



OUR SOUTHERN CALIFORNIA-BASED HUNTINGTON BEACH FACILITY IS THE LEADING DESTRUCTIVE TESTING AND MATERIALS TESTING LABORATORY IN NORTH AMERICA

INTRODUCTION

Element's Huntington Beach facility has been delivering world-class destructive testing and materials testing services since 1982, serving the aerospace, defense, nuclear, and medical manufacturing industries. Located in Orange County, California, our high-capacity laboratory supports requirements ranging from routine, high-volume production testing to complex materials analysis and failure investigations.

Element Huntington Beach is Nadcap and A2LA ISO 17025 accredited and holds approvals from more than 25 aerospace primes and OEMs. As part of the global Element Materials Technology network of over 270 laboratories worldwide, we combine the responsiveness of a local partner with the depth of a global testing leader.

WHY CHOOSE ELEMENT HUNTINGTON BEACH?

Element Huntington Beach provides destructive and materials testing services across the full manufacturing and product lifecycle — from raw material qualification and production lot testing through failure investigation and expert witness support. Our facility is staffed by experienced metallurgists, engineers, and technicians, with customer-specific qualifications available. Partnering with Element Huntington Beach gives you access to:

- **Scale and Capacity:** One of the largest and most comprehensively equipped destructive testing laboratories in North America, with high-volume throughput capability, an on-site machine shop for specimen preparation, and extended operating hours to support tight production schedules.
- **Comprehensive DT Capabilities:** Mechanical testing, metallurgical analysis, chemical analysis, fatigue, fracture mechanics, stress rupture and creep, corrosion, powder testing, failure analysis, and scanning electron microscopy under one roof — eliminating the need to source multiple testing vendors.
- **Proven Track Record:** Recipient of the Boeing Gold Performance Excellence Award and trusted by Southern California's aerospace supply chain for over 40 years.
- **Industry-Leading Accreditations:** Nadcap accredited and A2LA ISO 17025 certified, with approvals from more than 25 aerospace primes and OEMs including Boeing, Airbus, Rolls-Royce, GE, Honeywell, Northrop Grumman, and Safran.
- **Expert Insight Beyond the Data:** Element Huntington Beach combines advanced testing capabilities with experienced metallurgists and engineers who interpret results, investigate failures, and support complex technical challenges—delivering clarity when the stakes are highest.
- **Global Network Access:** As part of Element's network of over 270 laboratories, clients have access to complementary NDT, failure analysis, and product qualification testing services when program requirements demand it.

SERVICES OFFERED AT ELEMENT HUNTINGTON BEACH

Element Huntington Beach offers a comprehensive range of destructive and materials testing services, including:

- **Mechanical Testing:** Tensile, compression, shear, bend, and bearing testing performed on a broad range of metals, alloys, and engineered materials. Testing is conducted at ambient, elevated, and cryogenic temperatures to applicable ASTM, EN, and customer-specific specifications.
- **Stress Rupture & Creep Testing:** Extensive test frame capacity for both short- and long-duration stress rupture and creep testing of aerospace alloys, superalloys, and other high-performance materials. Our on-site machine shop supports rapid specimen preparation to minimize turnaround time.
- **Fatigue Testing:** High Cycle Fatigue (HCF) and Low Cycle Fatigue (LCF) testing, including Fatigue Crack Growth Rate (FCGR) testing to Airbus AITM, ASTM, and customer-specific specifications. Stress-controlled, strain-controlled, and R-ratio testing at ambient and elevated temperatures.
- **Fracture Toughness & Fracture Mechanics:** KIC, FCGR, and related fracture mechanics testing for aerospace structural materials. Specimen sizes and configurations are tailored to customer and specification requirements.
- **Hardness Testing:** Rockwell, Brinell, and Vickers hardness testing along with microhardness (Vickers and Knoop) systems supporting case depth measurement, hardness traverses, and coating evaluations to applicable ASTM and aerospace specifications.
- **Impact Testing:** Charpy and Izod impact testing at ambient, and sub-ambient temperatures, including instrumented impact for detailed energy absorption analysis.
- **Fastener & Bolt Testing:** Tension, torque-tension, shear, fatigue, and hydrogen embrittlement testing of aerospace fasteners and hardware to NASM, ASTM, and customer specifications. Nadcap accredited for fastener testing.

SERVICES OFFERED AT ELEMENT HUNTINGTON BEACH (CONTINUED)

- **Metallurgical Analysis:** Macro and microstructural characterization including grain size determination, inclusion rating, coating and case depth measurement, weld evaluation, and phase identification. Supported by a dedicated metallography laboratory and optical microscopy from 12x to 1200x, with oversight from a Certified Welding Inspector (CWI).
- **Corrosion & Environmental Testing:** Salt spray/fog testing, stress corrosion cracking (SCC), and environmental exposure testing performed to applicable ASTM and aerospace specifications.
- **Chemical Analysis:** Full analytical chemistry laboratory including ICP-MS, ICP-OES, optical emission spectroscopy (OES), LECO combustion analyzers (C/S/N/O/H), atomic absorption spectroscopy (AAS) instrumentation. Supports alloy verification, heat certification review, contamination investigations, and incoming material qualification.
- **Failure Analysis & Fractography:** Investigation of material, component, and product failures to determine root cause and contributing factors. Analyses integrate fractography, metallurgical evaluation, microscopy, mechanical testing, and analytical techniques to characterize fracture origin, crack propagation, material condition, manufacturing anomalies, and service-related damage. Tools such as SEM/EDS, optical microscopy, metallography, and supporting laboratory testing are applied as needed based on the failure mechanism under evaluation. Investigations address product failures, equipment malfunctions, and accident-related damage, with findings supporting engineering review, corrective action, insurance claims, and litigation matters.

