



**CERTIFICATE OF ANALYSIS**  
**Complies with ISO 17034, ISO Guide 31,**  
**ISO Guide 35, and ISO 9001**  
**TRACEABLE® CERTIFIED REFERENCE MATERIAL**



This certificate indicates traceability to standards provided by (NIST) National Institute of Standards and Technology and/or a National Standards Laboratory.

**Certificate No.:** 4162-13173213

**1742**

**Description:** Conductivity Solution 200000 µS/cm

**Catalog Number:** 00652-55,

**Lot : CC22402**

**Certificate Date:** 07 Mar 2022

**Expiration Date:** 07 Mar 2023

**Certified Value:** 199,924 µS/cm

**U: ±510 µS/cm (k=2) at 25°C**

**Derived Values:** 199,924 micromho/cm, 5 ohm-cm, 133283 PPM D.S.

Certification measurements are performed under ISO 17034, A2LA accreditation no. 1750.02 and are traceable to recognized national and international standards via an unbroken chain of comparisons. Electrical conductance is the reciprocal of electrical impedance. The International Systems of units (SI), derived unit of conductance, is Siemens(S), also referred to as (mhos) the reciprocal of ohms. The certified value is expressed in micro Siemens per centimeter (µS/cm).

MEASUREMENT: Minimum ten (10) 100 ml samples were measured from this lot. The conductivity of each sample was derived from a measurement of the impedance of the solution using a conductivity meter and calibrated cell. The cell and sample were temperature controlled by submersion in water bath at 25°C ±0.015°C.

UNCERTAINTY: The certified value is given as the average of the measured samples. The reported expanded uncertainty (U) is determined from the measurement variation from sample to sample, change due to shelf life, and from the uncertainty of the measurement process. The value of uncertainty is multiplied by k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. Uncertainty is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement".

METHOD: The certified reference material is prepared and analyzed by Control Company. The certified reference material consists of a mixture of a dilute solution of less than 18% (by mass) potassium chloride (KCL), of less than 2% (by mass) propanol, and of less than 84% (by mass) deionized water in equilibrium with atmospheric carbon dioxide. Mixing was performed by circulation utilizing a proprietary method.

*Marisa Elms*

Marisa Elms, Technical Manager

*Nicol Rodriguez*

Nicol Rodriguez, Quality Manager

**Traceability: Standards and Equipment Used**

Description	Serial Number	Due Date	Traceable Reference
Conductivity Probe/Meter	12212-F02	19 Apr 2022	TC26-12745986
Digital Thermometer	111879346	01 Jul 2022	4000-12411642
Conductivity/pH Meter	696R059N003		
Temperature Calibration Bath	B5C477		

**Laboratory Environment Conditions:** 38.00%RH 24.80°C 1021mBar

**CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598**  
**Phone 281 482-1714 Fax 281 482-9448 sales@control3.com www.traceable.com**

Control Company is an ISO 17034:2016 Certified Reference Material (CRM) Producer Accredited by American Association for Laboratory Accreditation (A2LA Certificate No. 1750.02). This certificate fulfills the requirements of ISO Guide 31:2015 (Reference Materials – Contents of Certificates and Labels), ISO 17034:2016 "Quality System Guidelines for the Production of Reference Materials", and ISO Guide 35:2017 "Certification of Reference Materials – General and Statistical Principles". Control Company is an ISO/IEC 17025:2017 Calibration Laboratory Accredited by American Association for Laboratory Accreditation (A2LA Certificate No. 1750.01). Control Company is ISO 9001:2015 certified by DNV GL (Certificate No. CERT-01805-2006-AQ-HOU-ANAB). Traceable® is a registered trademark of Control 3 Inc.





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**Temperature Correction Information:** 1.648%

If your conductivity meter allows you to set a temperature coefficient (temperature correction) then the underlines number shown above is the best approximation for this specific analysis for this specific Traceable® Certified Reference Material. For more precise measurements use the chart. Use the chart below only if you are making absolute measurements. That is, measurements without any automatic temperature correction (temperature coefficient set to 0). The chart below displays derived values.

Using a thermometer, measure the temperature of this Certified Reference Material. Shown on the chart is temperature (in the far-left column) in whole degree. Shown across the top row is temperature in tenths of a degree. Locate the measured temperature in whole numbers on the far-left column, then follow across the row to the temperature in tenths of a degree. At the intersection is the Certified Reference Material value at that specific temperature. Standardize your meter using that value. Example: Measured temperature is 20.4 °C. Find 20 °C in the far-left column, find the row 0.4°C. Where 20 °C and 0.4°C intersect, read the value in microseimens/cm.

Temperature Correction Chart in micromhos/cm

°C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
15	167272	167590	167908	168227	168545	168864	169183	169502	169821	170141
16	170460	170780	171099	171419	171739	172060	172380	172700	173021	173342
17	173663	173984	174305	174626	174948	175269	175591	175913	176235	176557
18	176879	177202	177525	177847	178170	178493	178816	179140	179463	179787
19	180111	180434	180758	181083	181407	181731	182056	182381	182706	183031
20	183356	183681	184007	184332	184658	184984	185310	185636	185962	186289
21	186615	186942	187269	187596	187923	188251	188578	188906	189233	189561
22	189889	190217	190546	190874	191203	191532	191860	192190	192519	192848
23	193177	193507	193837	194167	194497	194827	195157	195488	195818	196149
24	196480	196811	197142	197473	197805	198136	198468	198800	199132	199464
25	199924	200129	200462	200794	201127	201460	201793	202127	202460	202794
26	203127	203461	203795	204130	204464	204798	205133	205468	205802	206138
27	206473	206808	207143	207479	207815	208151	208487	208823	209159	209496
28	209832	210169	210506	210843	211180	211517	211855	212192	212530	212868
29	213206	213544	213882	214221	214559	214898	215237	215576	215915	216254
30	216594	216933	217273	217613	217953	218293	218633	218974	219315	219655
31	219996	220337	220678	221020	221361	221703	222044	222386	222728	223070
32	223413	223755	224098	224440	224783	225126	225469	225813	226156	226500
33	226843	227187	227531	227875	228220	228564	228909	229253	229598	229943
34	230288	230634	230979	231325	231670	232016	232362	232708	233055	233401
35	233748	234094	234441	234788	235136	235483	235830	236178	236526	236873

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