

National Institute of Advanced Industrial Science and Technology

National Metrology Institute of Japan



Reference Material Report

NMIJ RM 5014-a

No. +++



Aqueous Solution of Poly(Sodium Styrenesulfonate) for Zeta-Potential Measurement

This reference material (RM) is produced in accordance with the NMIJ's management system and in compliance with ISO 17034 and ISO/IEC 17025. This RM is intended for use in the validation of zeta potential measurement.

Indicative Value

The indicative value of this RM at 25 °C is given in the table below. The uncertainty of the indicative 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 %.

	Indicative value (mV)	Expanded uncertainty (mV)
Zeta potential (25 °C)	-57	19

Analysis

The indicative value of the zeta potential value of this RM, ζ , was determined by measuring the electrophoretic mobility μ by the electrophoretic light scattering method specified by JIS Z 8836:2017 (identical to ISO 13099-2:2012) and calculated using Smoluchowski's theory as $\zeta = \mu\eta / \epsilon$, where η is the viscosity of water (0.890 mPa s at 25 °C) and ϵ is the dielectric constant of water (6.95×10^{-10} F m⁻¹ at 25 °C). The validity of the zeta-potential measurements by NMIJ has been confirmed through the measurement of the certified reference material JRC ERM-FD305.

Expiration of Report

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

Description of the Material

This RM is an aqueous solution of poly(sodium styrenesulfonate) with a mass fraction of about 10 mg/g. This RM is in the form of a colorless and transparent liquid at ordinary temperature, and approximately 1 mL is sealed in a glass bottle.

Instructions for Storage

This RM should be stored in a clean place at temperatures of 1 °C to 10 °C and protected from light.

Instructions for Use

This RM should be used promptly once a bottle is opened, and should not be reused. Avoid dilution and strong stirring, and be careful not to introduce bubbles.

Precautions for Handling

Ensure proper ventilation. Use personal protective equipment, such as a safety mask and gloves, when handling. Refer to the safety data sheet (SDS) on this RM before use.

Preparation

This RM was produced by dissolving commercially available poly(sodium styrenesulfonate) in ultrapure water and subdividing the solution into glass bottles.

NMIJ Analysts

The technical manager for this RM is SAKURAI H., the production manager is TAKAHASHI K., and the analyst is TAKAHASHI K.

Information

If substantive technical changes occur that affect the value assignment before the expiration of this report, NMIJ will notify the registered customers. Customer registration on the NMIJ Website (given below) will facilitate notification. Technical reports regarding this RM can be obtained from the contact details given below.

Reproduction of Report

In reproducing this report, it should be clearly indicated that the document is a copy.

February 26, 2026

ISHIMURA Kazuhiko
President

National Institute of Advanced Industrial Science and Technology

If you have any questions about this RM, please contact:
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