

Conductivity Standards

Introduction

Reagecon is the world's largest producer of conductivity standards and is credited with the invention of low level aqueous standards. The company is still the only producer worldwide with the capability to manufacture and stabilise these products at such low levels of conductivity. This low range of standards includes $1.3\mu\text{S} \pm 0.5\mu\text{S}$ - the lowest aqueous conductivity standard available worldwide. The following summary details the principle features and benefits of this exciting range of products.

Extensive range of values

Reagecon offer over 45 different values of Conductivity and Total Dissolved Solids (TDS) standards, ranging from as low as $1.3\mu\text{S}/\text{cm}$ to as high as $500,000\mu\text{S}/\text{cm}$. Customised or bespoke values can be manufactured on demand.

Matrix Matched

The matrix of a solution is defined as "the components of the sample other than the analyte". In all analytical measurements, it is of utmost importance that the matrix of the standard and the sample are the same. As conductivity measurement is, in the main, a water quality measurement, the standard used should also have an aqueous matrix. Reagecon's conductivity standards are all aqueous based, thereby eliminating any errors attributable to matrix mismatch.

Non-Hazardous

As Reagecon's conductivity standards are aqueous, they are non-hazardous. They offer the following benefits over solvent-based conductivity standards

- Ease and cost of shipping, without the need to provide hazardous goods' paperwork
- Reduced Health & Safety requirements for storage and use
- Ease and cost of disposal - solvent-based conductivity standards require expensive, specialised disposal to comply with environmental regulations.

Guaranteed Stability

As a result of the extensive R&D that led to our innovative manufacturing process, Reagecon can guarantee the stability of their complete range of conductivity standards over their entire shelf life. The stability offered by Reagecon's conductivity standards varies from that of their competitors in one vital area. We can guarantee that our conductivity standards will remain within specification, (up to their expiry date), right through their working life, regardless of when the bottle was first opened provided Good Laboratory Practise is adhered to. This eliminates the need to open a fresh bottle of standard every time the product is used. (The $1.30\mu\text{S}/\text{cm}$ conductivity standard is packaged in single-dose bottles and each bottle when opened can only be used once.) The shelf life of the products from their date of manufacture are given below.

Conductivity value ($\mu\text{S}/\text{cm}$)	Shelf Life
1.3 & 3	3 months
5 & 10	6 months
20 - 147	12 months
200 - 500,000	18 months

Accuracy

All standards have a specification of $\pm 1\%$, except $1.30\mu\text{S}/\text{cm}$, which has a specification of $1.25 - 1.35\mu\text{S}/\text{cm}$. This high level of accuracy enables the standards to be used as calibrators and/or controls in fulfilment of the most exacting industrial statutory requirements, for example the United States Pharmacopoeia monograph for Water for Injection.

Accreditation

Reagecon's conductivity measurement has been covered in the scope of our accreditation to ISO 17025 "General Requirements for Calibration and Testing Laboratories" and its predecessor, EN 45001, since 1990. Achieving accreditation involves fulfilling many highly technical criteria, including fully validating our test methods and instrumentation systems and characterising our measurement uncertainty. Reagecon's accreditation proves the technical competence of our personnel, the technical validity of our test procedures and the traceability of our measurements. Therefore, in purchasing a conductivity standard from us, not only do you have transparent traceability to primary standards, but you also have confidence that our standards are of a well-defined and tightly controlled specification.

All values are Certified & Traceable

Comprehensive Certificates of Analysis are available for all of Reagecon's conductivity standards, including detailed information on:

- Product Number
- Lot Number
- Expiry Date
- Mean specific conductance
- Date of Measurement
- Assay Limits
- Test Method Used
- Uncertainty of Measurement and Traceability Data

The complete range is traceable to primary standards from the United States National Institute for Standards and Technology (NIST). The traceability of these standards is proven by the inclusion of conductivity testing in our ISO 17025 accreditation. It is a fundamental requirement of ISO 17025 that traceability is proven.

