



The wise choice

Conductivity Standards

for conductivity meter calibration



Conductivity is the measure of the ability of a material or substance to let electrical current pass through it. Conductivity measurements are routinely used for many industrial and environmental applications as a fast, cheap and reliable method of measuring ionic content in a solution, especially in water quality control. The correct calibration of the equipment cell constant is essential to obtain reliable, reproducible and accurate results.

The conductivity of a substance depends on several factors:

- ▶ Solvent
- ▶ Nature of the ions
- ▶ Viscosity
- ▶ Temperature
- ▶ Number of ions
- ▶ Concentration

Scharlab's Conductivity Standards are prepared using gravimetric methods, following a procedure that minimises the effect of CO₂ on the conductivity of the standard.



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CERTIFICATE OF ANALYSIS

Product: Conductivity standard, 147 µS/cm (25 °C), KCl 0,001 mol/l Batch: 20015301
PA0100 Quality release date: 22/07/2019
 Expiry date: 07/2022

Analysis	Batch value	Specifications	8U
Conductivity (25°C)	147,3 µS/cm	145,0 - 149,0	0,338%

Preparation
Conductivity standard solutions are prepared using gravimetrically procedures. The solution has been equilibrated with atmospheric carbon dioxide after preparation.
Composition per liter is Potassium Chloride 0,001 mol/l.

Temperature dependence of the conductivity value
The electrolytic conductivity is strongly influenced by the temperature. It is therefore necessary to refer to the table below for an accurate control of conductivity values.

T(°C)	k (µS/cm)
15	136,5
20	132,8
25	147,0
30	161,2
35	177,5
40	191,5

Traceability
The cell constant is calibrated against SRM from NIST.
SRM 999c Potassium Chloride.

Uncertainty
It characterizes the dispersion of the values that could be attributed to the measurand. The limits of the expanded uncertainty are given at a confidence level of 95% (k=2).

Measurement
The standard has been measured with an electrode, whose cell constant is approx. 0,1 cm-1, and a temperature sensor.

Storage and use
This conductivity standard solution is intended for use as a calibration standard for the determination of the conductivity cell constant. Take care in avoiding air bubbles at the electrode during measurement.
If the product is stored open/uncapped, this solution is stable for 3 years from the date of manufacturing.
Once the bottle is opened, store tightly closed at room temperature away from acid fumes, nitrogen oxides and sulfur dioxide. Each time the bottle is opened, a portion of the solution will evaporate, which will change the conductivity.
Never introduce the electrode in the bottle for measurements.
Never pour the used solution back in the bottle.

This certificate does not exempt the user from checking the results upon receipt of the goods.
Any copy of our CoA may be obtained from our website at www.scharlab.com

M. Canal
Laboratory Manager

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1. Certificate of Analysis

Scharlab's Conductivity Standards are always accompanied by a Certificate of Analysis, with all the information on composition, expiry date, temperature dependence, traceability, uncertainty and calibration of the standard.

2. Traceability

Scharlab offers secondary Conductivity Standards directly traceable to SRM of NIST (National Institute of Standards and Technology, USA).

3. Uncertainty

The total uncertainty of our Conductivity Standards is ±1%, guaranteeing high accuracy.

4. Temperature dependence

The conductivity value of a solution depends directly on the temperature of the medium. For this reason, the conductivity measurement values are only useful as long as the measurement temperature is indicated. Our Conductivity Standards are measured at 25 °C, in a 5-ring multi-electrode cell, minimising the adverse effects of polarisation, obtaining more accurate and precise results. In addition, our CoA and TDS contain the table of Conductivity dependence vs T°, showing the conductivity values between 15 and 40 °C, in intervals of 5 °C.

5. Expiry date

All Scharlau Conductivity Standards have an expiry date of 3 years. This value appears explicitly on the product label and CoA.

6. Packaging

We pack our standards in HDPE bottles, and they are delivered in plastic bags next to their Certificate of Analysis. Our range of standards is available in 250 and 500 ml containers.



Benefits of Scharlau's Conductivity Standards

- ▶ They cover a wide range of conductivities
- ▶ Conductivity values vs wide temperature range
- ▶ Standards directly traceable to NIST SRM (SRM 999)
- ▶ Real conductivity value in CoA
- ▶ Expanded uncertainty of results expressed with 95% confidence
- ▶ Reproducible and accurate
- ▶ 3-year expiry date

Ordering information

Conductivity	Description	Packaging	Art. No.
84 µS/cm	Conductivity standard, 84 µS/cm (25 °C), KCl 0,0006 mol/l	250 ml	PA00990250
		500 ml	PA00990500
147 µS/cm	Conductivity standard, 147 µS/cm (25 °C), KCl 0,001 mol/l	250 ml	PA01000250
		500 ml	PA01000500
1413 µS/cm	Conductivity standard, 1413 µS/cm (25 °C), KCl 0,01 mol/l	250 ml	PA01010250
		500 ml	PA01010500
12880 µS/cm	Conductivity standard, 12880 µS/cm (25 °C), KCl 0,1 mol/l	250 ml	PA01020250
		500 ml	PA01020500
50000 µS/cm	Conductivity standard, 50000 µS/cm (25 °C), KCl aqueous solution	250 ml	PA01030250

Table of Conductivity dependence (µS/cm) vs Temperature

Temperature	PA0099	PA0100	PA0101	PA0102	PA0103
15 °C	67,6	118,5	1139	10439	40690
20 °C	75,8	132,8	1276	11664	45350
25 °C	84,0	147,0	1413	12880	50000
30 °C	92,2	161,2	1550	14112	54660
35 °C	100,9	177,5	1694	15392	59320
40 °C	109,2	191,5	1833	16678	63980

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Further information:



Download here the leaflet:



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