



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

ATRONA Test Labs, Inc.
5271 Zenith Parkway
Loves Park, IL 61111

Fulfills the requirements of
ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the fields of

CALIBRATION and TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to be 'Jason Stine', is positioned above a horizontal line.

Jason Stine, Vice President

Expiry Date: 29 March 2025

Certificate Number: ACT-1512



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
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).

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017 AND
ANSI/NCSL Z540-1-1994 (R2002)**

ATRONA Test Labs, Inc.

5271 Zenith Parkway
Loves Park, IL 61111
Atif "Ott" Odeh
815 229 8620

TESTING

Valid to: **March 29, 2025**

Certificate Number: **ACT-1512**

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Metals Carbon, low and high alloy steels, cast irons, tool steel, stainless steel, aluminum, copper, and nonferrous	Chemical Composition by Spark Atomic Emission Spectrometry	ASTM E415, E1086, E1251, E1999	Optical Emission Spectrometry (OES)/Atomic Emission Spectrometry (AES) Analyzer
Organic and Inorganic Solids, Liquids and Gases	Material Identification	ASTM E1252 ASTM E334	Infrared Spectrometer Bio-Rad Excalibur w/ UMA500 Microscope Internal ATR
Organic and Inorganic Solids, Liquids and Polymers	Enthalpies of Fusion, Crystallization, Melting Temperature, Glass Transition Temperature, Oxygen Index	ASTM D3418 ASTM E793 ASTM E794 ASTM E1356	Differential Scanning Calorimeter TA DSC Q2000
Organic and Inorganic Solids, and Polymers	Material Composition, Volatile Materials, Combustion, Ash, Filler Content Carbon Black	ASTM E1131	Thermogravimetric Analyzer TA TGA Q500



ANSI National Accreditation Board

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Metals and Metallic Components	Metallographic Evaluation: Sample Preparation Macroetch / Microetch, Inclusion Rating, Intergranular Corrosion, Photomicrography / Light Microscopy Case Depth	ASTM E3, ASTM E340, E381, E407, ASTM E45 (Method A), ASTM A262 (Practice A and E), ASTM E883, SAE J423	Microscopes with Automatic Stages, Image Characterization and Automatic Microhardness Testers with Mapping
Metals and Metallic Components	Average Grain Size	ASTM E1382, ASTM E112,	Image Analysis Microscopes and Software
Metals and Metallic Components	Hardness: Rockwell (HRA, HRBW, HRC, HREW, HRRW, HRMW, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T); Brinell (500 kgf to 3 000 kgf) Micro-hardness (Vickers, Knoop); Leeb	ASTM E18 ASTM E10 ASTM E384 ASTM A956	Digital Automatic Testers
Steels	Determining Hardenability of Steel (end-quench or Jominy)	ASTM A255	Furnace Quench Device Hardness Tester
Metals, Metallic Components, Systems and Assemblies	Failure Analysis	Atrona MET-08 utilizing Test Methods in this Scope of Accreditation	Equipment/technologies per this Scope of Accreditation
Internal and External Threaded Fasteners, Washers and Rivets	Mechanical Properties	ASTM F606/M	Digital Testers with Various Load Cells



ANSI National Accreditation Board

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
All types of Metals and Non Metal Components, and Assemblies	Cleanliness Evaluation	Customer Supplied Test Methods or Methods Developed by the Lab Approved by the Client directly related to tests listed	Scale, Stereoscope, filters
Metal and Metallic Components	Notched Bar Impact (Charpy)	ASTM E23	Full Size and Sub-Size
Metals, Wires, Rods, Fasteners, Plates, Plastics, Components, and Assemblies	Tensile Mechanical Properties	ASTM A370, E8/E8M, B557	Tensile tester (Up to 100 000 lbf)
Fasteners, Components, and Assemblies	Surface Discontinuity	ASTM F788/F788M, F812/F812M	Visual & Stereoscopic
Fasteners, Components, and Assemblies	Carburization and Decarburization	ASTM F2328, F2328M	Microhardness
Polymers, Plastics and Composites	Ash Content	ASTM D5630	High Temperature Furnace
Organic and Inorganic Solids	Density Specific Gravity	ASTM D792 MPIF Standard 42	Precision Balance
Polymers	Durometer Hardness	ASTM D2240	Durometer A and D