Characterised Temperature Coefficient of Variation

Reagecon's standards are aqueous based and consequently have a very low temperature coefficient of variation. A table of conductivity variation with temperature is printed on the label of each bottle. This feature provides the user with all the information necessary to use the products across the full range of measurement temperatures encountered for their application. Non-aqueous standards have a very high coefficient of variation which leads to measurement error and renders the products totally unsuitable for non-temperature controlled conditions, or field work.

Unparalleled Technical Support

We have been manufacturing conductivity standards for over 20 years. In that time, we have built up a vast resource of technical expertise on all aspects of conductivity measurement. The members of Reagecon's Technical Services Department have written a comprehensive series of papers covering all of the practical requirements for accurate conductivity measurement. These papers and the Reagecon book, "A Practical Guide to Accurate Conductivity Measurement" are available via our website - www.reagecon.com Our Technical Services team is always on hand to answer any questions regarding the selection and use of conductivity instruments, sensors and standards.

Conductivity Standards

Product No.	Description	Pack Size
CSKC13	$1.30\mu\text{S}/\text{cm}$ @ 25°C	250ml
CSKC136	$1.30\mu\text{S}/\text{cm}$ @ 25°C	6x250ml
CSKC3	$3\mu\text{S}/\text{cm}$ @ 25°C	250ml
CSKC5	$5\mu\text{S}/\text{cm}$ @ 25°C	500ml
CSKC10	$10\mu\text{S}/\text{cm}$ @ 25°C	500ml
CSKC20	$20\mu\text{S}/\text{cm}$ @ 25°C	500ml
CSKC238	$23.8\mu\text{S}/\text{cm}$ @ 25°C	500ml

Product No.	Description	Pack Size
CSKC25	25µS/cm @ 25°C	500ml
CSKC50	50µS/cm @ 25°C	500ml
CSKC84	84µS/cm @ 25°C	500ml
CSKC100	100µS/cm @ 25°C	500ml
CSKCS	147µS/cm @ 25°C	500ml
CSKC150	150µS/cm @ 25°C	500ml
CSKC185	185µS/cm @ 25°C	500ml
CSKC200	200µS/cm @ 25°C	500ml
CSKC250	250µS/cm @ 25°C	500ml
CSKC300	300µS/cm @ 25°C	500ml
CSKC400	400µS/cm @ 25°C	500ml
CSKC500	500µS/cm @ 25°C	500ml
CSKC718	718µS/cm @ 25°C	500ml
CSKC1000	1000µS/cm @ 25°C	500ml
CSKCL	1413µS/cm @ 25°C	500ml
CSKC2M	2000µS/cm @ 25°C	500ml
CSKC2500	2500µS/cm @ 25°C	500ml
CSKC3M	3000µS/cm @ 25°C	500ml
CSKC5M	5,000µS/cm @ 25°C	500ml
CSKC7M	7,000µS/cm @ 25°C	500ml
CSKC10M	10,000µS/cm @ 25°C	500ml
CSKC12880	12,880µS/cm @ 25°C	500ml
CSKC20M	20,000µS/cm @ 25°C	500ml
CSKC30M	30,000µS/cm @ 25°C	500ml
CSKC40M	40,000µS/cm @ 25°C	500ml
CSKC50M	50,000µS/cm @ 25°C	500ml
CSKC60M	60,000µS/cm @ 25°C	500ml
CSKC80M	80,000µS/cm @ 25°C	500ml
CSKC100M	100,000µS/cm @ 25°C	500ml
CSKC111800	111,800µS/cm @ 25°C	500ml
CSKC150M	150,000µS/cm @ 25°C	500ml
CSKC200M	200,000µS/cm @ 25°C	500ml
CSKC300M	300,000µS/cm @ 25°C	500ml
CSKC350M	350,000µS/cm @ 25°C	500ml
CSKC400M	400,000µS/cm @ 25°C	500ml
CSKC450M	450,000µS/cm @ 25°C	500ml
CSKC500M	500,000µS/cm @ 25°C	500ml

TDS Standard

Product No.	Description	Pack Size
CS1382	1382 ppm NaCl at 25°C	500ml