Specification – Certified Reference Material

Certipur® Potassium Chloride Solution (nominal 12.8 mS/cm)

Certified Reference Material for Measurement of Electrolytic Conductivity

Accreditation:

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-RM-15185-01-00

Merck KGaA, Darmstadt, Germany is accredited by the German accreditation authority as registered reference material producer (D-RM-15185-01-00) in accordance with **ISO 17034**.

Producer:	Merck KGaA, Frankfurter Str. 250, 64293 Darmstadt, Germany
Product no.:	1.01554.0001
Description of CRM:	Certipur® Potassium Chloride Solution (nominal 12.8 mS/cm) Certified Reference Material for Measurement of Electrolytic Conductivity
Expiry date:	3 years
Storage:	+2°C to +8°C tightly closed in the original container
Composition:	KCl in H_2O (c_{KCl} = 0.1 mol/l)

Specification	Associated uncertainty, $U=k \cdot u$ ($k=2$)
12.6 – 13.0 mS/cm	**± 0.98% (25°C)**

Metrological traceability:	This Certified Reference Material is directly traceable to the corresponding primary reference material PTB-KCl01-xxx//xx characterized by PTB. *PTB: Physikalisch Technische Bundesanstalt, Braunschweig, Germany*
Measurement method:	Electrolytic conductivity is measured by using a conductivity meter and calibrated with Primary Reference Material.

Intended use:	This certified reference material is intended for use in aqueous solution as a calibration standard for the determination of the conductivity cell constant or as a control sample.
Instructions for handling and correct use:	The electrolytic conductivity is strongly dependent on the temperature. It is therefore necessary to keep the temperature constant within the measurement cells (variation less than 0.1 K).
Health and safety information:	Please refer to the Safety Data Sheet for detailed information about the nature of any hazard and appropriate precautions to be taken.
Preparation:	This certified reference material is prepared gravimetrically from potassium chloride (Cat. No.1.04936*) and high purity water (Cat. No. 1.16754*). After preparation the solution was allowed to equilibrate with atmospheric carbon dioxide. The certified value given above is based on this equilibrium condition and the solution should not be degassed before use. *Products used from Merck KGaA, Darmstadt, Germany

Associated uncertainty:

The expanded uncertainty U_{CRM} is calculated as $U_{CRM}=k \cdot u_{CRM}$, where $k=2$ is the coverage factor for a 95% coverage probability and u_{CRM} is the combined standard uncertainty in accordance to ISO 17034.

The combined uncertainty u_{CRM} is derived from combination of the squared uncertainty contributions:

$$u_{CRM} = \sqrt{u^2_{Characterisation} + u^2_{Homogeneity} + u^2_{Stability}}$$

$u_{characterisation}$:	is the uncertainty in accordance with DIN EN ISO/IEC 17025 which includes the contributions of the primary reference material and the measuring system. The characterisation measurements have been conducted by our DAkkS accredited calibration laboratory.
$u_{homogeneity}$:	is the between-bottle variation in accordance with ISO 17034. The assessment of homogeneity is performed by analysis of a representative number of systematically chosen sample units.
$u_{stability}$:	is the uncertainty obtained from short-term and long-term stability in accordance with ISO 17034. The stability studies are the basis for the quantification of the expiry date of this reference material for the unopened bottle.

Informative values:

Temperature dependence[1]:

Temperature °C	Conductivity mS/cm	Temperature °C	Conductivity mS/cm
5	8.20	26	13.12
10	9.33	28	13.63
15	10.48	30	14.12
20	11.65	35	15.40
22	12.12	40	16.66
24	12.63	45	17.99
25	12.86	50	19.32

[1]Temperature deviation data provided for reference only. Values are not batch-specific and should not be considered certified values.

Detailed information is provided by the certificates and the certification report on our website.