

Materials Engineering

Packer Engineering provides a staff of experienced engineers, scientists, technicians and support personnel. We distinguish ourselves by maintaining complete in-house laboratory facilities, including extensive visual, computer, and information services. Our clients benefit from Packer Engineering's years of experience and expertise, as well as our diligence toward timely customer response.

Everything from consumer products to industrial machinery involves materials: metals, plastics, woven materials, such as textiles, and composite materials. When something breaks, a material is involved, so materials engineering is critical to analyzing failures.

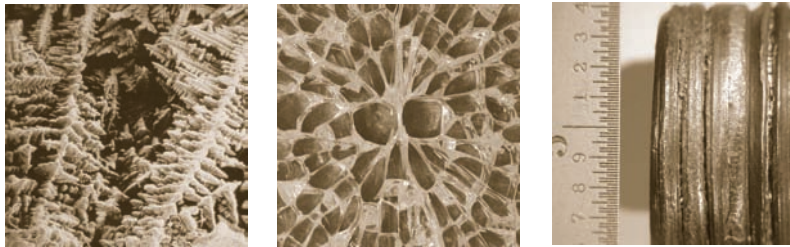
Our approach to product failure investigation is to apply the scientific principles of materials and mechanics necessary to thoroughly analyze a failure.

Mechanics evaluates the fracture toughness of the material with the applied stress and critical flaw size to understand how and why fracture occurs. This necessitates the following:

- Evaluation mechanical design
- Material properties evaluation
- Manufacturing process
- Quality Control
- Evaluation of force and conditions such as impact, shock, thermal gradients, and accelerations.

Often our analysis leads to development of critical knowledge and information relating to such things as:

- Competitive Intelligence
- Standards and Regulations
- Stress Analysis
- Process Control
- Instructions and Warnings
- Human Factors



The Materials Engineering Group provides:

- Fracture and Failure Analysis
- Engineering Mechanics/Stress Analysis
- Laboratory Analytical Services
- Scanning Electron Microscopy
- Corrosion Assessment and Testing
- Welding Evaluation
- Non-Destructive Evaluation
- Routine and Customized Testing
- Tribological Testing
- Intellectual Property Analysis



Power Plant Structural Collapse

Materials Engineering

Working with the Materials Engineering Group on your product or process before a failure occurs can often prevent failure and injuries, saving you time and money. We specialize in a wide variety of materials including:

- Metals/Metallurgy
- Polymers/Plastics
- Composites
- Ceramics and Glass
- Building Materials

Types of Projects

- **Incident Scene Investigations**
 - Buildings and structures
 - Industrial processes and machinery
 - Commercial/Industrial vehicles
 - Cranes and personnel lifts
 - Elevators and Escalators
- **Product Recall Consulting**
 - Pharmaceutical processing equipment
 - Bicycle components
 - Consumer products
 - Industrial equipment
 - Exercise and fitness equipment
- **Product Qualification Testing**
- **Product Design and Evaluation**
- **Environmental Compatibility Evaluation**
- **Product Failure Analysis**
 - Plumbing products such as valves, pipes and pressure vessels
 - Medical devices and implants
 - Consumer products
 - Automotive/Rail/Aviation components
 - Chains, ropes, and rigging equipment
 - Personnel lifts, ladders, and scaffolding

