When do you need a materials engineer?

When you need answers to questions like:

- Was the wrong material used?
- Did the component break prematurely?
- Did it fail because of abuse or misuse?
- Did poor maintenance cause the failure?
- Did this weld fail? If so, why?
- Why did this valve or fitting begin leaking?
- Was it manufactured or installed incorrectly?

From airplanes to nail polish bottles, the material building blocks that make up our everyday lives share similarities in composition and structure. Since 1970, the court qualified experts that comprise S-E-A's multi-disciplined Materials Science Group have been investigating failures and conducting testing for clients around the world.

Areas of Expertise:

- Metals
- Polymers
- Composites
- Glass and Ceramics
- Fine Particles
- Building Materials
- Medical Implants

Analysis Offered:

- Imaging-Field-Emission S.E.M.
- Microstructure and Property Analysis
- Gas Chromatography-Mass Spectrometry
- Mechanical Property Evaluation and Material Characterization
  - Impact Testing
  - Tensile/Compression Testing
  - Fatigue Testing
  - Hardness Testing
  - Application Specific Testing

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Our Experts

With over 100 years of combined experience, S-E-A's Materials Science Group has the personnel and equipment to evaluate material structures, industry, transportation and construction.

Carbonara

Robert Carbonara, Ph.D., has conducted more than 2000 failure analysis investigations covering materials that include metal, ceramics, glass, plastics, wood, composites and even leather. His investigations have included automobile, railroad and airplane components, industrial furnaces, home products and appliances, industrial machines, cranes, and cables. Prior to joining S-E-A, Dr. Carbonara supervised and conducted R&D for a globally recognized technology development company, and completed studies at the University of Cincinnati Carnegie-Mellon University and the University of Pittsburgh.

Chojecki

Gregory Chojecki, Ph.D., earned his Bachelor of Science and Master of Science in Chemical Engineering and his Doctor of Philosophy in Materials Science and Engineering from Clarkson University. His expertise lies in the fields of thermodynamics, phase transformations, custom coating design, thin-film synthesis and characterization, fine particle technologies, and reactive thermal processing. At S-E-A, Dr. Chojecki utilizes his combined chemical and materials engineering background to investigate chemical and material interactions as they pertain to material failures and limitations, particularly regarding metals, polymers (plastics, rubbers, elastomers, etc.) glass, and ceramics.

Easley

Thomas Easley, Ph.D., earned his Bachelor of Science in Materials Science and Engineering from Cornell University and his Ph.D, also in Materials Science and Engineering, from Northwestern University. During his more than 20 years in the materials development and analysis industry, Dr. Easley developed expertise in strength and fracture of metals, ceramics, composites, mechanical testing, and brazing. At S-E-A, Dr. Easley applies his materials knowledge and analytical skills to determine the cause of failures due to fatigue, corrosion, and residual stress on welds and other structures, and conducts product improvement projects.

McGarry

Prior to joining S-E-A, Dennis McGarry, Ph.D., spent 20 years with a Fortune 500 manufacturing company where his areas of focus ranged from the chemistry and composition of glass to super alloys and welding. During Dr. McGarry's 18-year tenure with S-E-A, he has conducted failure analysis of metals, plastics, elastomers, glass and ceramics, in addition to conducting performance testing. Dr. McGarry earned his Doctorate, Masters and Bachelors from the Ohio State University in Metallurgical Engineering.

Riegner

David Riegner, Ph.D., earned his Ph.D. in Materials Science and Engineering from the Ohio State University, where he also served as a postdoctoral researcher and instructed courses in the materials science department. His expertise is rooted in physical metallurgy and alloy design principles in both traditional and emerging materials systems. At S-E-A, Dr. Riegner uses his experience to aid clients in the evaluation of materials problems regarding phase stability, materials selection, component design, environmental susceptibility, and corrosion.