CALIBRATION

Length – Dimensional Metrology ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Amplifier - Electronic	Up to 1 in	$(21 + 4L) \mu\text{in}$	Gage Blocks
Anvil Parallelism ²	Up to 1 in(1 to 24) in	16 μin 110 μin	Optical Parallel Gage Blocks
Bench Center ²	Up to 48 in	160 μin	Master Arbors, 50 μin Test Indicator
Bench Micrometer ² Linear Accuracy	Up to 1 in	41 μin	Gage Blocks
Bore Micrometer, 3 point	(0.2 to 6) in	$(110 + 10L) \mu\text{in}$	Plain Ring Gages
Brinell Scope ²	Up to 6 mm	0.12 mm	Stage Micrometer
Caliper ² Digital / Dial / Vernier	Up to 72 in	$(600 + 14L) \mu\text{in}$	Gage Blocks, Plain Ring Gage
Caliper CheckerKalmaster	Up to 24 in	$(19 + 20L) \mu\text{in}$	Gage Blocks, Surface Plate, Electronic Amp
Chamfer Gage, Dial ²	Up to 2 in	610 μin	Chamfer Ring Gage, Gage Blocks
Depth Micrometer	Up to 12 in	$(140 + 10L) \mu\text{in}$	Gage Blocks, Surface Plate

Length – Dimensional Metrology ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Dial Bore Gage	Up to 0.02 in	120 μin	P&W Supermicrometer
Flatness	Up to 2 in Surface Face	14 μin	Optical Flat
Flatness/ Parallelism	(2 to 24) in	130 μin	Surface Plate, Electronic Amp
Granite Surface Plates ² Local Area Flatness (Repeat Reading)	Local Area Flatness Up to 96 in	30 μin	Repeat meter
Overall Flatness	Overall Flatness Up to 24 in Up to 48 in Up to 96 in	44 μin 62 μin (5 + (24 x L/12)) μin	Planekator/indicator Planekator/indicator Autocollimator
Height Gage	Up to 48 in	(150 + 13L) μin	Gage Blocks, Surface Plate
Height Master	Up to 24 in	(36 + 16L) μin	Gage Blocks, Surface Plate
Indicator Dial/Digital/Electronic	Up to 4 in	(610 + 2L) μin	Gage Blocks, Surface Plate
Indicator Calibrator	Up to 1 in	60 μin	Gage Blocks, Electronic Amplifier
Length Standards	(1 to 60) in	(34 + 14L) μin	Gage Blocks, Surface Plate, Electronic Amp
Levels ²	Up to 0.000 5 in/ ft	200 μin / ft	Gage Blocks, Surface Plate, Plug Gages
Micrometer, Inside	(10 to 40) in	(34 + 14L) μin	Gage Blocks, Surface Plate, Electronic Amp
Micrometer	Up to 48 in	(25 + 14L) μin	Gage Blocks

Length – Dimensional Metrology ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Plain Plug Gage (P&W Supermicrometer)	Up to 10 in	$(34 + 23L) \mu\text{in}$	P&W Supermicrometer Gage Blocks
Plain Ring Gage	(0.125 to 14) in	$(21 + 5L) \mu\text{in}$	PW Supermic, Height Gage Gage Blocks
Protractor	0° to 360°	0.058°	Sine Bar, Gage Blocks
Sine Bar	Up to 20 in	$(34 + 14L) \mu\text{in}$	Gage Blocks, Electronic Amplifier, Surface Plate
Squares, Steel	Up to 24 in	$(59 + 9L) \mu\text{in}$	Granite Square, Surface Plate
Taper Thread Plug	(0.062 5 to 4) in	$(130 + 10L) \mu\text{in}$	P&W Supermicrometer Taper Block, Wires
Taper Thread/Plain Plug Step Height	Up to 1 in	230 μin	Gage Blocks Surface Plate Electronic Amp
Taper NPTF 6 Step Plain Plug Diameter	(0.062 5 to 4) in	$(81 + 14L) \mu\text{in}$	P&W Supermicrometer Taper Block
Taper Thread Rings	(0.062 5 to 3) in Pitch Diameter at End Step Height	$(290 + 110PD) \mu\text{in}$ 230 μin	Taper Thread Plugs, Gage Blocks, Electronic Amp
Thread Ring Gage Pitch Diameter	(0.072 to 1) in (1 to 7.5) in	$(75 + 41L) \mu\text{in}$	Thread Set Plugs, PW Supermic, Height Gage
Thread Measuring Wires	Up to 0.25 in	$(31 + 580L) \mu\text{in}$	PW Supermic, Height Gage Thread Measuring Rolls
Thread Plug Gage Pitch Diameter	Up to 10 in	$(94 + 17L) \mu\text{in}$	P&W Supermicrometer Gage Blocks Thread Measuring Wires
Thread Roll Gage Elements Lead Flank Angle	(0.01 to 0.5) in (0 to 45) °	$(280 + 80L) \mu\text{in}$ 0.043 °	Optical Comparator



