



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

MATERION BRUSH INC.<sup>1</sup>  
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 Elmore, OH 43416-9502  
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MECHANICAL

Valid To: December 31, 2018

Certificate Number: 0339.03

In recognition of the successful completion of the A2LA evaluation process (including compliance to R223 – Specific Requirements – GE Aviation S-400 Accreditation Program), accreditation is granted to this laboratory at the location listed above as well as the satellite laboratory location listed below to perform the following physical tests on metals and alloys – (beryllium metal, aluminum – beryllium metal, beryllium – containing alloys, and copper and copper alloys):

Test Technology

Test Method(s)<sup>2</sup>

Bend Test (90°)	BW-ELM-ML-0986
Charpy Impact Test	ASTM E23
Hardness	
Brinell Hardness (3000 Kg)	ASTM E10
Vickers Hardness Testing (HV1, HV2, HV10)	ASTM E92
Rockwell Hardness Testing (B and C)	ASTM E18
Precision Elastic Limit	BW-ELM-MT-0104
Scroll Test	Tyco 109-32F
Solderability Test	BW-ELM-ML-0983
Tensile Testing of Be Microbars, High-Be Sheets, BeCu Bars and BeCu Strip Bars, Preparation of Tensile Specimens and Stress-Stain Curve Interpretation (70 to 1200) °F	ASTM E8, E21
Thermal Expansion	ASTM E289; BW-ELM-MT-0103

Metallographic Evaluation

Grain Size	
Characterizing Duplex Grain Size	ASTM E1181
Estimating the Largest Grain Observed in a Metallographic Section (ALA Grain Size)	ASTM E930
Grain Size by Linear (HEYN) Intercept	ASTM E112
Macroetching Using HNO <sub>3</sub> Acid	ASTM E340; BW-ELM-ML-0647
Preparation of Be Metal Metallographic Test Specimens	BW-ELM-ML-0693

Test Technology

Test Method(s)

Electrical Analysis

Conductivity Measurement Using the Auto Sigma 3000 -  
Conductivity Meter

ASTM E1004

Conductivity Measurement Using the Kelvin Bridge

ASTM B193

Nondestructive Testing

Magnetic Permeability of BeCu Specimens

BS-EN-60404

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

<sup>2</sup> Those methods designated as BW-ELM-ML are internal test methods.

MATERION BRUSH INC.  
WARREN SERVICES TESTING LABORATORY  
27555 College Park Drive  
Warren, MI 48093

Technology

Test Method(s)

Rockwell Hardness Testing (B and C)

ASTM E18





# Accredited Laboratory

A2LA has accredited

## MATERION BRUSH INC.

Elmore, OH

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 laboratory also meets the requirements of R223 – Specific Requirements – GE Aviation S-400 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 8 January 2009).



Presented this 28<sup>th</sup> day of March 2017.

A handwritten signature in black ink, appearing to read 'L. ...', positioned above a horizontal line.

President and CEO  
For the Accreditation Council  
Certificate Number 0339.03  
Valid to December 31, 2018

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