

National Institute of Advanced Industrial Science and Technology

## National Metrology Institute of Japan



## Reference Material Certificate

NMIJ CRM 5133-a01

No. +++

Secondary Electrolytic Conductivity Standard Solution  
Aqueous Solution of Potassium Chloride (0.01 mol kg<sup>-1</sup>)

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 electrolytic conductivity measurement instruments.

**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 S m <sup>-1</sup>	Expanded uncertainty S m <sup>-1</sup>
Electrolytic Conductivity (25 °C)	0.140 61	0.000 74

**Analysis**

The certified value of this CRM was determined by using NMIJ CRM 5123-a06 (Electrolytic Conductivity Standard Solution, Aqueous Solution of Potassium Chloride (0.01 mol kg<sup>-1</sup>)) and the secondary glass cell for electrolytic conductivity.

**Metrological Traceability**

The certified value was determined based on NMIJ CRM 5123-a06 (Electrolytic Conductivity Standard Solution, Aqueous Solution of Potassium Chloride (0.01 mol kg<sup>-1</sup>)). The certified value, therefore, is traceable to the International System of Units (the SI).

**Mutual Recognition Arrangement under Meter Convention**

This certificate is consistent with the calibration and measurement capabilities (CMCs) that are presented in Appendix C of the Mutual Recognition Arrangement (MRA) established 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 (See <http://kcdb.bipm.org/AppendixC/default.asp> for details of Appendix C of the MRA).

**Expiration of Certification**

This certificate is valid for 6 months from the date of shipment or until April 18, 2023, whichever comes earlier, provided that this CRM remains unopened and is stored in accordance with the instructions given in this certificate.

**Sample Form**

This CRM of ca. 250 mL in net volume is kept in a screw-cap glass bottle. The bottle is sealed in a plastic bag.

**Homogeneity**

The homogeneity of this CRM was determined based on electrolytic conductivity measurements taken from four bottles (the

first, the middles and the last in the order of bottling) chosen from among the total 75 bottles. The electrolytic conductivity was determined with the glass cell. The homogeneity has been incorporated in the uncertainty of the certified value.

#### **Instructions for Storage**

This CRM should be kept in the glass bottle sealed in a plastic bag. This CRM should be stored in a clean place at temperatures of 15 °C to 30 °C.

#### **Instructions for Use**

The bottle should be allowed to warm (or cool down) to room temperature before opening. Prior to use, the bottle should be shaken gently to homogenize the solution without forming air bubbles. This CRM should be used up promptly once the bottle is opened.

#### **Precautions for Handling**

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

#### **Preparation**

The prescribed amount of potassium chloride was dissolved in the prescribed amount of pure water; the nominal molality is 0.01 mol kg<sup>-1</sup>. The solution was then divided into 250-mL glass bottles; each bottle contains *ca.* 250 mL of the solution.

#### **NMIJ Analysts**

The technical manager for this CRM is OHATA M., the production manager is ASAKAI T., and the analysts are HIBINO Y., MAKSIMOV I., ONUMA S., SUZUKI T. and ASAKAI T.

#### **Information**

If substantive technical changes occur that affect the certification before the expiration of this certificate, NMIJ will notify the registered customers. 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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