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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. : 4889-11105998

Description : Buffer 10.012 pH Blue

Catalog Number : 15-078-287,15568703

Lot : CC662519

Certificate Date : 18 Feb 2020

Expiration Date : 18 Feb 2022

Certified Value : 10.005 pH

U: ±0.011 pH (k=2) at 25°C

Certification measurements are performed under ISO 17034, A2LA accreditation no. 1750.02. They are traceable to recognized national and international standards via an unbroken chain of comparisons. pH is defined as the negative logarithm of the hydrogen ion activity.

MEASUREMENT: Minimum twelve (12) 100 ml samples were measured from this lot. The pH of each sample was determined using a pH meter and electrode.

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 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 produced and analyzed by Control Company. The certified reference material is comprised of deionized water, 0.025 mol/kg H2O sodium hydrogen carbonate, and 0.025 mol/kg H2O sodium carbonate.

Aaron Judice, Technical Manager

Nicol Rodriguez, Quality Manager

Traceability: Standards and Equipment Used

<u>Description</u>	<u>Serial Number</u>	<u>Due Date</u>	<u>Traceable Reference</u>
pH/Ion Meter	658R067-N023		
pH Reference Material 10.000	E1410719	17 Jun 2022	107-19
Digital Thermometer	102008443	21 Feb 2020	4000-10197805
pH Electrode	15293-F18		

Laboratory Environment Conditions: 36.00%RH 24.80°C 1014mBar

CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598
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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 17025:2005 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.



Temperature Correction Information:

Use the chart below only for making absolute measurements. That is, measurements without any automatic temperature correction (temperature coefficient set to 0).

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
18	10.077	10.076	10.075	10.074	10.073	10.072	10.070	10.069	10.068	10.067
19	10.066	10.065	10.064	10.063	10.062	10.061	10.060	10.059	10.058	10.056
20	10.055	10.054	10.053	10.052	10.051	10.050	10.049	10.048	10.047	10.046
21	10.045	10.044	10.043	10.042	10.041	10.040	10.039	10.038	10.037	10.036
22	10.035	10.034	10.033	10.032	10.031	10.030	10.029	10.028	10.027	10.026
23	10.025	10.024	10.023	10.022	10.021	10.020	10.019	10.018	10.017	10.016
24	10.015	10.014	10.013	10.012	10.011	10.010	10.009	10.008	10.007	10.006
25	10.005	10.004	10.003	10.002	10.001	10.000	9.999	9.998	9.997	9.996
26	9.995	9.994	9.994	9.993	9.992	9.991	9.990	9.989	9.988	9.987
27	9.986	9.985	9.984	9.983	9.982	9.982	9.981	9.980	9.979	9.978
28	9.977	9.976	9.975	9.974	9.973	9.972	9.972	9.971	9.970	9.969

The above data are derived values based upon IUPAC data (Pure and Applied Chemistry 74, 2169-2200) and data/algorithm obtained using a temperature controlled calibration bath.

Shown on the chart is temperature (in the far left column) in whole degrees. Shown across the top row is temperature in tenths of a degree. Using a thermometer, measure the temperature of this certified reference material. Locate the measured temperature in whole numbers on the far left column. 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 the meter using that value.

Example: Measured temperature is 24.5°C. Find 24°C in the far left column, find the row 0.5°C. Where 24°C and 0.5°C intersect, read the value in pH.

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