Approved by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

GBW08604

Certificate of Certified Reference Material

Fluoride in Water

Sample Number：

Date of Certification：

Producer： National Institute of Metrology

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1. Description of Material & Intended Use

This certified reference material (CRM) is mainly intended for calibration of measurement instruments, validation and evaluation of analytical methods, quality control on measurement process and technology arbitration and certificate assessment on analytical results in the process of trace analysis for fluorine element in drinking water, waste water and natural water.

2. Preparation

The starting materials of this reference material, primary reagent sodium fluoride (NaF) with accurately known purity and high purity boric acid (H_3BO_3), are diluted with organic-component-free water in clean room at 20℃±2℃ by using gravimetric method. The water is purified for three times by using reverse osmosis method, ion exchange method and quartz distiller.

The boric acid of 0.01mol/L is used as the protective agent for trace element fluorine and the elements in the matrix are close to the actual water samples, they are K^+ 2.2mg/L, Na^+ 23mg/L and Cl^- 37mg/L.

3. Traceability and certification

The purity of primary agent NaF was determined using spark source mass spectrometry - impurity deduction method. The preparing value (formulated value) of concentration, checked with ion chromatography method, is considered as the certified value of the concentration of this CRM.

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

4. Certified value and uncertainty

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

Code	Certified value / μg·g^{-1}	Expanded uncertainty / μg·g^{-1}, k=2
GBW08604	1.00	0.02

Contributions from purity of materials, sample weighing for high purity materials and solution and change of temperature 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 were carried out through random sampling by using ion chromatography method. The *F*-test method was used and no statistically significant difference among bottles was observed. The reference material is in good homogeneity and stability.

The valid period of this RM is two 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 sealed up in polyethylene (PE) bottles and each unit contains about 80ml of the standard solution.
- This certified reference material should be kept in cool and clean place. Prior to use, the CRM should be thoroughly mixed by inverting the bottle.
- This certified reference material should be used as soon as possible and be stored cold after being opened. And it should be prevented from contamination while using.
- The relationship between the density of solution and temperature are as follows:

Temperature / ℃	5	10	15	20	25	30	35
Density / g·cm^{-3}	1.000	1.000	1.000	0.999	0.998	0.996	0.995

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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