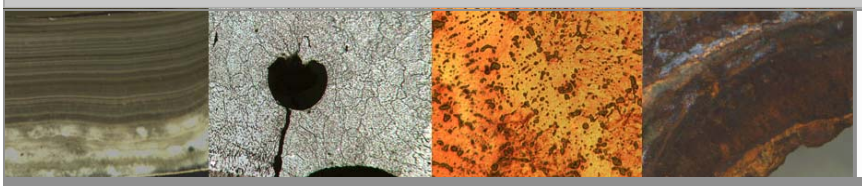
NUTS & BOLTS



New Hampshire MATERIALS LABORATORY, INC.
Your Problem Solving Partner

THE "ABC'S" OF MATERIAL TESTING **JULY 2013 SUPPLEMENT ISSUE**

Welcome to New Hampshire Materials Laboratory

New Hampshire Materials Lab aspires to provide "one stop shopping" to our customers and have capabilities for providing chemical composition, materials testing, and mechanical properties of materials. This allows us to look at the whole picture for our customers and provide answers to their dilemmas.

In this supplement issue of the Nuts & Bolts, The "ABC's" of Materials Testing provides a brief overview of Organic and Inorganic materials with testing that can be provided along with Metallography and Mechanical testing.

Tim Kenney
Laboratory Director

A Organic Materials (Resins, Plastics, Lubricants, Coatings, Paper..)

Resin

We solve a lot of mysteries with *"clues"* the size of decimal points. Contaminants are examined under a microscope and radiated to produce their unique *"fingerprints".*

This fingerprint is compared with hundreds of other reference prints to identify the mystery material.

Along with identifying mysterious contaminants, we are often called to confirm resin and plastic chemistry, coating or paint composition, and identify debris in filters and traps.

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The "ABC's of Materials Testing Cont..

B Metallography (Metals and Plastics)

This is the technique used to examine the internal structures of the material. These structures are known as grains (in metals).

Opaque object microscopy including coating and plating thickness, case hardness and depth, grain size, corrosion analysis, heat treat verification, fracture morphology and more.

The appearance of this "microstructure" is the key to failure analysis and understanding mechanical behavior.

Laboratory techniques like microscopy, spectroscopy and x-ray diffraction are combined with a thorough knowledge of thermodynamics, engineering metallurgy, polymer chemistry and applied mechanics to understand and explain the behavior of the materials.

Of course, this scientific understanding is balanced by real-world understanding of manufacturing and design applications.

Metallographic Testing Applications:

- Coating thickness
- Weld and heat affected zone examinations
- Microhardness
- Plating thickness & adhesion
- Grain size
- Corrosion analysis

Heat treating including case depth and hardness

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The "ABC's of Materials Testing Cont..

C Inorganic Materials (Metals and Rock)

Thanks to state of the art technology and chemists we can perform elemental analyses to ppm (parts per million).

This is ideal for 3rd party verification of incoming materials, especially in cooperation with your ISO 9000 or other quality initiatives.

We appreciate the time demands on most manufactures. That's why, precise results & speedy turn around are our hallmarks.

In most cases, we need only a small sample of your sample of your material, less than a "dime" in size.

D Mechanical Testing & Analysis (Metals & Plastics)

Load Testing

Metal and plastic strength, custom fixturing for testing finished parts, tension, compression, flexural properties and bend tests (bending) peel strength, tear strength, elongation, and more.

Mechanical testing reveals the true physical properties of the material assembly. Whether it's a compression test on a plastic support, and adhesion test of a laminate assembly or a hardness test on a gun barrel, these test yield real data, not calculated values. This is the first step in putting critical design into practice.

Our universal testing machines are capable of tensile and compression testing modes within a single frame. Test types may include tensile, compression, shear, flexure, peel, tear, cyclic, and bend tests.

NHML can perform testing to ASTM Standards such as ***ASTM D 3039 Tensile Properties of Fiber-Resin Composites*** or to specified customer procedures.

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