



The American Association for Laboratory Accreditation

World Class Accreditation

## Accredited Laboratory

A2LA has accredited

**LECO CORP. OPTICAL SERVICE DEPT.**

*St. Joseph, MI*

for technical competence in the field of

**Calibration**

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 ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. 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 22<sup>nd</sup> day of October 2009.



  
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President & CEO

For the Accreditation Council  
Certificate Number 1845.01  
Valid to December 31, 2011

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025-2005  
& ANSI/NCSL Z540-1-1994

LECO CORP., OPTICAL SERVICE DEPT.  
 3000 Lakeview Avenue  
 St. Joseph, MI 49085  
 Tim Bonge Phone: 269 982 2385

CALIBRATION

Valid To: December 31, 2011

Certificate Number: 1845.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1</sup>:

I. Mechanical

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Microindentation Hardness Testers <sup>3</sup> –  Knoop 100 gf 500 gf  Vickers 100 gf 500 gf	(50 to 1800) HK   (50 to 1800) HV	0.44 µm 1.1 µm  0.13 µm 0.32 µm	ASTM E384
Indirect Verification of Vickers Hardness Testers <sup>3</sup>	HV: Low Medium High	2.3 µm 1.7 µm 1.4 µm	ASTM E92



Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Rockwell Hardness and Rockwell Superficial Hardness Testers <sup>3</sup>	HRBW: Low Medium High  HRC: Low Medium High  HREW: Low Medium High  HR30N: Low Medium High  HR30TW: Low Medium High	0.68 HRBW 0.69 HRBW 0.53 HRBW  0.39 HRC 0.35 HRC 0.35 HRC  0.51 HREW 0.60 HREW 0.58 HREW  0.65 HR30N 0.57 HR30N 0.50 HR30N  0.52 HR30TW 0.47 HR30TW 0.42 HR30TW	ASTM E18
Metallographic Linear Reticles <sup>3</sup>	(40 to 600) divisions	0.11 µm/division	ASTM E1951 "Based on a 600 division OSM."
Total Photomicrographic/ Video Print Magnification <sup>3</sup>	Up to 2000x	0.65 % of magnification	ASTM E1951
Pixel Calibration of Image Analysis/Video Measurement Systems <sup>3</sup>	Up to 5120 by 4096 pixels	0.9 % per pixel	ASTM E1951 and LECO AMH43 "Based on 3800x total magnification".

*Peter Mhyer*

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Calibration of Microscopic Stage Micrometers	Up to 155 mm	1.95 µm	ASTM E1951, LECO AMH43, and image analysis application with NIST specimen
	Up to 2 mm	0.14 µm	

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service.

<sup>2</sup> Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations 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 calibration 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 calibration.

<sup>3</sup> Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

