# Accredited Laboratory

A2LA has accredited

## ELEMENT CLEVELAND

*Cleveland, OH*

for technical competence in the field of

## Chemical 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 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 April 2017*).

Presented this 9th day of November 2018.

President and CEO
For the Accreditation Council
Certificate Number 0100.02
Valid to September 30, 2020

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

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT CLEVELAND
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### CHEMICAL

Valid To: September 30, 2020 Certificate Number: 0100.02

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 to perform the following tests on metals:

| Test | Test Method(s) |
|---|---|
| Combustion Analysis (C, S)<br>Low Alloy Steel Base Alloys, Stainless Steel Base Alloys, Ni Base Alloys, Co Base Alloys, Ti Base Alloys<br>Exclusions: S in Ti Base, S in Co Base | ASTM E1019, SOP 10.04[1] |
| Inert Gas Fusion (N, O)<br>Low Alloy steel Base Alloys, Stainless Base Alloys<br>Ni Base Alloys, Co Base Alloys, Cu Base Alloys | ASTM E1019, SOP 10.08[1] |
| Inert Gas Fusion (N,O)<br>Ti Base Alloys | ASTM E1409, SOP 10.08[1] |
| Inert Gas Fusion ($H_2$)<br>Ti Base Alloys | ASTM E1477, SOP 10.09[1] |
| Optical Emission / ICP<br>Fe Base Alloys<br>(Al, B, Co, Cr, Cu, Mn, Mo, Nb, Ni, P, Si, Ti, V, W) | ASTM D1976, E1479, D1976, SOP 10.30[1], |
| Stainless Steel Base Alloys<br>(Al, B, Co, Cr, Cu, Mn, Mo, Nb, Ni, P, Si, Ti, V, W) | ASTM D1976, E1479, D1976, SOP 10.30[1], SOP 10.21[1] |
| Al Base Alloys<br>(Be, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn, Ti, V, Zn, Zr) | ASTM D1976, E1479, D1976, SOP 10.30[1], SOP 10.20[1] |
| Ni Base Alloys<br>(Al, Co, Cr, Cu, Fe, Mn, Mo, Nb, P, Si, Ti, W, Zr) | ASTM D1976, E1479, D1976, SOP 10.30[1], SOP 10.19[1] |



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| Test | Test Method |
|---|---|
| Co Base Alloys<br>(Al, Cr, Cu, Fe, Mn, Mo, Nb, Ni, P, Si, Ti, V, W) | ASTM D1976, E1479, D1976, SOP 10.30[1], SOP 10.24[1] |
| Cu Base Alloys<br>(Al, Be, Co, Cr, Fe, Mn, Ni, P, Pb, Si, Sn, Zn) | ASTM D1976, E1479, D1976, SOP 10.30[1], SOP 10.23[1] |
| Ti Base Alloys<br>(Al, Cr, Cu, Fe, Mn, Mo, Ni, Si, Sn, V, Zr) | ASTM D1976, E1479, D1976, E2371, SOP 10.301, SOP 10.25[1] |
| Mg Base Alloys<br>(Al, Cr, Cu, Fe, Si, Mn, Ni, Pb, Sn, Zn, Zr) | ASTM D1976, E1479, D1976, SOP 10.301, SOP 10.29[1] |
| Optical Emission / Spark | |
| Low Alloy Steel Base Alloys<br>(Al, B, C, Cr, Cu, Mn, Mo, Ni, P, S, Si) | ASTM E415, SOP 10.05[1] |
| Stainless Steel Base Alloys<br>(Al, C, Cr, Co, Cu, Mn, Mo, N, Nb, Ni, P, S, Si, Ti, V, W) | ASTM E1086, SOP 10.05[1] |
| Al Base Alloys<br>(Be, Bi, Cr, Cu, Fe, Mn, Mg, Ni, Pb, Si, Sn, Ti, V, Zn, Zr) | ASTM E1251, E607, SOP 10.05[1] |
| Ni Base Alloys<br>(Al, C, Co, Cr, Cu, Fe, Mo, Mn, Nb, P, Si, Ta, Ti, W, Zr) | SOP 10.05[1] |
| Co Base Alloys<br>(Al, C, Cr, Cu, Fe, Mo, Mn, Nb, Ni, P, S, Si, V, W) | SOP 10.05[1] |
| XRF | |
| Low Alloy Steel Base Alloys<br>(Al, Co, Cr, Cu, Mn, Mo, Nb, Ni, P, Pb, Si, Sn, Ti, V) | ASTM E322, E1086, SOP 10.07[1] |
| Stainless Steel Base Alloys<br>(Co, Cr, Cu, Mn, Mo, Nb, Ni, P, Si, Ta, Ti, V, W) | ASTM E572, E1086, SOP 10.07[1] |
| Ni Base Alloys<br>(Al, Co, Cr, Cu, Fe, Mn, Mo, Nb, P, Si, Ta, Ti, V, W, Zr) | SOP 10.07[1] |
| Cu Base Alloys<br>(Ag, Al, Co, Cr, Fe, Mn, Ni, P, Pb, S, Sn, Zn) | SOP 10.07[1] |
| Ti Base Alloys<br>(Al, Cr, Cu, Fe, Mn, Mo, Nb, Ni, Si, Sn, V, Y, Zr) | ASTM E539, SOP 10.07[1] |
| Graphite Furnace Atomic Absorption | |
| Ni Base Alloys<br>(Ag, Bi, Pb, Se, Te, Tl) | ASTM E1184, SOP 10.40[1] |

[1] In-house test procedure.