



**Go to market with confidence, knowing that your materials meet the highest standards of quality and safety. With our comprehensive destructive and non-destructive testing services, we make it easy for you to do just that.**

### ADVANTAGES OF PARTNERING WITH ELEMENT

#### ANY MATERIAL, ANYTIME, ANYWHERE

We support both destructive and non-destructive testing methods for metals and non-metals including composites, polymers, elastomers, and resins. From high volume routine services to highly specialized mechanical testing and chemical analysis services, we've got you covered.

Scheduling your project is simple with the large capacity of our nationwide network of labs, conveniently located in key industry hubs.

#### ACCURATE, ACTIONABLE RESULTS

Avoid costly delays or re-tests caused by improper testing techniques. From preparing specimens to data reports, our team of technical experts and state-of-the-art equipment ensure every step is done right.

#### APPROVALS\*

- Aerojet Rocketdyne
- Airbus
- Boeing
- Beechcraft
- Bell
- Blue Origin
- Cessna
- Collins
- GE Aviation
- GKN Sweden
- Gulfstream
- Hamilton Sunstrand
- Honda Aero
- Honeywell
- Lycoming
- Lockheed Martin
- MBD (Messier-Bugatti-Dowty)
- Nuclear Industry Assessment Committee (NIAC)
- Nuclear Procurement Issues Committee (NUPIC)
- Rolls-Royce
- SpaceX
- Transport Canada
- US Coast Guard
- US Department of Transportation
- US Department of Defense
- Pratt and Whitney
- Pratt and Whitney - Canada
- SAFRAN
- Sikorsky
- Westinghouse

#### ACCREDITATIONS\*

- Nadcap
- ISO 17025:2017
- ISO 17020
- AS9100
- UKAS
- COFRAC

\*Approvals and accreditations vary by location; contact us to be connected to the lab(s) that best fit your needs

#### INDUSTRIES WE SERVE

- Aerospace
- Airframe Structures
- Automotive
- Automotive Parts
- Components
- Building/Industrial Construction
- Castings & Forgings
- Commercial Vehicles
- Electronic Systems
- Engineering & Supply Chain
- Exploration
- Fastener Manufacturing
- Fossil Fuel Power
- Ground Support Equipment
- Heavy Equipment
- Infrastructure
- Land Based Power Generation
- Landing Gear

OUR SERVICES\*

CHEMICAL ANALYSIS

- Optical emission spectroscopy (OES/ Direct reader)
- X-Ray fluorescence
- Inductively coupled plasma (ICP)
- Atomic absorption (graphite furnace)
- Materials identification
- LECO direct combustion for carbon, sulfur, oxygen, nitrogen, hydrogen

MECHANICAL TESTING

- Full size yield
- Machined tensile
- Elevated temperature tensile
- Axial tensile
- Nut axial tensile
- Proof load tension and compression
- Wedge tensile
- Core hardness
- Surface hardness
- Hardness testing
- Impact testing (Charpy, Izod)
- Mechanical testing for Metals & Nonmetals,
- Tensile testing & stress
- Rupture/Creep Testing
- Bend testing
- Torque testing
- Recess torque
- Locking torque
- Stress durability- torque
- Stress durability- external load
- Hydrogen embrittlement
- Stress rupture
- Creep rupture
- Rotational capacity
- Pipe flare and flattening testing

METALLURGICAL TESTING

- Microstructure evaluation
- Grain size
- Grainflow
- Microcleanliness
- Percent delta ferrite
- Microhardness
- Macro etch
- Surface discontinuities
- Decarburization
- Case depth
- Alpha case
- Plastic thickness (optical)
- Thread evaluations
- Stress corrosion
- Oxidation / corrosion
- Intergranular attack
- Non- traditional machining evaluation (EDM, ECM, LBMR)

HEAT TREATMENT

- Heat treat response plus Jominy hardness (certified lab size furnaces)

WELDING TECHNOLOGY

- Weld process improvement
- Welding inspection
- Welding procedure qualifications
- Welding & brazing procedure development
- Welder qualifications
- Weld evaluations (verify Rogotic applications)
- Brazing procedure qualifications
- Brazing qualifications
- Hydrostatic and pressure testing

NON-DESTRUCTIVE TESTING

- Fluorescent penetrant\*\*
- Magnetic particle\*\*
- Magnetic permeability
- Radiographic (X-ray)
- Ultrasonic\*\*
- Visual inspection
- Field NDE services

FULL MACHINING CAPABILITY

FASTENER TESTING

FRACTOGRAPHY SERVICES

FRACTURE TOUGHNESS

HARDWARE TESTING

EQUIPMENT & COMPONENTS TESTING

MATERIAL PROPERTIES TESTING

MATERIALS TESTING

METALLURGICAL ANALYSIS

FAILURE ANALYSIS & CONSULTING

- Materials selection
- Manufacturing and process evaluation
- Scanning electron microscope (SEM)
- SEM / EDS
- Residue analysis
- Corrosion analysis
- Fractography
- Replication/field metallography
- Reverse engineering

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\*\*In-house and on site

MAIN EQUIPMENT

- Stress Rupture & Creep Frames
- Servo-Hydraulic Fatigue Frames (LCF/HCF)
- Elevated Temperature Tensile Frames
- Fracture Toughness Equipment
- Room Temperature Tensile Frames
- Stress Durability Frames
- Heat Treat Furnaces
- Scanning Electron Microscope with EDS
- Rockwell and Brinell Hardness testers
- Charpy Impact Tester
- Buehler Vickers & Knoop Microhardness Tester
- Metallurgical Scopes with Video Systems
- Optical Emission Spectrometer (OES)
- Atomic Absorption with Graphite Furnace (AA)
- X-Ray Fluorescence (XRF)
- Inductively Coupled Plasma Spectroscopy (ICP)
- Gases - Hydrogen, Oxygen, Nitrogen, Carbon/Sulphur
- Machine Shop including: CNC Lathes, CNC Mills, conventional lathes and mills, CNC Grinders, Thread grinders

TRUST THE CERTAINTY OF  element

With almost 200 years of experience and a global network of world-class laboratories, we make certain that the materials and products we test, inspect and certify for our customers are safe, quality, compliant and fit for purpose.

contact.us@element.com element.com 1-888-786-7555