Accredited Laboratory

A2LA has accredited

GENERAL FASTENERS COMPANY

Livonia, MI

for technical competence in the field of

Mechanical Testing

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 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*).

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

Presented this 25th day of September 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0170.01
Valid to July 31, 2022

For the types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

GENERAL FASTENERS COMPANY
37584 Amrhein Road
Livonia, MI 48150
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MECHANICAL

Valid to: July 31, 2022 Certificate Number: 0170.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following metals and metal products tests (including fasteners and automotive components):

Test:	**Test Method(s) [1]:**
Hardness (Rockwell A, B, C, 15N, 30N)	ASTM E18, F606/F606M; ASME B18.13; SAE J78, J81, J417, J933
Microhardness (Knoop, Vickers: 300g, 500g)	ASTM E384; SAE J78, J81, J933
Tension (Axial, Wedge: 120,000 lb. Capacity)	ASTM F606/F606M
Proof Load (Internally & Externally Threaded)	ASTM F606/F606M; IFI 100/107 [2]; ASME B18.16.6
Stress Durability (Hydrogen Embrittlement)	ASME B18.6.3, B18.13, B18.21.1; SAE J81, J773, J1237; SAE/USCAR-7
Torsion	ASTM F606/F606M; ASME B18.6.3; SAE J78, J81, J933, J1237
Ductility	ASME B18.6.3; SAE J78, J81, J1237
Salt Spray	ASTM B117
Drive Test	ASME B18.6.3; SAE J81, J933, J1237
Washer Recovery Test	ASME B18.13
Twist Test	ASME B18.13
X-ray Fluorescence of Plating Thickness	ASTM B568
Metallographic Evaluation	
Case Depth	SAE J423
Depth of Decarburization	ASTM F835, F2328, F2328M; GM6104M [2]; SAE J419; ISO 898-1, 898-5 (visual only)

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Test:	**Test Method(s) [1]:**
Surface Discontinuities	ASTM A574, A574M, F788, F812, F835, F835M, F912, F912M; SAE J123; ISO 6157-1, 6157-2, 6157-3; GM6102M [2]
Coating Thickness	ASTM B487
Microstructure	ASM Handbook, Volume 9
SEM/EDS	ASTM E1508
Fracture Analysis	ASM Handbook, Volume 11 and the methods listed above
Chemical Optical Emission of Carbon, Alloy & Stainless Steel (Al, B, C, Cr, Cu, Fe, Mn, Mo, Ni, P, S, Si, V)	ASTM E415, E1086

II. Dimensional Testing [3]

Parameter/Equipment	Range	CMC [4] (±)	Comments
Linear [5] –			
1D	Up to 0.070 in (50X) Up to 0.070 in (100X) Up to 12 in Up to 2 in Up to 10 in	0.0009 in 0.0009 in 0.0005 in 0.0003 in 0.0005 in	Metallograph / Image analysis system / MIL-STD-120 [2] Calipers / MIL-STD-120 [2] Micrometer / MIL-STD-120 [2] Height gage / MIL-STD-120 [2]
2D	X Axis: 10 in Y Axis: 6 in	0.0002 in 0.0002 in	Optical comparator / MIL-STD-120 [2]
Angle [5]	0° to 360°	4’	Optical comparator / MIL-STD-120 [2]
Radius [5]	(0.005 to 5) in	0.0002 in	Optical comparator / MIL-STD-120 [2]
Threads [5] –			
External	(0-80 to 2.875-12) in M3x0.5 to M30x1.5	N/A	Ring gage / ASME B1.3; MIL-STD-120[2] system 21
	(6-32 to 1-14) in M8x1.25 to M16x2.0	0.0002 in	Tri-Roll Pitch micrometer / ASME B1.3; MIL-STD-120 [2] system 22
Internal	(2-56 to 1½ -12) in M3x0.5 to M48x2.0	N/A	Plug gages / ASME B1.3; MIL-STD-120 [2] system 21

[1] When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements - Accreditation of ISO-IEC 17025 Laboratories*.

[2] This laboratory's scope contains withdrawn or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.

[3] Commercial dimensional testing service is sometimes available for this laboratory.

[4] 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 measurements 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 measurement 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 measurement.

[5] This test is not equivalent to that of a calibration.