ANSI National Accreditation Board

Length – Dimensional Metrology ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
V Block	(6 x 6 x 6) in	130 μ in	Granite Square, Surface Plate, Electronic Amp
Extensometers ²	Up to 1 in	(51 + 26L) μ in	Extensometer Calibrator
Optical Comparator ² X, Y Linear Accuracy Angle Accuracy	X, Y: Up to 6 in X, Y: Up to 12 in Angle: (90, 180, 270, 360) $^{\circ}$	(120 + 34L) μ in (300 + 34L) μ in 0.024 $^{\circ}$	Glass Scale, Magnification Scale, Sphere Kit; Angle Square

Mass ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Rockwell Hardness Testers ²	HRA Low Mid High	0.83 HRA 0.58 HRA 0.51 HRA	Certified Test Blocks
	HRBw Low Mid High	1.4 HRBW 1.6 HRBW 0.92 HRBW	
	HRC Low Mid High	0.90 HRC 0.63 HRC 0.60 HRC	
	HREw Low Mid High	1.1 HREW 0.89 HREW 0.77 HREW	



ANSI National Accreditation Board

Mass¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Rockwell Hardness Testers ²	HR15N Low Mid High	0.87 HR15N 0.87 HR15N 0.68 HR15N	
	HR30N Low Mid High	1.1 HR30N 0.87 HR30N 0.78 HR30N	
	HR45N Low Mid High	0.85 HR45N 0.84 HR45N 0.75 HR45N	
	HR15TW Low Mid High	1.7 HR15TW 1.3 HR15TW 1.4 HR15TW	
	HR30TW Low Mid High	1.6 HR30TW 1.2 HR30TW 1.4 HR30TW	
	HR 45TW Low Mid High	1.6 HR45TW 1.3 HR45TW 1.5 HR45TW	
Brinell Hardness Testers ²	HBW 10/500 Low HBW 10/500 Mid HBW 10/500 High HBW 10/3 000 Low HBW 10/3 000 Mid HBW 10/3 000 High	2.3 HBW 2.1 HBW 2.5 HBW 9.3 HBW 5.3 HBW 13 HBW	Certified Test Blocks



ANSI National Accreditation Board

Mass ¹

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Vickers/Knoop Microhardness Testers ²	HK 100 gf High HK 500 gf Low HK 500 gf High HV 100 gf Low HV 500 gf Low HV 500 gf High HV 1 000 gf High HV 5 000 gf Low HV 5 000 gf High	23 HK 16 HK 36 HK 26 HV 12 HV 37 HV 11 HV 13 HV 26 HV	Certified Test Blocks
Leeb Hardness Testers ²	HLD	13 HLD	Standardized Test Blocks
Pressure (Hydraulic/ Pneumatic)	Up to 500 psig (500 to 3 000) psig (3 000 to 10 000) psig (10 000 to 15 000) psig	0.30 psig 2 psig 9.3 psig 44 psig	Master Pressure Gages
Vacuum	(0 to 24) in Hg	0.6 in Hg	Master Pressure Gage
Profilometer	Ra: (10 to 20) μin Ra: (110 to 120) μin	2.6 μin 3.4 μin	Master Three Patch Reference Standard
Profilometer Standard	Ra: (10 to 20) μin Ra: (110 to 120) μin	2.6 μin 3.4 μin	MTI SJ-400 Profilometer
Torque Wrenches ²	Up to 50 lbf·in Up to 400 lbf·in Up to 1000 lbf·in Up to 250 lbf·ft Up to 600 lbf·ft	0.24 lbf·in 1.6 lbf·in 3.7 lbf·in 1 lbf·ft 2.4 lbf·ft	CDI Torque Calibrator

Notes:

1. 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%.
2. 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
3. This scope is formatted as part of a single document including Certificate of Accreditation No. ACT -1512.



Jason Stine, Vice President

