



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.: 4161-13372831

1743

Description: Conductivity Solution 150000 µS/cm

Catalog Number: 00652-53,

Lot : CC22708

Certificate Date: 13 May 2022

Expiration Date: 13 May 2023

Certified Value: 149,611 µS/cm

U: ±510 µS/cm (k=2) at 25°C

Derived Values: 149,611 micromho/cm, 6.68 ohm-cm, 99741 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 14% (by mass) potassium chloride (KCL), of less than 2% (by mass) propanol, and of less than 88% (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	20 Oct 2022	TC26-13317281
Digital Thermometer	111879346	01 Jul 2022	4000-12411642
Conductivity/pH Meter	696R059N003		
Temperature Calibration Bath	B5C477		

Laboratory Environment Conditions: 41.00%RH 25.00°C 1018mBar

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: 1.708%

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	124168	124413	124659	124905	125152	125398	125644	125891	126138	126384
16	126631	126878	127125	127373	127620	127868	128115	128363	128611	128859
17	129107	129355	129604	129852	130101	130350	130599	130848	131097	131346
18	131595	131845	132094	132344	132594	132844	133094	133344	133595	133845
19	134096	134346	134597	134848	135099	135351	135602	135853	136105	136357
20	136608	136860	137112	137365	137617	137869	138122	138375	138627	138880
21	139133	139387	139640	139893	140147	140400	140654	140908	141162	141416
22	141671	141925	142179	142434	142689	142944	143199	143454	143709	143964
23	144220	144476	144731	144987	145243	145499	145756	146012	146268	146525
24	146782	147039	147295	147553	147810	148067	148325	148582	148840	149098
25	149611	149614	149872	150130	150389	150647	150906	151165	151424	151683
26	151942	152201	152461	152720	152980	153240	153499	153759	154020	154280
27	154540	154801	155061	155322	155583	155844	156105	156366	156628	156889
28	157151	157413	157675	157937	158199	158461	158723	158986	159248	159511
29	159774	160037	160300	160563	160827	161090	161354	161617	161881	162145
30	162409	162673	162938	163202	163467	163731	163996	164261	164526	164791
31	165057	165322	165588	165853	166119	166385	166651	166917	167183	167450
32	167716	167983	168250	168517	168784	169051	169318	169585	169853	170121
33	170388	170656	170924	171192	171461	171729	171997	172266	172535	172804
34	173073	173342	173611	173880	174150	174419	174689	174959	175229	175499
35	175769	176039	176310	176580	176851	177122	177393	177664	177935	178206

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