SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

VULCAN ELECTRIC COMPANY, CORPORATION
28 Endfield Street
Porter, ME 04068
Thaddeus Ver Wey Phone: 207 625 3231

CALIBRATION

Valid To: September 30, 2028 Certificate Number: 4974.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations[1, 3]:

I. Thermodynamics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermodynamic, Thermocouple Calibration, Type B	(250 to 1100) °C (>1100 to 1400) °C (>1400 to 1550) °C	0.0002 °C/°C + 0.80 °C 0.05 °C/°C + 1.9 °C 2.8 °C	Comparison method in electric tube furnace
	(100 to 649) °C (650 to 1100) °C (1101 to 1295) °C	2.3 °C 1.2 °C 1.5 °C	Comparison method in fluidized bed furnace
Thermodynamic, Thermocouple Calibration, Type C	0 °C	0.82 °C	Comparison method in ice bath
	(0 to 50) °C	0.82 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.75 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C (>1100 to 1400) °C (>1400 to 1550) °C	0.50 °C 0.0005 °C/°C + 0.55 °C 0.0005 °C/°C + 1.4 °C 2.8 °C	Comparison method in electric tube furnace

5202 Presidents Court, Suite 220 | Frederick, MD 21703-8398 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermodynamic, Thermocouple Calibration, Type E	-196 °C	0.33 °C	Comparison method in stirred liquid nitrogen bath
	(-70 to 25) °C	0.21 °C	Comparison method in stirred methanol bath
	0 °C	0.22 °C	Comparison method in ice bath
	(0 to 50) °C	0.28 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.20 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C	0.60 °C 0.0004 °C/°C + 0.67 °C	Comparison method in electric tube furnace
Thermodynamic, Thermocouple Calibration, Type J	0 °C	0.22 °C	Comparison method in ice bath
	(0 to 50) °C	0.28 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.20 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C (>1100 to 1200) °C	0.60 °C 0.0004 °C/°C + 0.63 °C 2.0 °C	Comparison method in electric tube furnace
Thermodynamic, Thermocouple Calibration, Type K	-196 °C	0.35 °C	Comparison method in stirred liquid nitrogen bath
	(-70 to 25) °C	0.21 °C	Comparison method in stirred methanol bath
	0 °C	0.23 °C	Comparison method in ice bath

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermodynamic, Thermocouple Calibration, Type K (cont)	(0 to 50) °C	0.28 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.21 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C (>1100 to 1372) °C	0.60 °C 0.0004 °C/°C + 0.63 °C 2.1 °C	Comparison method in electric tube furnace
Thermodynamic, Thermocouple Calibration, Type N	0 °C	0.24 °C	Comparison method in ice bath
	(0 to 50) °C	0.29 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.22 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C (>1100 to 1300) °C	0.59 °C 0.0004 °C/°C + 0.63 °C 2.0 °C	Comparison method in electric tube furnace
Thermodynamic, Thermocouple Calibration, Type P (Platinel II)	0 °C	0.28 °C	Comparison method in ice bath
	(0 to 50) °C	0.34 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.25 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 1100) °C (>1100 to 1395) °C	-0.0006 °C/°C + 0.90 °C 0.0004 °C/°C + 0.72 °C 0.0012 °C/°C + 0.61 °C	Comparison method in electric tube furnace

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermodynamic, Thermocouple Calibration, Type R	0 °C	0.55 °C	Comparison method in ice bath
	(0 to 50) °C	0.50 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.41 °C	Comparison method in stirred oil bath
	(38 to 1100) °C (>1100 to 1400) °C (>1400 to 1550) °C	0.0003 °C/°C + 0.53 °C 0.001 °C/°C + 0.7 °C 2.8 °C	Comparison method in electric tube furnace
	(100 to 649) °C (650 to 1100) °C (1101 to 1295) °C	2.4 °C 1.3 °C 1.6 °C	Comparison method in fluidized bed furnace
Thermodynamic, Thermocouple Calibration, Type S	0 °C	0.53 °C	Comparison method in ice bath
	(0 to 50) °C	0.50 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.41 °C	Comparison method in stirred oil bath
	(38 to 1100) °C (>1100 to 1400) °C (>1400 to 1550) °C	0.0003 °C/°C + 0.56 °C 0.001 °C/°C + 0.7 °C 2.8 °C	Comparison method in electric tube furnace
	(100 to 649) °C (650 to 1100) °C (1101 to 1295) °C	2.3 °C 1.2 °C 1.5 °C	Comparison method in fluidized bed furnace
Thermodynamic, Thermocouple Calibration, Type T	-196 °C	0.35 °C	Comparison method in stirred liquid nitrogen bath
	(-70 to 25) °C	0.21 °C	Comparison method in stirred methanol bath
	0 °C	0.23 °C	Comparison method in ice bath

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermodynamic, Thermocouple Calibration, Type T (cont)	(0 to 50) °C	0.28 °C	Comparison method in stirred antifreeze bath
	(50 to 250) °C	0.20 °C	Comparison method in stirred oil bath
	(38 to 343) °C (>343 to 400) °C	0.60 °C 0.81 °C	Comparison method in electric tube furnace

[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] This scope meets A2LA's *P112 Flexible Scope Policy*.