



DELIVERING EXPERT SOLUTIONS IN AEROSPACE & ENERGY

WHO ARE WE

Element Houston & Element Houston-Cypress are world leaders in the testing of metals and polymers. They are located in the Houston area, as part of a global network of laboratories and experts specializing in materials testing, product qualification testing, and failure analysis.

The facilities have state-of-the-art equipment for machining, testing, analyzing, and conducting failure analysis, as well as unparalleled services in fracture mechanics, corrosion, and coatings. Element Houston operates destructive and nondestructive laboratories for metals testing and houses our high pressure high temperature sour service and corrosion laboratory. Element Houston-Cypress is focused on testing of polymers (non-metallics).

ELEMENT ACCREDITATIONS

- ASNT-ACCP
- A2LA
- ISO 17025
- NADCAP
- LDEQ LELAP
- PED
- QSTI
- TCEQ NELA
- ISO 17020
- GE Aviation
- Airbus
- Boeing

INDUSTRIES WE SERVE

Element provides testing in Energy, Aerospace, Transportation, Building & Industrial Construction, and Other High-Tech Industries.

NON-DESTRUCTIVE TESTING

Services are offered in-house and in field:

- Magnetic Particle
- Digital, Computed, & Conventional Radiography
- Phased Array, Manual, & Immersion Ultrasonic
- Liquid Penetrant

MECHANICAL TESTING

- Tension Testing up to 600,000 lbf
- Elevated Temperature Tensile up to 1800F
- Charpy Impact (ASTM E23 & ISO 148)
- Hardness Testing (macro & micro)
- Fastener Testing (axial, torque, wedge, proof load)
- Bend Testing
- Pipe Flattening & Flare Testing
- Drop Weight Testing
- Compression Testing
- ASTM D412
- ASTM D638, D624
- ASTM D3389, D5963
- ASTM D395, D1414
- ASTM D256
- Cyclic testing for low cycle fatigue
- Notched Izod impact

CHEMICAL ANALYSIS

- Optical Emission Spectroscopy (OES)
- Portable X-Ray Fluorescence
- Direct Combustions Analysis by Leco – (N,H,O & C,S)

A LEADING AEROSPACE & ENERGY TESTING PARTNER YOU CAN TRUST

FAILURE ANALYSIS & CONSULTING

- Metallic and Non-Metallic
- Expert Witness Testimony / Litigation Support
- Scanning Electron Microscopy (SEM)
- Energy Dispersive Spectroscopy (EDS)
- Third Party Inspection & Witness

METALLURGICAL EVALUATION

- Microstructure Evaluation
- Grain Size / Grain Flow
- Micro Cleanliness (ASTM E45)
- Macro Etch
- Case Depth Analysis
- Ferrite Count
- Pitting & Intergranular Corrosion (A262, G48, G28, etc.)
- Coating Thickness & Weight
- Magnetic Permeability
- Dye Penetrant Inspection
- Heat Treating
- Specimen Machining
- Surface characterization

FRACTURE MECHANICS, ANALYSIS & CONTROL

- CTOD, J and K Analysis, including JIC and KIC
- SENB, SENT and CT geometries
- J-R Curve and CTOD-R curve analysis
- In-Situ testing at temperature and in environment
- Small-scale straining & aging
- Preparing Integrity Management Plans for pipelines
- Performing Fitness for Purpose Analyses

CORROSION TESTING

- Cyclic Immersion per ASTM G44/G47
- Four-Point Bend per NACE TM0316
- Sour Service Material Qualification per NACE MRO175/ ISO 15156 SSC
- HIC per NACE TM0177 and TM0284
- Standard ASTM Corrosion Testing
- HP/HT Accelerated Aging - Metals
- Slow Strain Rate Testing

AIR EMISSIONS:

- Air Toxics
- EPA Compliance Testing
- Source Emissions (Stack Sampling) Testing
- State Permit Testing
- Flare Testing
- CEMS Certification
- Consumable Selection
- Defect Sizing & Validation

COATINGS TESTING

- DSC & DMA Testing
- Cathodic Disbondment Testing
- Material Characterization
- Simulated Service Testing
- Consulting and Bespoke Testing
- Salt Fog and UV Exposure (Static and Cyclic)

NON-METALLICS & POLYMERS TESTING

- HP/HT Accelerated Aging: Chemical and Thermal
- Sweet (CO₂), Sour (H₂S) and Clean (H₂) Exposures
- Rapid Gas Decompression (RGD)
- Tensile, Compression and Shear
- Creep and Stress Relaxation
- Density and Hardness
- Fiber, Resin and Void Volume Fraction
- Fracture and Fatigue Testing
- Compression After Impact (CAI)
- Digital Image Correlation for full field strain mapping
- Friction, wear, abrasion (including in-situ)
- Surface profilometry
- Low temperature pressure testing
- Elastomer formula reconstruction
- Thermal Conductivity
- Thermal Analysis (DSC, TGA, DMA)

SOUR GAS AGING OF POLYMERS

- ISO 23936
- API 6A
- NORSOK M-710
- API TR 6J1
- API 17D

WELDING & WELD INSPECTION

- Welder & Welding Operator Qualification
- Welds & Weldments Testing
- Certified Welding Inspector (CWI) Service
- Welding & Inspection Consulting
- Weld Engineering & Material Selection
- Consumable Selection
- Defect Sizing & Validation