



Approved by General Administration of Quality Supervision,

Inspection and Quarantine of the People's Republic of China

GBW06108a

Certificate of Certified Reference Material

Zinc Oxide

(Complexometric Standard)

CNRM

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Sample Number:

Date of Certification:

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1. Description of Material & Intended Use

This Certified Reference Material (CRM) is mainly intended for volumetric analysis as a complexometry primary reference material. It also can be used in other measurement process, such as calibration of measurement instruments, evaluation of measurement methods, and so on.

2. Preparation

This CRM is prepared as batches. It was subdivided into transparent glass bottles after passing the primary test of homogeneity.

3. Traceability and certification

The purity of this CRM was determined using weight titration method. It can be traceable to the national primary standard on the purity of primary reagent of China through the first-class CRM GBW06102 - disodium ethylenediamine tetraacetate. In the buffer solution of pH=10, the content of Zn was determined through the quantitative complexometric titration reaction with disodium ethylenediamine tetraacetate. Then the purity of zinc oxide was reached from the concentration of zinc ion.

The traceability of the certified value is ensured by using measurement methods and measuring instruments that meet the requirements of metrology.

4. Certified values and uncertainties

The certified value and the expanded uncertainty of the CRM are as follows:

Code	Certified value	Expanded uncertainty, $k=2$
GBW06108a	Mass fraction: 99.97% (as complexometry of zinc oxide)	Mass fraction: 0.04% (as complexometry of zinc oxide)

Contributions from measurement repeatability, purity of disodium ethylenediamine tetraacetate, weighing, molecular weight, judgment on titration end-points, homogeneity and stability were considered in uncertainty evaluation of the reference material.

5. Homogeneity and Stability Testing

According to the requirement of national criterion for primary certified reference materials, the homogeneity and stability testing for the dry CRM were carried out through random sampling by using weight titration method. The F -test method was used and no statistically significant difference among bottles was observed. The reference material is in good homogeneity. The stability testing has been implemented for more than 10 years and the results fluctuated in the range of the uncertainty. It showed that the reference material is well stable. The minimal sample intake of this CRM is 0.15g.

The valid period of this CRM is 10 years from the date of certification. The stability of this RM is regularly monitored by NIM. Any change of the certified value during this period will be informed to the customers in time.

6. Instructions for use

● This certified reference material is encapsulated in glass bottles and each bottle contains about 50g of the CRM. The bottle should be capped with inside and outside lids and be encapsulated in vacuum aluminum foil bags.

● It should be kept in dark, cool and dry place.

● Prior to use, it should be drying for six hours at $800\pm 10^{\circ}\text{C}$ then be placed in desiccators with silica gel desiccant. Weigh it after it was cooled to room temperature. While Weighing, buoyancy correction must be done and the density of zinc oxide solid is 5.61 g/cm^3 .



STATEMENT

1. The CRM is only limited in use of scientific research and analytical measurement. Any loss caused by improper use and storage by customer will not be respond by maker.
2. Please check the kind, number and package as soon as the sample arriving. The compensate do not relate to any loss except for the CRM.
3. The maker only answer for the intact certificate with CRM cachet of nim. Please keep the certificate appropriately.
4. Please contact with technical consultant section, if more information related to the use of the CRM is needed.

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