



This certificate is granted and awarded by the authority of the Nadcap Management Council to:

Element Cleveland

**5405 E Schaaf Rd
Cleveland, OH 44131-1337
United States**

This certificate demonstrates conformance and recognition of accreditation for specific services, as listed in www.eAuditNet.com on the Qualified Manufacturers List (QML), to the revision in effect at the time of the audit for:

Materials Testing

Certificate Number: 4344173401
Expiration Date: 31 October 2019

Joseph G. Pinto
Executive Vice President and Chief Operating Officer



SCOPE OF ACCREDITATION

Materials Testing

Element Cleveland
5405 E Schaaf Rd
Cleveland, OH 44131-1337

This certificate expiration is updated based on periodic audits. The current expiration date and scope of accreditation are listed at: www.eAuditNet.com - Online QML (Qualified Manufacturer Listing).

In recognition of the successful completion of the PRI evaluation process, accreditation is granted to this facility to perform the following:

AC7101/1 Rev F - Nadcap Audit Criteria for Materials Testing Laboratories – General Requirements for All Laboratories (to be used on/after 14 Sept 2014)

AC7101/2 Rev D - Nadcap Audit Criteria for Materials Test Laboratories – Chemical Analysis (to be used on audits on/after 22 March 2015)

(F) Atomic or Optical Emission Spectroscopy (AES or OES)

(F2) Atomic Emission Spectroscopy – Inductively Coupled Plasma (ICP–OES/AES)

(F3) Atomic Emission Spectroscopy – Spark/Arc (S/A–OES)

(G) Elemental Analysis (Combustion or Fusion)

(G1) – Carbon

(G2) – Hydrogen

(G3) – Nitrogen

(G4) – Oxygen

(G5) – Sulfur

(S) X–Ray Fluorescence (XRF)

(W) Atomic Absorption

(W2) Graphite Furnace (GFAA)

Specify the Alloy Base for Accreditation

Al Base

Co Base

Cu Base

Fe Base

Mg base

Ni Base

Ti Base

**AC7101/3 Rev C - Nadcap Audit Criteria for Materials Test Laboratories – Mechanical Testing
(to be used on/after 28 August, 2011)**

- (A) Room Temperature Tensile
- (B) Elevated Temperature Tensile
- (C) Stress Rupture
- (N) Impact
- (P) Fracture Toughness
- (XA) Creep
- (XN) Bend Testing

**AC7101/4 Rev F - Nadcap Audit Criteria for Materials Test Laboratories – Metallography and
Microindentation Hardness (to be used on/after 14 August, 2016)**

- (L0) Metallographic Evaluation
- (L1) Microindentation (Interior)
- (L10) Near Surface Examinations – Carburization / Decarburization
- (L11) Grain Size
- (L12) Inclusion Rating
- (L2) Near Surface Examinations – Alloy Depletion
- (L3) Near Surface Examinations – Oxidation/Corrosion
- (L5) Near Surface Examinations – Microindentation (Surface–Case Depth)
- (L5X) Near Surface Examinations – Microindentation (Surface) (Chord Method ARP1820)
- (L6) Near Surface Examinations – Nitriding
- (L7) Near Surface Examinations – IGA, IGO
- (L8) Near Surface Examinations – Alpha Case: Wrought Titanium
- (L9) Near Surface Examinations – Alpha Case: Cast Titanium
- (XL) Macro Examination

**AC7101/5 Rev D - Nadcap Audit Criteria for Materials Test Laboratories – Hardness Testing
(Macro) (to be used on audits on/after 22 March 2015)**

- (M1) Brinell Hardness
- (M2) Rockwell Hardness

**AC7101/6 Rev C - Nadcap Audit Criteria for Materials Test Laboratories – Corrosion (to be
used on/after 28 August, 2011)**

- (Q1) Stress Corrosion

**AC7101/7 Rev C - Nadcap Audit Criteria for Materials Test Laboratories – Mechanical Testing
Specimen Preparation (to be used on audits before 15 May 2016)**

- (Z) Standard Specimen Machining
- (Z3) Cast Specimens

(Z4) Special Preparation

AC7101/9 Rev B - Nadcap Audit Criteria for Materials Test Laboratories – Specimen Heat Treating (to be used on/after 28 August, 2011 and before 15 January 2017)

AC7110/13 Rev B - Nadcap Audit Criteria for Evaluation of Welds to be used ON OR AFTER 5 MAY 2013

DO NOT CHECK – INFORMATION ONLY – IF YOU ARE SELECTING THE AC7110/13 CHECKLIST YOU MUST ALSO SELECT AC7101/4 – Nadcap Audit Criteria for Materials Test Laboratories – Metallography and Microhardness

Supplement A – Metallurgical Evaluation of Welder / Welding Operator Qualifications (identify if this process is used)

Supplement B – Metallurgical Evaluation of Fusion Welds (identify if this process is used)

Supplement C – Metallurgical Evaluation of Electron Beam / Laser Welds (identify if this process is used)

Supplement D – Metallurgical Evaluation of Resistance Welds (identify if this process is used)

AC7110/13S Rev D - Nadcap Supplemental Audit Criteria for Evaluation of Welds to be used on audits ON OR AFTER 11 January 2015)

U10 GE Aviation

U2 Pratt & Whitney

Lab Type - Lab Type

Independent