

National Institute of Advanced Industrial Science and Technology

National Metrology Institute of Japan



Reference Material Certificate

NMIJ CRM 6005-a
No. +++

Creatinine

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 calibration of analytical instruments and reagents, control of the precision of analysis, and validation of analytical methods and instruments.

Certified Value

The certified value for purity (in mass fraction) of creatinine is given in the table below. The uncertainty of the certified value is the expanded uncertainty obtained by multiplying the combined standard uncertainty by a coverage factor (k) of 2, and it is the half-width of an interval estimated to have a level of confidence of approximately 95 %.

	CAS No.	Certified value, Mass fraction (kg/kg)	Expanded uncertainty, Mass fraction (kg/kg)
Creatinine	60-27-5	0.999	0.002

Analysis

The certified value is calculated on the basis of the results of acidimetric titration, nitrogen determination by the Kjeldahl method, and impurity determination by high performance liquid chromatography (HPLC).

Metrological Traceability

The certified value was determined by titrimetry as a primary method of measurement, with NMIJ CRM 3001-a (potassium hydrogen phthalate) and NIST SRM 351 (sodium carbonate) as primary standards, and by impurity determination using a HPLC calibrated with purity-evaluated creatine. The certified value, therefore, is traceable to the International System of Units (SI).

Mutual Recognition Arrangement under Metre Convention

The certified value and expanded uncertainty of this CRM is recognized for international equivalence based on the Mutual Recognition Arrangement under the Metre Convention (CIPM MRA). The calibration measurement capability (CMC) of NMIJ related to this CRM is registered in the Key Comparison Database (KCDB) (see <https://www.bipm.org/kcdb/>) of the International Bureau of Weights and Measures (BIPM).

Expiration of Certification

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

Description of the material

This CRM is in the form of a white powder of creatinine. 2 g of this material was bottled in a glass vial and kept in an aluminum-laminated bag.

Instructions for Storage

This CRM should be stored at a temperature between 15 °C and 25 °C in a clean place and shielded from bright lights.

Instructions for Use

Considering the homogeneity, a minimum sample mass of 100 mg should be used. This CRM is for laboratory use only and not for *in vivo* use.

Precautions for Handling

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

Preparation

This CRM was prepared by Wako Pure Chemical Industries, Ltd. Purified creatinine was bottled into vials under an argon atmosphere, and each vial was sealed in an aluminum-laminated bag.

Technical Information

The following values are not certified but are provided for information. The creatine content as determined by HPLC was 0.06 g/kg. The moisture content as determined by Karl Fischer titration was 0.1 g/kg. The concentration of soluble chlorides as determined by ion chromatography was 0.9 mg/kg.

NMIJ Analysts

For this CRM, the technical and production manager is TAKATSU A. and the analysts are TAKATSU A., EYAMA S. and SAEKI M.

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:
National Institute of Advanced Industrial Science and Technology,
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

April 1, 2015: "Metrology Management Center" was renamed to "Center for Quality Management of Metrology."
October 13, 2015: The description in "Expiration of Certification" was changed to "one year from the date of shipment."
The description on Mutual Recognition Arrangement under Mete Convention was added.