



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TSP / USB LABORATORY <sup>1</sup>  
 12895 South Main Street  
 Houston, TX 77035  
 Lester Burgess Phone: 713 726 1000

MECHANICAL

Valid To: June 30, 2018

Certificate Number: 0929.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above as well as the two satellite laboratory locations listed below to perform the following tests on fasteners, metals and alloys:

**I. Mechanical Testing**

**Test Technology:**

Hardness

Rockwell (HRBW & HRC)

Brinell (3000 Kg)

Microhardness (HK 500g & HV 500g)

Tensile

*(axial & wedge, tension testing, yield, ROA, %E)*

Proof

*(internally and externally threaded)*

Discontinuities

Charpy Impact (-150° F to Room Temperature)

Plating Thickness

Metallographic Evaluation:

Macroetch

Decarburization

Grain size

Inclusion Content

XRF (PMI)

**Test Method(s):**

ASTM A370, E18, F606/F606M

ASTM A370, E10, F606/F606M

ASTM E384

ASTM A370, F606/F606M; SAE J429

ASTM A370, F606/F606M;

SAE J429, J995

ASTM F788, F812; SAE J122, J123<sup>2</sup> (cancelled)

ASTM A370, A540, E23

ASTM B499

ASTM E340, E381

ASTM E1077, F2328; SAE J419, J121<sup>2</sup> (cancelled)

ASTM E112

ASTM E45, Method A

ASTM E1476

***Chemical***

Optical Emission Spectroscopy on Steel,

Stainless Steel and Nickel Base Alloys

(C, Mn, P, S, Si, Cu, Ni, Cr, Mo, Al, Ti, Nb, B, V)

ASTM E415, E1086

<sup>1</sup> This accreditation covers testing performed at the main laboratory listed above, and at the satellite laboratories indicated below.

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 This laboratory's scope contains cancelled or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.

## Dimensional Testing

Parameter	Range	CMC Uncertainty <sup>3,4</sup> ( $\pm$ )	Technique/Method
Angle <sup>5</sup>	0° to 360°	1°	Optical comparator / MIL-STD-120
Radius <sup>5</sup>	Up to 0.650 in	2000 $\mu$ in	Optical comparator / MIL-STD-120
Threads <sup>5</sup> – Systems 21	.25 to 3.25 in	N/A	Ring gages / ANSI/ASME B1.2
	.25 to 3 in	N/A	Plug gages / FED-STD-H28/20
	Up to 4 in	600 $\mu$ in	Pitch micrometers / AS 8879
Linear <sup>5</sup>	Up to 4 in	1000 $\mu$ in	Optical comparator / MIL-STD-120
	Up to 6 in	500 $\mu$ in	Micrometer / MIL-STD-120
	Up to 12 in	1000 $\mu$ in	Calipers / MIL-STD-120
	Up to 24 in	1500 $\mu$ in	Height gage / MIL-STD-120
	Up to 20 in	(12 + 38L) $\mu$ in	Gagemaker micrometer / MIL-STD-120

<sup>3</sup> Calibration and Measurement Capability (CMC Uncertainty) 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. Calibration and Measurement Capabilities 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 Uncertainty due to the behavior of the customer's device and to influences from the circumstances of the specific measurement

<sup>4</sup> In the statement of CMC Uncertainty,  $L$  is the numerical value of the nominal length of the device measured in inches.

<sup>5</sup> This test is not equivalent to that of a calibration.

## II. Nondestructive Examination

### Test Technology:

Ultrasonic Testing

Magnetic Particle Testing

Liquid Penetrant

### Test Method(s):

API 6A, 17D; ASTM A388, E114, E127, E317, E428

API 6A, 17D; ASTM A275, E709, E1444; ASME V-Article 7

API 6A, 16C, 20E, 20F; ASME Section V Article 6; ASTM A962, E165, E1120, E1418; EN473; ISO 9712

**I. Mechanical Testing**

**Test Technology:**

**Test Method(s):**

Hardness

Rockwell (HRBW & HRC)

ASTM A370, E18, F606/F606M

Discontinuities

ASTM F788, F812; SAE J122, J123<sup>2</sup> (cancelled)

Plating thickness

ASTM B499

XRF (PMI)

ASTM E1476

**II. Dimensional Testing**

Parameter	Range	CMC Uncertainty <sup>6</sup> (±)	Technique/Method
Angle <sup>7</sup>	0° to 360°	1 °	Optical comparator / MIL-STD 120
Radius <sup>7</sup>	Up to 0.650 in	2000 µin	Optical comparator / MIL-STD 120
Threads <sup>7</sup> – Systems 21	.25 to 3.25 in	N/A	Ring gages / ANSI/ASME B1.2
	.25 to 3 in	N/A	Plug gages / FED-STD-H28/20
	Up to 4 in	600 µin	Pitch micrometers
Linear <sup>7</sup>	Up to 4 in	1000 µin	Optical comparator / MIL-STD 120
	Up to 6 in	500 µin	Micrometer / MIL-STD 120
	Up to 12 in	1000 µin	Calipers / MIL-STD 120
	Up to 18 in	1500 µin	Height gage / MIL-STD 120

<sup>6</sup> Calibration and Measurement Capability (CMC Uncertainty) 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. Calibration and Measurement Capabilities 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 Uncertainty due to the behavior of the customer's device and to influences from the circumstances of the specific measurement

<sup>7</sup> This test is not equivalent to that of a calibration.



**I. Mechanical Testing**

**Test Technology:**

**Test Method(s):**

Hardness Rockwell (HRBW & HRC)	ASTM A370, E18, F606/F606M
Discontinuities	ASTM F788, F812; SAE J122, J123 <sup>2</sup> (cancelled)
Plating thickness	ASTM B499
XRF (PMI)	ASTM E1476

**II. Dimensional Testing**

Parameter	Range	CMC Uncertainty <sup>8</sup> (±)	Technique/Method
Angle <sup>9</sup>	0° to 360°	1 °	Optical comparator / MIL-STD 120
Radius <sup>9</sup>	Up to 0.650 in	2000 µin	Optical comparator / MIL-STD 120
Threads <sup>9</sup> – Systems 21	.25 to 3.25 in	N/A	Ring gages / ANSI/ASME B1.2
	.25 to 3 in	N/A	Plug gages / FED-STD-H28/20
	Up to 4 in	600 µin	Pitch micrometers
Linear <sup>9</sup>	Up to 4 in	1000 µin	Optical comparator / MIL-STD 120
	Up to 6 in	500 µin	Micrometer / MIL-STD 120
	Up to 12 in	1000 µin	Calipers / MIL-STD 120
	Up to 18 in	1500 µin	Height gage / MIL-STD 120

<sup>8</sup> Calibration and Measurement Capability (CMC Uncertainty) 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. Calibration and Measurement Capabilities 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 Uncertainty due to the behavior of the customer's device and to influences from the circumstances of the specific measurement

<sup>9</sup>This test is not equivalent to that of a calibration.





## *Accredited Laboratory*

A2LA has accredited

### **TSP/USB LABORATORY**

*Houston, TX*

for technical competence in the field of

### **Mechanical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 8 January 2009).



Presented this 20<sup>th</sup> day of June 2016.

A handwritten signature in blue ink, appearing to read "J. C. Bennett".

Senior Director of Quality and Communications  
For the Accreditation Council  
Certificate Number 0929.01  
Valid to June 30, 2018

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