



AEROSPACE INSPECTION & SPECIAL PROCESSING

NDT AND ETCH PROCESSING FOR AEROSPACE COMPONENTS

In aerospace applications, materials must meet extremely tight specifications and structural integrity requirements. Even minor discontinuities such as cracks, seams, laps, or irregular grain flow can compromise component performance if they are not identified early in the manufacturing and inspection process.

Element Hartford supports aerospace manufacturers with nondestructive testing (NDT) and chemical processing services that help identify these issues and confirm material integrity before parts move forward in production. We help customers meet quality requirements, maintain certification compliance, and release components with confidence.

Formerly known as Metals Testing Company, the Hartford laboratory has supported aerospace inspection programs for decades. Since joining Element Materials Technology in 2017, the facility has become part of a global network of laboratories serving the aerospace, energy, and advanced manufacturing industries.

Today, Element Hartford operates as a Nadcap accredited laboratory with extensive technical expertise in the inspection of forged hardware, turbine components, and other critical aerospace materials.

SUPPORTING THE AEROSPACE SUPPLY CHAIN

Aerospace components must meet exact specifications through qualification and production. Inspection delays or inaccurate results can disrupt supply chains and introduce rework.

Element Hartford integrates chemical processing and nondestructive testing within a single facility, allowing suppliers to complete multiple inspection processes under one quality system resulting in reduced lead times and lower shipping costs.



ADVANCED ETCH AND NONDESTRUCTIVE TESTING SERVICES

Chemical processing and nondestructive testing play a critical role in aerospace inspection by enhancing the visibility of material structures and discontinuities that may otherwise remain undetected. Element Hartford provides a range of etching processes and nondestructive testing methods used to evaluate metallurgical structures, identify surface and subsurface defects, and verify material integrity prior to component release.

Capabilities include:

- Blue Etch Anodize (BEA) for grain structure and surface anomaly evaluation
- Nital etch and anodic etch for metallurgical assessment of ferrous and nickel-based alloys
- Pre-penetrant etch and localized swab etch to enhance NDT effectiveness
- Grain flow detection etching for forged components
- Macro etching for controlled material removal and structure validation
- Fluorescent Penetrant Inspection (FPI) for detecting surface-breaking discontinuities, such as cracks, laps, seams, and porosity, in aerospace alloys.
- Magnetic Particle Inspection (MPI) for detecting cracks and defects in ferromagnetic materials commonly used in aerospace, structural, and rotating components.
- Ultrasonic Testing (UT) enable the detection of internal discontinuities, inclusions, and structural inconsistencies within complex components.

APPROVALS AND ACCREDITATIONS

Element Hartford provides safety-critical testing services that support the aerospace, defense, and energy industries. We serve as a trusted partner for the inspection of both direct and subcontracted aerospace components, supporting customers across global supply chains.

Element Hartford is Nadcap accredited and DDTC (ITAR) registered, demonstrating our commitment to regulatory compliance and technical rigor. We also maintain hundreds of approvals from more than 40 aerospace OEMs and prime contractors, enabling us to support a wide range of critical customer programs.

ELEMENT MATERIALS TECHNOLOGY NETWORK

Element Hartford is part of Element Materials Technology's global laboratory network providing materials testing, product qualification testing, and engineering services.

This network allows customers to access additional testing capabilities while working with a local inspection facility.

CONTACT ELEMENT HARTFORD

Element Hartford is more than a testing provider, we are an extension of your quality and engineering teams. With decades of experience supporting aerospace primes and their supplier networks, we understand the urgency, communication cadence, and technical precision required to keep programs on track.

We deliver consistent data, clear reporting, and responsive support aligned with your production timelines, giving you confidence at every stage of inspection and qualification.

When inspection timelines are tight and program performance is on the line, having a reliable inspection partner matters. Connect with the Element Hartford team today to discuss your requirements and keep your program moving forward with confidence.

