



A LEADING MATERIALS TESTING PARTNER YOU CAN TRUST

WHY CHOOSE ELEMENT

Design, manufacturing, and materials can all cause failures, either singly or in combination. Failure analysis can be an integral part of a product's development and life cycle because it includes consideration of the influences of design, processing, and use of a component. A failure analysis extends a fracture analysis by including materials analysis to determine what caused the failure and whether a material or design deficiency, a manufacturing process, or improper usage was responsible. In addition to fractography, a failure analysis includes composition determination, mechanical property testing, microstructural analysis, and comparison of the material to specifications and expectations.

For its failure analysis investigations, Element's laboratories employ state-of-the-art analytical instruments and testing equipment, operated by experienced materials testing technicians. Our labs are A2LA accredited, validating the quality of our testing data and expertise.

FAILURE COMPONENT EXAMPLES

- Cast iron and cast aluminum cylinder blocks and heads
- Ductile iron and forged steel crankshafts
- Alloy and stainless steel springs
- Brazed joints in radiators
- Aluminum and steel pistons
- Steel trailer hitches
- Painted trim and body panels
- Carburized, nitrided and induction hardened gears and shafts
- Aluminum and steel car and truck wheels
- Steel wheel spindles
- Steel airbag inflators
- Cast iron brake rotors
- Chips and particles in engines
- Control arms and knuckles
- Occupant seating
- Steel hooks and chains
- Bearings
- Tool steel dies
- Metal plating, thermal spray, and other coatings
- Bolt, washer, rivets and nut fasteners
- Steel and cast iron pipe
- Cobalt, stainless steel and titanium alloy body joint implants
- Brass plumbing fixtures

SERVICES

- Failure analysis
- Fracture analysis (fractography)
- Crack analysis
- Corrosion analysis
- Scanning electron microscopy (SEM)
- Energy dispersive spectroscopy (EDS)
- Optical microscopy
- Optical stereo microscopy
- Chemical analysis
- Hardness testing
- Metallographic preparation
- Microhardness testing
- Inclusion analysis
- Tensile testing
- Joint plaintiff-defense investigations for lawsuits
- Metallurgical consulting and expert witnessing

WHO WE ARE

We are Element, one of the world's leading independent providers of testing, inspection and certification services to a diverse range of industries where failure in service is simply not an option. Everything we do is aligned to deliver safety and certainty to our customers. We exist to help all of our customers to make certain that the materials and products that they make are safe, quality, compliant and ultimately fit for purpose using our 200 years of testing experience and our global testing capabilities.