



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

H-B INSTRUMENT / SP SCIENCEWARE
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CALIBRATION

Valid To: June 30, 2020

Certificate Number: 2448.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Fluid Quantities

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments ³
Hydrometers –			
Percent Proof Spirit Hydrometers	(0 to 206) % Proof Spirit	0.098 % Proof Spirit	Alcohol solution
Specific Gravity Hydrometers (Relative Density & other related conversions: kg/M ³ , g/L, Brix, NaCl, CaCl, Kg/L, Balling, Quevenne)	(0.635 to 1.99) Specific Gravity (g/cm ³) (2.00 to 3.02) Specific Gravity (g/cm ³)	0.00044 Specific Gravity (g/cm ³) 0.0015 Specific Gravity (g/cm ³)	Sodium polytungstate solution or alcohol/water solution or petroleum ether/alcohol solution
Baume Heavy Hydrometers	(0 to 70)° Be Hy	0.03° Be Hy	Sodium polytungstate solution
Baume Light Hydrometers	(0 to 90)° Be Lt	0.03° Be Lt	Alcohol/water solution or petroleum ether/alcohol solution
American Petroleum Institute Scale Hydrometers	(0 to 90)° API	0.03° API	Alcohol/water solution or petroleum ether/alcohol solution

II. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Thermometers – Liquid-in-Glass, Electronic, Bi Metal	(-80 to -1) °C 0 °C (1 to 100) °C (101 to 200) °C (201 to 300) °C (301 to 400) °C	0.027 °C 0.015 °C 0.019 °C 0.020 °C 0.021 °C 0.028 °C	ASL F250 display with T100-450 PRT probe
Digital Infrared Thermometer	(-20 to 40) °C (41 to 100) °C (101 to 200) °C (201 to 300) °C (301 to 400) °C	1.1 °C 1.8 °C 2.2 °C 3.0 °C 4.3 °C	Flateplate Blackbody Blackbody Blackbody Blackbody

III. Time & Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Digital Stopwatch & Timers (Type I)	(2 to 120) s/day	0.43 s/day	TM-4500 vibrograph & digital multitester
Analog Stopwatch (Type II)	(2 to 120) s/day	0.53 s/day	TM-4500 vibrograph & digital multitester
Quartz Frequency & LED/LCD watches	24 hours	3.6 s/day	TM-4500 vibrograph & digital multitester

¹ This laboratory offers commercial calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ The definition and identification of the hydrometer scale graduations follow the NBS Circular 555.