

National Institute of Advanced Industrial Science and Technology

National Metrology Institute of Japan



Reference Material Certificate

NMIJ CRM 4220-a
No. +++

Potassium Perfluorooctanesulfonate in Methanol

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 instruments or for confirming the validity of analytical methods or instruments during quantification of perfluorooctanesulfonic acid (PFOS) and its salts.

Certified Value

The certified value for this CRM is the concentration (mass fraction) 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 %.

Substance	CAS No.	Certified value, Mass fraction (mg/kg)	Expanded uncertainty, Mass fraction (mg/kg)
Potassium perfluorooctanesulfonate (Linear) (Potassium heptadecafluorooctane-1-sulfonate)	2795-39-3	9.93	0.15

Analysis

The certified value of this CRM was obtained by multiplying the dilution ratio of potassium perfluorooctanesulfonate in the prepared solution with the purity of this compound. The purity of potassium perfluorooctanesulfonate was determined by the freezing point depression method using a differential scanning calorimeter (DSC) and by the coulometric titration method using a Karl Fisher (KF) titrator.

Metrological Traceability

The certified value was determined by the freezing point depression and coulometric titration methods. The certified value of this CRM was calculated using these results. The certified value, therefore, is traceable to the International System of Units (SI).

Mutual Recognition Arrangement under Meter Convention

The certified value 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 this CRM 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 colorless and clear liquid at room temperature. This CRM of ca. 1 g in net volume is sealed in a 2-mL amber glass ampoule under argon atmosphere.

Instructions for Storage

This CRM should be stored at temperature of 15 °C to 25 °C and protected from light.

Instructions for Use

This CRM is for laboratory use only. This CRM should be used promptly once the ampoule is opened.

Precautions for Handling

Keep away from heat and ignition sources. Wear personal protective equipment, such as safety mask and gloves when handling. The use, handling, and storage of this CRM should be carried out according to the laws regulating the components of this CRM. Refer to the safety data sheet (SDS) on this CRM before use.

Preparation

This CRM was prepared by dissolving commercial potassium perfluorooctanesulfonate into methanol. Of the solution, 1 g was dispensed and sealed in an amber glass ampoule under argon atmosphere.

Technical Information

The density value of this CRM is 0.7913 g/cm³ at 20 °C. This CRM contains branched potassium perfluorooctanesulfonate (0.052 mg/kg). The concentration of this impurity in this CRM was estimated by using liquid chromatography - mass spectrometry (LC/MS).

NMIJ Analysts

The technical manager for this CRM is NUMATA M., the production manager is HANARI N., and the analysts are YAMAZAKI E., HANARI N., ITOH N., ISHIKAWA K., YARITA T., IWASAWA R. and AOYAGI Y.

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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Phone: +81-29-861-4059, <https://unit.aist.go.jp/nmij/english/refimate/>

Revision history

February 1, 2012: The expiration date of this certificate was changed to "March 31, 2015" from "March 31, 2013."

February 4, 2014: The expiration date of this certificate was changed to "March 31, 2019" from "March 31, 2015."

February 4, 2014: 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."

February 13, 2018: The description in "Expiration of Certification" was changed to "one year from the date of shipment."

Sample