

National Institute of Advanced Industrial Science and Technology

## National Metrology Institute of Japan



## Reference Material Certificate

NMIJ CRM 3006-a  
No. +++

Potassium Iodate

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 oxidimetry and so on.

**Certified Value**

The certified value of this CRM is given in the table below. The uncertainty of the certified value 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 (%)
Oxidants expressed as potassium iodate	99.973	0.022

**Analysis**

The certified value was determined by coulometric titration and gravimetric titration. At first, the concentration of a sodium thiosulfate solution was determined by coulometric titration with electrogenerated iodine; then, the liberated iodine from potassium iodate by adding potassium iodide and sulfuric acid was gravimetrically titrated with the sodium thiosulfate solution. The molar mass of potassium iodate (214.0010) was calculated from the IUPAC atomic weight table (2007). A value of  $96\,485.339\,9\text{ C mol}^{-1}$  was used for the Faraday constant (CODATA: 2006). A value of  $3.89\text{ g cm}^{-3}$  (25 °C) was used as the density of potassium iodate for air-buoyancy correction.

**Metrological Traceability**

The certified value was determined by titration with sodium thiosulfate solution standardized 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) 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 and it of ca. 25 g in net volume is kept in a glass bottle.

### Homogeneity

The homogeneity of this CRM was determined by analyzing 10 bottles, which were chosen by a stratified random sampling with the order of bottling. The homogeneity is reflected in the uncertainty of the certified value.

### Instructions for Storage

This CRM should be stored at a temperature between 15 °C and 35 °C and at a relative humidity of 60% or less in a clean place shielded from light. It should not be affected by acids, bases, oxidants, reductants, organic substances and others.

### Instructions for Use

This CRM should be dried for two hours at 130 °C without crushing and then held at room temperature for one hour in a silica-gel desiccator. The recommended minimum sample mass is 0.15 g or more for one analysis. The dried material should be used promptly after drying and should not be dried again.

### Precautions for Handling

Careful attention should be paid to this material being a deleterious substance. Refer to the safety data sheet (SDS) on this CRM before use.

### Preparation

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

### NMIJ Analysts

The technical and production manager for this CRM is HIOKI A. 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:  
National Institute of Advanced Industrial Science and Technology,  
National Metrology Institute of Japan,  
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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

December 20, 2013: The expiration of this certificate was changed to "March 31, 2020" from "March 31, 2015."

December 20, 2013: The description on "Mutual Recognition Arrangement under Meter Convention" was added.

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

January 15, 2019: The description in "Expiration of Certification" was changed to "one year from the date of shipment."  
Expanded uncertainty of certified value was changed to 0.022 %.

Sample