



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Data Weighing Systems

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CALIBRATION

Valid to: September 22, 2021

Certificate Number: L1114-1

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Force gauges and sensors used in force measurement applications, tension and compression ¹	(0.1 to 1 000) lbf	0.1% of reading	Method, tolerance according to DWS procedures utilizing NIST Class F Weights
Force gauges and sensors used in force measurement applications, tension and compression ¹	(0.5 to 600 000) lbf	0.08% of reading	Method, tolerance according to DWS procedures utilizing reference load cell
Testing Machines / Load Cells – Compression ¹	(0.01 to 600 000) lbf	0.08% of reading	ASTM E4
Testing Machines / Load Cells – Tension ¹	(0.01 to 200 000) lbf	0.08% of reading	ASTM E4
Testing Machine Displacement ¹	(0 to 25) in	0.011 in	ASTM E 2309
Testing Machine Speed ¹	(0.05 to 20) in/min	0.16 % of reading	ASTM E 2658

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
NIST Class F ASTM E617 Class 5 ASTM E617 Class 6 ASTM E617 Class 7	50 lb 25 lb 20 lb 10 lb 5 lb 2 lb 1 lb 0.5 lb 0.2 lb 0.1 lb 0.05 lb 0.02 lb 0.01 lb	75 mg 40 mg 35 mg 20 mg 10 mg 5 mg 2.5 mg 2.5 mg 0.5 mg 0.25 mg 0.25 mg 0.1 mg 0.05 mg	Comparison of Unknown Mass to Known Mass ASTM E617 Class 1, Class 4 Weights
NIST Class F ASTM E617 Class 5 ASTM E617 Class 6 ASTM E617 Class 7	25 000 g 10 000 g 5 000 g 2 000 g 1 000 g 500 g 200 g 100 g 50 g 30 g 20 g 10 g 5 g 3 g 2 g 1 g	75 mg 35 mg 20 mg 6.5 mg 5 mg 2.5 mg 2.5 mg 1 mg 1 mg 0.2 mg 0.2 mg 0.2 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg	Comparison of Unknown Mass to Known Mass ASTM E617 Class 1, Class 4 Weights
Micro-Balances ^{1,2}	0 g to 1 g 0 g to 2.1 g 0 g to 5 g 0 g to 31 g 0 g to 5 g 0 g to 20 g 0 g to 100 g 0 g to 230 g	4 µg 4 µg 7 µg 26 µg 37 µg 45 µg 65 µg 110 µg	Method, tolerance according to DWS procedures utilizing ASTM E617 Class 1 Weights
Analytical and Top Loading Balances ^{1,2}	0 g to 610 g 0 g to 1 200 g 0 g to 10 000 g 0 g to 64 000 g 0 g to 150 000 g	0.75 mg 3.1 mg 31 mg 0.3 g 2.6 g	



Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Bench Scales, Floor Scales, Tanks and Hoppers ^{1,2}	0 lb to 100 lb	0.005 lb	Method, tolerance according to DWS procedures utilizing NIST Class F Weights
	0 lb to 1 000 lb	0.05 lb	
	0 lb to 10 000 lb	0.3 lb	
	0 lb to 20 000 lb	1.3 lb	
	0 lb to 40 000 lb	10 lb	
Crane and hanging scales ^{1,2}	0 lb to 5 000 lb	1 lb	
Crane and hanging scales ¹	0 lb to 1 000 lb	1 lb	Method, tolerance according to DWS procedures utilizing reference load cell
	0 lb to 10 000 lb	10 lb	
	0 lb to 60 000 lb	65 lb	
	0 lb to 250 000 lb	875 lb	
Moisture Analyzers ^{1,2} Weighing Systems Analytical Balances and Top Load Temperature	0 g to 610 g	0.75 mg	Method tolerances according to DWS procedures utilizing ASTM E617 Class 1 weights Reference Thermometer
	0 g to 1 200 g	3.1 mg	
	20 °C to 200 °C	2.9 °C	
Weigh Pads & Load Cells ¹ (1 lb resolution) (10 lb resolution)	0 lb to 10 000 lb	8.8 lb	Method, tolerance according to DWS procedures utilizing reference load cell
	0 lb to 60 000 lb	53 lb	
Torque Transducers and Testers ²	(0.01 to 1 000) lbf·ft	0.32% of reading	Method, tolerance according to DWS procedures utilizing NIST Class F Weights and reference wheel/arm standards
Torque Hand Tools	(0.5 to 1 000) lbf·ft	0.57% of reading	Method, tolerance according to DWS procedures utilizing reference transducer

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. The CMC for scales and balances is highly dependent upon the resolution of the unit under test. The CMC here does not include the resolution of the unit under test. The resolution will be included in the reported measurement uncertainty at the time of calibration.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. L1114-1.



 Vice President