INDUSTRIES WE SERVE

Element Huntington Beach supports customers across industries where material performance, safety, and regulatory compliance are non-negotiable. Our laboratory is trusted by companies across the following sectors:

- **Aerospace:** We are a Nadcap-accredited destructive and materials testing laboratory supporting major aerospace primes, Tier 1 suppliers, and defense contractors throughout Southern California and beyond. Our team supports structural components, rotating parts, fasteners, castings, forgings, raw material, and engineered assemblies across commercial and military platforms.
- **Government & Military:** We support defense programs requiring precise, documented materials testing to customer and government specifications for components used in propulsion, structural systems, and ordnance platforms. Element Huntington Beach operates under ITAR registration and CMMC-compliant cybersecurity practices to support controlled defense programs.
- **Nuclear Energy:** Our ISO/IEC 17025-accredited testing capabilities support nuclear industry customers requiring certified mechanical and chemical testing of materials to applicable codes and standards.
- **Medical Device:** Our accredited mechanical testing and chemical analysis services support medical device manufacturers requiring precise, traceable testing of metallic implants, instruments, and structural components.
- **Space:** We support space program customers requiring qualification and acceptance testing of advanced materials and components to demanding performance and traceability requirements.

ACCREDITED AND APPROVED BY LEADING AEROSPACE AND INDUSTRIAL COMPANIES

Element Huntington Beach holds Nadcap accreditation and A2LA ISO 17025 certification and maintains approvals from a broad range of aerospace primes and manufacturers. Our team is certified to applicable aerospace and industry standards, with customer-specific certifications available. Current approvals include:

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| • Aerojet Rocketdyne | • Bombardier Aerospace | • Honeywell | • Northrop Grumman (Aeronautics Systems, Strategic Deterrent, Strategic Space) | • Safran |
| • Airbus | • Cessna / Textron Aviation | • IHI Corporation | • Parker Hannifin | • Sikorsky |
| • Airbus Canada | • GE Aviation | • Kawasaki Heavy Industries | • Rolls-Royce (US, UK, Deutschland) | • And more... |
| • Bell Helicopter | • GKN Aerospace | • MTU Aero Engines | | |
| • Boeing | • Gulfstream | | | |

STATE-OF-THE-ART EQUIPMENT

Element Huntington Beach operates advanced testing equipment designed for high-throughput aerospace production programs and precise materials characterization. Key equipment includes:

- **Universal Testing Machines:** A broad fleet of servo-hydraulic and electromechanical load frames ranging from fastener-scale to high-capacity frames for tensile, compression, fatigue, and fracture mechanics testing at ambient, elevated, and cryogenic temperatures.
- **Stress Rupture & Creep Test Frames:** Hundreds of test frames spanning a wide load range, supporting both short-duration rupture and long-duration creep testing of aerospace superalloys and structural materials.
- **On-Site Machine Shop:** A dedicated, full-service machine shop for in-house specimen preparation and custom fabrication. The machine shop has the capability to machine standard test specimens and custom fixtures for finished parts, complex geometries, and exotic materials — reducing turnaround time and eliminating external machining dependencies.
- **Chemistry Laboratory:** Full analytical chemistry suite including ICP-MS, ICP-OES, LECO combustion analyzers (C/S/N/O/H), optical emission spectrometer (OES), atomic absorption spectrometer.
- **Metallography Laboratory:** A full metallographic preparation facility supporting sectioning, mounting, grinding, polishing, and etching of metallic materials and components. Capable of preparing specimens for microstructural evaluation, failure analysis, and materials characterization in accordance with ASTM and aerospace specifications.
- **Optical Microscopy Suite:** Stereo, inverted, and digital optical microscopy systems supporting microstructural evaluation and failure analysis from 12x to 1200x, including high-resolution digital imaging and measurement capabilities. Scanning Electron Microscope (SEM) with EDS: High-resolution SEM with energy-dispersive X-ray spectroscopy for fractographic evaluation, elemental mapping, and phase analysis.
- **Hardness Testing Equipment:** Rockwell, Brinell, Vickers hardness as well as Knoop and Vickers microhardness testers with automated traversing capability for case depth and gradient evaluations.
- **Environmental & Corrosion Chambers:** Salt spray/fog chambers and controlled-environment testing equipment for corrosion and environmental exposure evaluations.

CONTACT US TODAY

Element Huntington Beach is ready to support your next program. Whether you are qualifying a new material, managing production testing requirements, investigating a field failure, or need a certified destructive testing partner with the approvals your prime demands, our team is here to help. **Contact us to discuss your program requirements and learn how Element Huntington Beach can support your supply chain.**

