptance criteria: If a red color is produced, NMT 0.30 mL of 0.10 N [hydrochloric acid](#) is required to discharge it.

CARBONATE AND COLOR OF SOLUTION

Analysis: Mix 2.0 g with 10 mL of water, add 30 mL of 2 N [sulfuric acid](#), and heat on a steam bath with constant stirring.

Acceptance criteria: No effervescence occurs, and the resulting solution is clear and colorless. [NOTE—Use this solution in the test for *Iron and Other Heavy Metals*.]

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers.

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
ZINC OXIDE	Documentary Standards Support	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM32020 Small Molecules 3

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

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