

Your Guide to Materials and Process Solutions

MAP Laboratories is a materials lab specializing in solutions-oriented materials testing and consulting. We provide the analytical testing and quantitative results to help you solve your design challenges.

Our services include:

- ✕ **Material & Contaminant identification**
- ✕ **Composition & Property verification**
- ✕ **Reverse engineering**
- ✕ **Failure analysis**
- ✕ **Material & Process Optimization**
- ✕ **Development of new materials / test-methods / instrumentation**
- ✕ **Custom Data Acquisition/Analysis**
- ✕ **3D Drafting & Simulation**

Our team of advisors have extensive backgrounds employing analytical techniques to solve challenges in a range of industries including:

- ✕ **Medical Devices**
- ✕ **Aerospace & Automotive**
- ✕ **Consumer Products**
- ✕ **Construction & Environmental**

We keep apprised of technology and testing changes via participation in standards committees, continued involvement with academic research, and expansion of our standardized test method offerings (ASTM/ISO/MIL/JIS).

We strive to treat your products/clients/consumers like they're our own and provide the extra effort that is sometimes needed to reach a complete and satisfying testing outcome. Submit an inquiry today and see how we can help.



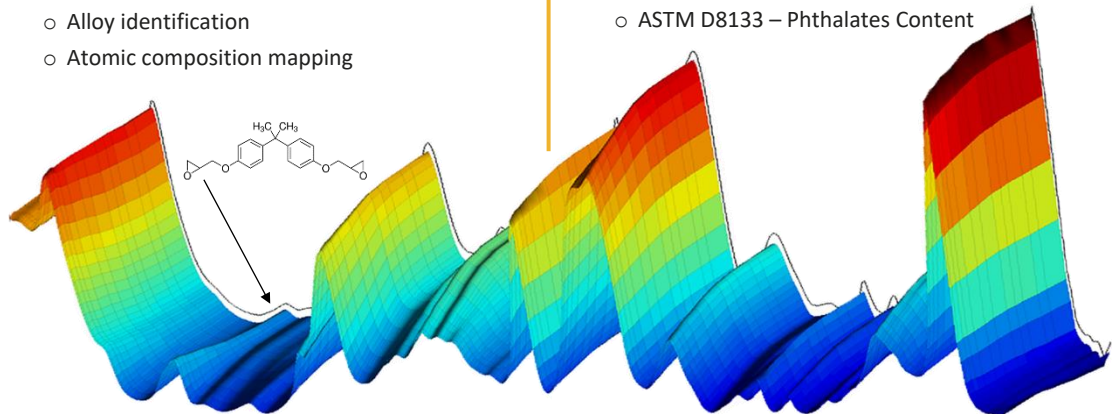
4405 Rucker Ave Office in Everett, WA

Whether your task is development of new products & processes, supply chain quality assurance, or maintenance of clean and safe facilities/equipment; materials analysis is key to increasing quality and efficiency, meeting deadlines, and generally making your job easier.

At MAP Laboratories our goal with every project is to provide you with satisfying and accurate answers promptly so that you can move on to your next challenge. We've included a partial list of our capabilities below. Please visit our website or give us a call to see how else we can help.

Capabilities

- ✕ Infrared Spectroscopy (FTIR)
 - www.maplaboratory.net/ftir-testing
 - Molecular composition of various specimen types including solids, liquids, gases.
 - Useful for identification of chemical composition, contaminants, surface residues, blooming, tracking chemical reactions, and material degradation.
 - Robust technique with widespread uses including analysis of polymers, composites, oils, waxes, powders, and more.
 - ASTM E1252 Qualitative Identification
 - ASTM E168 Quantitative Analysis
- ✕ Elemental Composition (SEM-EDS / XRF)
 - www.maplaboratory.net/elemental-analysis
 - Identification of contaminants, particulate, debris.
 - Alloy identification
 - Atomic composition mapping
- ✕ Microscopy (SEM and Optical)
 - Stereo Microscope 0.3X-100X, Polarized light, Transmission&Reflected Light
 - Metallographic Microscope 50-1000X, Polarized light, Transmission&Reflected Light
 - Electron Microscopy (SEM) 75-10000X Secondary Electron (SED), Backscatter (Quad-BSED), and EDS elemental composition mapping.
 - ASTM F1877 – Particle Characterization
 - ASTM B487 - Coating Thickness
 - ASTM E2228 - Examination of Textile Fibers
- ✕ Gas Chromatography (GC-MS)
 - Separation, identification, and quantitation of molecular composition of materials.
 - Polymer Extractables/Leachables
 - Fuel/Lubricant Contaminant Identification
 - ASTM D8133 – Phthalates Content



Time Series Infrared Molecular Spectroscopy (FTIR) of Optoelectronic Epoxy Curing Process showing consumption of epoxide functional groups.

