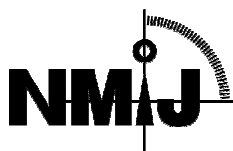


National Institute of Advanced Industrial Science and Technology

National Metrology Institute of Japan



Reference Material Certificate

NMIJ CRM 3001-b

No. +++

Potassium Hydrogen Phthalate



This certified reference material (CRM) was produced in accordance with NMIJ's management system in compliance with JIS Q 0034 (ISO Guide 34). It is intended to be used for standardizing titrants for acidimetry and other similar uses.

Certified Value

The certified value of this CRM is given in the following table. The quoted uncertainty is the half-width of the expanded uncertainty interval calculated using a coverage factor (k) of 2, which gives a level of confidence of approximately 95%.

| | Certified value, Mass fraction (%) | Expanded uncertainty, Mass fraction (%) |
|--|---------------------------------------|--|
| Mass fraction of acids expressed as potassium hydrogen phthalate | 99.991 | 0.014 |

Analysis

The certified value was determined by analyzing 10 bottles of the CRM that were chosen by stratified random sampling based on the order of bottling. The analysis was conducted on the basis of acidimetric coulometric titration. The certified value was calculated as the mass fraction of acids expressed as potassium hydrogen phthalate. The molar mass of potassium hydrogen phthalate (204.2212) was calculated from the IUPAC atomic weight table (2007). A value of $96\,485.3399\text{ C mol}^{-1}$ was used for the Faraday constant. A value of 1.636 g cm^{-3} (25 °C) was used as the density of potassium hydrogen phthalate for air-buoyancy correction.

Metrological Traceability

The certified value was determined by coulometric titration as a primary method of measurement, and is traceable to the International System of Units (SI).

Mutual Recognition Arrangement under Meter Convention

This certificate is consistent with the calibration and measurement capabilities (CMCs) included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures (CIPM). Under the MRA, all participating institutes recognize the validity of each other's calibration and measurement certificates for the quantities, ranges, and measurement uncertainties specified in Appendix C (Appendix C of MRA can be found at <http://kcdb.bipm.org/AppendixC/default.asp>).

Expiration of Certification

The certification of this CRM is valid until March 31, 2018, provided that the material remains unopened and is stored in accordance with the instructions given in this certificate.

Sample Form

This CRM is in the form of a white powder, contained in a brown glass bottle (net mass 50 g).

Homogeneity

The homogeneity of the CRM was determined by coulometric titration analysis of 10 bottles, which were chosen by stratified random sampling based on the order of bottling. The homogeneity of each element is reflected in the uncertainty of the certified value.

Precautions for Storage

This CRM should be kept at room temperature (15 °C to 35 °C) and a relative humidity of 60 % or less; moreover, it should not be affected by acids/bases and other vapors.

Instructions for Use

This CRM should be dried for 1 h at 120 °C without crushing and then held at room temperature for another 1 h in a silica-gel desiccator. The recommended sample mass for analysis is 0.4 g or more. The dried material should be used promptly after drying and should not be dried again. Please refer to the safety data sheet (SDS) for this material prior to use.

Preparation Method

The source material of this CRM was purchased from Wako Pure Chemical Industries, Ltd.

NMIJ Analysts

For this CRM, the technical and production manager is A. Hioki and the analysts are T. Asakai and T. Suzuki.

Technical Information

Customer registration on the NMIJ Website (given below) will facilitate notification of any revision of the information given above. Technical reports regarding this CRM can be obtained from the contact details given below.

Reproduction of Certificate

In reproducing this certificate, it should be clearly indicated that the document is a copy.

December 8, 2009

Tamotsu Nomakuchi
President

National Institute of Advanced Industrial Science and Technology

If you have any questions about this CRM, please contact:
National Institute of Advanced Industrial Science and Technology,
National Metrology Institute of Japan,
Metrology Management Center, Reference Materials Office,
1-1-1 Umezono, Tsukuba, Ibaraki 305-8563, Japan
Phone: +81-29-861-4059; Fax: +81-29-861-4009,
<https://www.nmij.jp/english/service/C/>

Revision history

| | |
|-------------------|---|
| December 20, 2013 | The expiration date of this certificate was changed to March 31, 2018, from March 31, 2015. |
| December 20, 2013 | The description on Mutual Recognition Arrangement (CIPM MRA) was added. |

Note: This certificate is a translation of the original Japanese certificate and is not an official document.