



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

NORTHERN BALANCE AND SCALE, INC.
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CALIBRATION

Valid To: August 31, 2024

Certificate Number: 1684.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,5}:

I. Chemical

Parameter/Equipment	Range	CMC ² (±)	Comments
pH Meter ³	(0 to 14) pH	0.016 pH	HANNA HI931001 pH/mV calibrator
Gas Concentration – CO ₂	Up to 20 %	1.3 % concentration	Vaisala GMP251

II. Electrical – DC/Low Voltage

Parameter/Equipment	Range	CMC ² (±)	Comments
Metal Detector ³			
Ferrous	0.50 mm	0.090 mm	Manufacturer recommendations using Mediumz precision test balls
Ferrous	1.00 mm	0.090 mm	
Ferrous	1.50 mm	0.090 mm	
Ferrous	2.00 mm	0.090 mm	
Ferrous	2.50 mm	0.090 mm	
Ferrous	3.00 mm	0.090 mm	
Non Ferrous	0.50 mm	0.090 mm	
Non Ferrous	1.00 mm	0.090 mm	
Non Ferrous	1.50 mm	0.090 mm	
Non Ferrous	2.00 mm	0.090 mm	
Non Ferrous	2.50 mm	0.090 mm	
Non Ferrous	3.00 mm	0.090 mm	
Stainless Steel 316	0.50 mm	0.090 mm	
Stainless Steel 316	1.00 mm	0.090 mm	
Stainless Steel 316	1.50 mm	0.090 mm	
Stainless Steel 316	2.00 mm	0.090 mm	
Stainless Steel 316	2.50 mm	0.090 mm	
Stainless Steel 316	3.00 mm	0.090 mm	
Bronze	1.50 mm	0.090 mm	
Bronze	2.00 mm	0.090 mm	
Bronze	2.50 mm	0.090 mm	
Bronze	3.00 mm	0.090 mm	
Lead	1.00 mm	0.090 mm	
Lead	2.00 mm	0.090 mm	
Lead	3.00 mm	0.090 mm	
Copper	0.50 mm	0.090 mm	
Copper	1.00 mm	0.090 mm	
Stainless Steel 304	0.50 mm	0.090 mm	
Stainless Steel 304	1.00 mm	0.090 mm	
Stainless Steel 304	1.50 mm	0.090 mm	
Stainless Steel 304	2.00 mm	0.090 mm	
Stainless Steel 304	2.50 mm	0.090 mm	
Stainless Steel 304	3.00 mm	0.090 mm	
Aluminum	1.00 mm	0.090 mm	
Aluminum	1.50 mm	0.090 mm	
Aluminum	2.00 mm	0.090 mm	
Aluminum	2.50 mm	0.090 mm	
Aluminum	3.00 mm	0.090 mm	

Parameter/Equipment	Range	CMC ² (±)	Comments
X-Ray Detector ³			
Soda Lime Glass	1.00 mm	0.090 mm	Manufacturer recommendations using Mediumz precision test balls
Soda Lime Glass	1.50 mm	0.090 mm	
Soda Lime Glass	2.00 mm	0.090 mm	
Soda Lime Glass	2.50 mm	0.090 mm	
Soda Lime Glass	3.00 mm	0.090 mm	
Quartz Glass	1.00 mm	0.090 mm	
Quartz Glass	2.00 mm	0.090 mm	
Quartz Glass	3.00 mm	0.090 mm	
Ceramic	1.00 mm	0.090 mm	
Ceramic	1.50 mm	0.090 mm	
Ceramic	2.00 mm	0.090 mm	
Ceramic	2.50 mm	0.090 mm	
Teflon	3.00 mm	0.090 mm	
Teflon	2.00 mm	0.090 mm	
Teflon	2.50 mm	0.090 mm	
Teflon	3.00 mm	0.090 mm	

III. Mechanical

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Mass – Measure, Fixed Points	1 mg	1.6 µg	NIST SOP 4 double substitution with ASTM Class 0 weights
	2 mg	1.3 µg	
	3 mg	1.4 µg	
	5 mg	1.5 µg	
	10 mg	2.0 µg	
	20 mg	1.4 µg	
	30 mg	1.6 µg	
	50 mg	1.7 µg	
	100 mg	2.3 µg	
	200 mg	2.2 µg	
	300 mg	1.7 µg	
	500 mg	1.8 µg	