- ✕ Thermal Analysis (TGA and DSC)
 - Examination of material changes and degradation with temperature.
 - Melting point, glass transition, crystallinity, degree of cure, composition, thermal stability & degradation, filler content.
 - Thermal Imaging
 - ASTM E1131 – TGA Compositional Analysis
 - ASTM D3418 – DSC Transition Temperatures
- ✕ Sample Preparation
 - Precision Cross-Sectioning - Epoxy Potting, Buehler Sectioning & Polishing.
 - Planetary Centrifuge Mixer and Degassing for silicone/urethane/epoxy preparation.
 - Laboratory oven, fridge, freezer, dessicator, humidity chambers as necessary for specimen conditioning.



Injection Molded Plastic Component, machined down for FTIR identification of polymer inclusion.

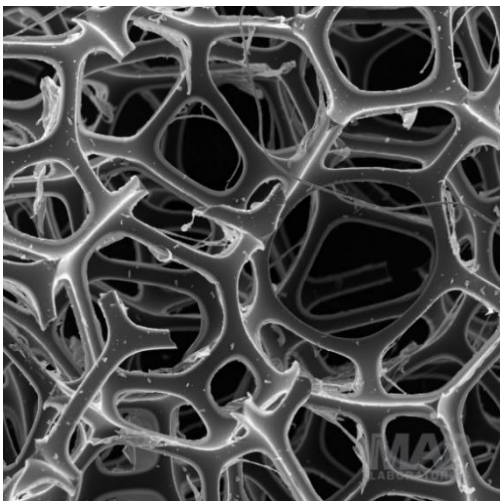
- ✕ Mechanical Testing
 - www.maplaboratory.net/mechanical-testing
 - Instron 5542 500N Tensile Test Frame
 - Low and Ultralow force range focused on testing of small specimens, elastomers, and adhesion strength
 - ASTM D412 - Elastomers Tensile Testing
 - ASTM D624 – Elastomer Tear Strength
 - ASTM D413 – 180° Peel Test
 - ASTM D2240 – Durometer Hardness
- ✕ Electrical Testing
 - Assessment of electrical properties of polymers after aging, degradation, and exposure to disinfectants & other chemicals. Electrical Leakage Evaluation & Reliability Assessment.
 - ASTM D257 - DC Resistance of Insulating Materials (Surface and Volume Resistivity)
 - ASTM D150 – AC Loss Characteristics (Dielectric Constant and Loss Factor)

How to Submit Samples for Analysis

1. Contact Sales and request a quote for your project. Use the contact email/phone-number below or visit our website: www.maplaboratory.net/submit-inquiry
Science staff will review your request and typically respond within 24 hours with a quote, sample size requirements, and sampling instructions. If we require additional information we may arrange a call/meeting to discuss your project further.
2. Complete a Sample Submission Form (www.maplaboratory.net/submit-sample)
3. Send your samples with the completed Sample Submission Form to our Everett office:

MAP LABORATORIES
4405 Rucker Ave STE B
Everett, WA 98203

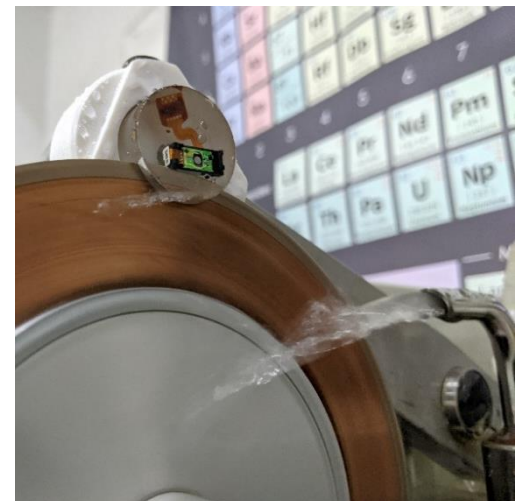
Note: Local customers with specimens smaller than 10 x 10 x 2" can submit samples after hours using the drop box next to the north entrance of our Everett office. Specimens will be logged in the following business day.



Scanning Electron Microscopy (SEM) Image of Open Cell Polyurethane Foam



Spectroscopy and microscopy tools at MAP Labs.



Cross-sectioning of epoxy potted Microelectromechanical device (MEMS).