National Institute of Advanced Industrial Science and Technology

National Metrology Institute of Japan

Reference Material Certificate

NMIJ CRM 3004-a
No. +++

Amidosulfuric Acid

This certified reference material (CRM) is produced in accordance with the NMIJ's management system and is in compliance with ISO 17034 and ISO/IEC 17025. This CRM is intended for use in the standardization of titrants for acidimetry or as a standard of nitrogen content.

Certified Values

The certified values (mass fraction of acids expressed as amidosulfuric acid and mass fraction of nitrogen) of this CRM are given in the table below. The uncertainty of each certified value is the half-widths of the expanded uncertainty intervals 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 (%)
Acids expressed as amidosulfuric acid	99.986	0.013
Nitrogen expressed as amidosulfuric acid	14.4246 (99.992)	0.0043 (0.032)

Analysis

The certified value of the mass fraction of acids was determined by coulometric titration. The molar mass of amidosulfuric acid (97.0937) was calculated from the IUPAC atomic weight table (2007). The value 96 485.339 9 C mol^{-1} was used for the Faraday constant (CODATA: 2006). The value 2.15 g cm^{-3} (25 °C) was used as the density of amidosulfuric acid for air-buoyancy correction.

The mass fraction of nitrogen was determined by coulometric titration. The molar mass of amidosulfuric acid (97.0965) was calculated from the IUPAC atomic weight table (2009). The value 96 485.336 5 C mol^{-1} was used for the Faraday constant (CODATA: 2010). The value 2.15 g cm^{-3} (25 °C) was used as the density of amidosulfuric acid for air-buoyancy correction.

Metrological Traceability

Each certified value was determined by coulometric titration as the 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) that are 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 (as for Appendix C of MRA, see http://kcdb.bipm.org/AppendixC/default.asp).

Expiration of Certification

This certificate is valid for one year from the date of shipment, provided that the material is stored in accordance with the instructions given in this certificate.

Sample Form

This CRM is in the form of a white powder at room temperature in a glass bottle (net mass 25 g).

Homogeneity

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

Instructions for Storage

This CRM should be stored at a temperature between 15 °C and 35 °C, at a relative humidity of 60% or less, and shielded from light.

Instructions for Use

This CRM should be dried for 2 h at 50 °C without crushing and then held at room temperature for 30 min in a desiccator with silica-gel. The recommended minimum sample mass is 0.2 g or more for one analysis. The dried material should be used promptly after drying and should not be dried again.

Precautions for Handling

Refer to the safety data sheet (SDS) on this CRM before use.

Preparation

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

NMIJ Analysts

The technical manager for this CRM is MIURA T., the production manager is ASAKAI T., and the analyst is ASAKAI T.

Information

If substantive technical changes occur that affect the certification before the expiration of this certificate, NMIJ will notify the registered customer. Customer registration on the NMIJ Website (given below) will facilitate notification. 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.

April 1, 2020

ISHIMURA Kazuhiko
President
National Institute of Advanced Industrial Science and Technology

If you have any questions about this CRM, please contact:
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National Metrology Institute of Japan,
Center for Quality Management of Metrology, Reference Materials Office,
1-1-1 Umezono, Tsukuba, Ibaraki 305-8563, Japan
Phone: +81-29-861-4059; Fax: +81-29-861-4009, https://unit.aist.go.jp/nmij/english/refmate/

Revision history

August 10, 2012: The expiration of this certificate was changed from March 31, 2014 to March 31, 2019.

August 10, 2012: The description on the Mutual Recognition Arrangement (CIPM MRA) was added.

March 21, 2013: The certified value of the mass fraction of nitrogen and Reference Information were added.

April 1, 2015: "Metrology Management Center" was renamed to "Center for Quality Management of Metrology."

September 4, 2018: The description in "Expiration of Certification" was changed to "one year from the date of shipment."
Expanded uncertainty of certified value for acids was changed to 0.013 %.
Expanded uncertainties of certified values for nitrogen were changed to 0.0043 % (0.032 %).