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Mass – Measure, Fixed Points (cont)	1 g	6.8 µg	NIST SOP 4 double substitution with ASTM Class 0 weights
	2 g	5.3 µg	
	3 g	4.4 µg	
	5 g	6.4 µg	
	10 g	15 µg	
	20 g	15 µg	
	30 g	21 µg	
	50 g	30 µg	
	100 g	43 µg	
	200 g	68 µg	
	300 g	59 µg	
	500 g	0.12 mg	
	1 kg	0.37 mg	
	2 kg	1.1 mg	
	3 kg	1.0 mg	
	5 kg	1.4 mg	
	10 kg	1.9 mg	NIST SOP 4 double substitution with ASTM Class 1 weights
	25 kg	10 mg	
	30 kg	10 mg	
	22.6 kg (50 lb)	430 mg	NIST SOP 4 double substitution with ASTM Class 2 weights
	11.4 kg (25 lb)	170 mg	
	4.5 kg (10 lb)	3.0 mg	
	2.3 kg (5 lb)	2.2 mg	
	907 g (2 lb)	1.2 mg	
	453 g (1 lb)	0.84 mg	
	226 g (8 oz)	0.93 mg	
	113 g (4 oz)	1.5 mg	
	56.7 g (2 oz)	0.50 mg	
	28.3 g (1 oz)	0.040 mg	
	14.2 g (1/2 oz)	0.039 mg	
	7.09 g (1/4 oz)	0.013 mg	
	3.54 g (1/8 oz)	0.019 mg	
	1.77 g (1/16 oz)	0.013 mg	
0.886 g (1/32 oz)	0.012 mg		
90.7 g (0.2 lb)	0.27 mg		
45.4 g (0.1 lb)	0.14 mg		
22.7 g (0.05 lb)	0.10 mg		
9.07 g (0.02 lb)	0.064 mg		
4.54 g (0.01 lb)	0.046 mg		
2.27 g (0.005 lb)	0.051 mg		
0.907 g (0.002 lb)	0.041 mg		
0.454 g (0.001 lb)	0.038 mg		

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Balances & Scales ³ –	Up to 10 000 kg [Up to 20 000 lb]	1.2R	NIST Handbook 44 verification with: ASTM E617 Class 1-7 or NIST HB 105-1 Class F mass standards.
Pipettes ³	(0.5 to 1) µl (>1 to 5) µl (>5 to 10) µl (>10 to 50) µl (>50 to 100) µl (>100 to 500) µl (>500 to 1000) µl (>1 to 10) ml	0.048 µl 0.048 µl 0.049 µl 0.049 µl 0.063 µl 0.063 µl 0.065 µl 10 µl	Gravimetric method using Class I analytical balance
Dispenser ³	Up to 25 ml (>25 to 50) ml (>50 to 100) ml (>100 to 200) ml	38 µl 50 µl 100 µl 170 µl	Gravimetric method using Class I analytical balance
Force Gages ³ , Fixed Points	Up to 10 lb (>10 to 50) lb (>50 to 110) lb	0.04 lb 0.22 lb 0.50 lb	Dead weight method using NIST Class F weights
Pressure Gages ³ – Pneumatic	(-12 to 100) psi (>100 to 300) psi	0.079 psi 0.30 psi	Fluke 719 calibrator and 700 pressure module
Centrifuge ³ –			
Rotation	(6 to 15 000) rpm (>15 000 to 30 000) rpm	7.4 rpm 21 rpm	Laser tachometer Laser tachometer Stopwatch
Time Interval	Up to 10 min (600 s)	0.13 s	Fluke 724
Temperature	(-20 to 40) °C	1.2 °C	

IV. Thermodynamic

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Thermometers and Temperature Indicating Systems ³	(-80 to -30) °C	0.026 °C	Dry block by comparison to thermometer readout and PRT
	(-30 to 100) °C	0.013 °C	Silicon oil bath by comparison to thermometer readout and PRT
	(>100 to 300) °C	0.014 °C	Silicon oil bath by comparison to thermometer readout and PRT
	(>300 to 650) °C	0.13 °C	Dry block by comparison to thermometer readout and PRT
Relative Humidity – Measure ³	(10 to 85) % RH	2.4 % RH	Environmental chamber or direct comparison to Vaisala humidity probe

V. Fluid Quantities

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Fume Hoods – Air Velocity Only ³	(50 to 150) FPM (>150 to 500) FPM (>500 to 1250) FPM (>1250 to 2500) FPM	19 FPM 53 FPM 160 FPM 230 FPM	Extech SDL350 Anemometer

¹ This laboratory offers commercial calibration service and field 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 Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.
- ⁴ In the statement of CMC, R is the Resolution of the unit under test/calibration.
- ⁵ This scope meets A2LA's *P112 Flexible Scope Policy*.
- ⁶ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.



Accredited Laboratory

A2LA has accredited

NORTHERN BALANCE AND SCALE, INC.

Blaine, MN

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 1st day of August 2022.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1684.01
Valid to August 31, 2024
Revised February 13, 2024

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.