

PRODUCT / SERVICE
INFORMATIONMATERIALS CONSULTING,
FAILURE ANALYSIS AND
TESTING

In today's lean workplace, many companies find themselves without internal materials/metallurgical expertise. Materials engineering input allows you to achieve maximum potential from your processes. Materials expertise is beneficial during new product development, sourcing, sustaining engineering, quality, VA/VE, reverse engineering, and when manufacturing, assembly or field fractures occur. Often, warranty and/or liability issues are of concern.

Failure analysis is essential to determine the root cause and the subsequent prevention of future failures. Often, decisions regarding product recalls hinge upon the outcome of these investigations. Analyses performed by LMC will include recommendations to prevent future failures.

Materials testing is often performed to determine compliance to specifications/drawings. Periodic testing is periodically required for many components after first article inspection. This should be performed to ensure the supplier is maintaining their quality. Testing is also employed in support of failure analysis and reverse engineering projects.

In this highly competitive and demanding market, sourcing can become difficult. The search and review of the various **domestic and international proprietary and industry standards** is a time consuming task that often requires the knowledge of the interactions between chemistry, processing, and properties.

Strategic alliances with other materials and engineering professionals specializing in the areas of polymers, corrosion, welding, coatings, non-destructive evaluation (NDE/NDT) and six-sigma expand the support services offered by LMC and provides a one-stop shop for all your materials needs. LMC continuously strives to extend this network to benefit you, the customer.

LINK'S MATERIALS
CONSULTING

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SERVICES AVAILABLE :

Failure Analysis	On-Site Evaluations
Materials Selection	Supplier Evaluations
Manufacturing Process Selection	Training
Metallurgical/Materials Consulting	Design Support
Testing Recommendations	International Standards
Laboratory Testing	Specifications (Materials & Heat Treat)

PRODUCT / SERVICE INFORMATION

Industries Served

Aerospace
Architectural Hardware
Automotive
Bearings
Compressor
Construction Equipment
Fastener
Golf Cart/Utility Vehicles
Industrial Equipment
Medical
Metal Suppliers
Pneumatic Tool & Hoist
Pumps

Education

B.S / M.S.
Materials Science & Engineering
Lehigh University

Expertise

Failure Analysis

Over 15 years experience with failure/damage analysis in a laboratory environment. Assessments have included a multitude of mechanisms such as fatigue, overload, wear, corrosion, embrittlement (stress corrosion cracking, hydrogen embrittlement, and environmentally assisted embrittlement), inherent metallurgical, design and manufacturing flaws, weld related defects, heat treat deficiencies, impact, etc.

Manufacturing Process Consulting

Whether it's a new design or conversion of expensive machined components into near net shape, the knowledge available at LMC can help you with finding the best manufacturing method. Typical methods include:

Stamping and Forming
Near Net Shape Manufacturing
Castings (Die, Sand, Investment, Permanent Mold)
Extrusions
Forging
Metal Injection Molding (MIM)
Powder Metallurgy (PM)
Heat Treating

Testing/Test Program Development

The following types of testing are available in support of routine testing, QA, reverse engineering, and failure analysis. Other types of testing may be available upon request.

Chemical	Corrosion
Mechanical	Coating Evaluations
Hardness	Non-Destructive Evaluation
Microstructural Evaluations	Weld Evaluations
Fractography	Welder Qualifications
Electron Microscopy	Macroscopic Evaluations
Energy Dispersive Spectroscopy	Wear/Tribology
Micro/Macro Digital Photography	Thermal Analysis (DSC/TGA)
FTIR	

Metallurgical/Materials Consulting

Consulting ranging from small questions to help on your new product development process is available.

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