

Recommended Mounting Methods

ALUMINUM Aluminum is typically soft and can be mounted in most mounting materials. If heat is a concern, use a castable technique to avoid compromising the microstructure of your material. LECOSET™ 100 is the proper media to select, and the LECOMAT™ provides a transparent mount (if desired).

BORIDES/CARBIDES These types of harder/brittle materials need special care when mounting. Epoxy cold mounting is highly recommended because of problems with the sample fracturing under the pressure of thermosetting materials. Compression mounts can be used but care must be taken to make sure that all burrs have been removed. This will keep the mount flat and fractures are much less likely to occur.

CERAMICS, CERMETS The same rules apply to ceramics as the borides/carbides family. Ceramics tend to be hard/brittle and will be damaged if mounted in a thermosetting mounting material. Epoxy cold mounting again will provide the correct abrasion resistance and excellent edge retention.

COPPER, BRASS Copper and brass are considered softer materials and acrylic cold mounting materials are acceptable for the majority of applications.

CIRCUIT BOARDS Small plated thru-holes must be filled so cold mount materials must be used. Typically acrylics are best because they provide low viscosity and quicker cure times. Circuit boards are not extremely hard so epoxy is not needed in this case. LECOSET™ 100 used in conjunction with LECO's patented Printed Circuit Board System or a pressure vessel will provide excellent results.

FERROUS MATERIALS This is a very broad category which may include low carbon steels to higher carbon steels that have been heat-treated. Ferrous materials are good candidates for thermosetting mounting materials. Bakelite, epoxy, or even diallyl phthalate may be appropriate depending upon the hardness of the material. Lower carbon steels can be mounted in bakelite or an economical cold mounting system. Harder medium and high carbon steels should be mounted in epoxy especially when surface defects are being investigated. Epoxy will ensure good adhesion to the sample and therefore with good preparation techniques, it will also provide excellent flat edges of the sample.

PRECIOUS METALS Precious metals are always very soft and should be mounted in the softer mounting materials. Bakelite and some of the cold mounting materials are excellent for mounting these softer alloys. Precious metals will "dish" out or abrade away faster than the mounting material if it is harder than needed. Usually precious metals require excessive final polishing to remove unwanted scratches so the mounting media should wear away almost as readily as the metal itself. Lucite thermoplastic mounting material is excellent for these types of applications. Its clarity also allows the operator to grind to a specific area of interest.

STEELS Steels vary quite a bit in hardness. Ferritic stainless steels such as 409 and 430 are fairly soft and can be mounted in bakelite or an economical cold mounting material. Martensitic grades such as 410, 420, and 440C are much harder and should be mounted in epoxy thermosetting or diallyl phthalate. Austenitic grades are usually somewhere in between and can be mounted in either group. When surface anomalies or defects are being investigated it is always better to use the harder mounting material if a choice is available.

TUNGSTEN ALLOYS Tungsten and other "tough" materials such as titanium and nickel alloys require special metallographic polishing, but mounting can be done with normal thermosetting materials such as bakelite or epoxy.

LECO—Your source for total Metallographic solutions.



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LECO®
Mounting Systems

For Consistency In Preparing Quality Mounts, Choose LECO

Professional materials engineers know that sample preparation techniques determine the quality of material analyses. The difference between a good specimen and a great specimen largely depends on how the material is mounted. LECO offers systems for either cold or compression mounting of quality metallographic or materials specimens. See the back page of this brochure to help select the best mounting system for your application.

ACRYLICS

LECOSET™ 100 is LECO's newest rapid cold curing plastic designed for any lab needing fast, dependable, and reproducible results. The liquid (resin monomer) and solid (resin polymer) components are formulated to mix easily for large or small batch sizes. LECOSET™ 100 is an excellent mounting material for irregularly shaped or fragile sample types when the pressure or heat of a thermosetting plastic would be detrimental. Cured in air for 10 to 12 minutes, LECOSET™ 100 forms an opaque finish that is conducive to grinding and polishing. (Cure the materials in a LECOMAT™ Pressure Vessel for a transparent mount.) Regardless of how LECOSET™ 100 is cured, it maintains good edge retention and will resist most etching solutions. The liquid and powder components are sold in a variety of quantities, including our new larger size kits.

LECO's Basic Acrylic Kit provides the same rapid curing of our premium acrylic LECOSET™ 100 with similar abrasion resistance and exotherm, at a slightly lower cost. The two-part system produces an opaque pink mount.



EPOXIES

For mounting harder materials such as carbides, borides, ceramics, or where edge retention and flatness are critical, use LECO's new epoxy mounts. Our epoxy comes in both long curing formulation (LC) and quick cure (QC). Both have minimal shrinkage and excellent edge retention. The LC formulation cures in 8 to 12 hours and has a working time of 45 minutes. It has an exotherm up to 175°F while setting up. The QC formulation cures in approximately one hour, with a working time of 15 minutes. Temperatures can reach 200°F while curing. A vacuum chamber may be used to remove bubbles and fill small areas or cracks.

POLYESTERS

For applications where examination of specimen edges isn't critical and sample throughput (curing time) isn't a concern, Castolite and Castoglas are excellent choices. Both are very economical two-part systems with fairly low exotherms (150°F). Castolite cures in 4 to 6 hours and Castoglas cures in 2 to 4 hours; each can be accelerated in a low temperature oven (under 180°F) to 20 to 30 minutes cure time. Both produce a transparent mount.

For more abrasion resistance and superior edge retention, use LECOSET™ 7000. LECOSET™ 7000 is a three-part cold polymerization, made of resin and two liquids. It cures in 6 to 10 minutes and forms an opaque, white mount that resists cleaning fluids and etching reagents. Always use LECOSET™ products in a well ventilated area or with a fume hood.

Compression Mounting

PR-4

No other mounting press allows you to efficiently prepare mounts for microstructural examination or provides your lab with high-caliber samples like the LECO PR-4. With convenient pre-programmed methods to mount various materials and easy-to-remove molds, the automatic PR-4 Mounting Press provides you with quality sample mounts while saving you time and effort. Add up to three auxiliary units (capable of operating independently) to prepare several mold sizes—a practical, economical solution for all laboratory budgets!

- Five interchangeable mold sizes: 1¼ in., 1½ in., 30 mm, 40 mm, and 50 mm
- Tool-steel mold assembly with diamond coating provides excellent wear and release characteristics for minimal flashing
- Pre-programmed methods for different mounting materials
- Integrated heating and cooling
- Sealed electro-hydraulic design—No pneumatic requirements
- Low working mold assembly height—14 in.

Design Benefits

The modern styling of the PR-4 Mounting Press creates a small footprint, saving you valuable lab space. Traditional closure mechanisms on older systems, such as bayonet or thread connections, are not utilized on the PR-4. Instead, the unique Face Sealing Design (Patent Pending) allows you to easily remove samples by simply releasing pressure and pushing the upper unit aside. Concerned about downtime? No worry, no hassle—the PR-4 requires minimal maintenance!



PR-25

The PR-25 is a semi-automatic mounting press. It's ideal for laboratories with a moderate sample throughput requirement. The semi-automatic features of the PR-25 reduce operator involvement, permitting other tasks to be performed during the next cycle. The pressure display and timer provide convenient monitoring during the cycle. The PR-25 also incorporates an air gun for easy debris removal and clean-up. Mold sizes are the same as the PR-15—1.00, 1.25, and 1.50 inch mounts.

PR-32

The PR-32 is an automatic, dual-mount, mounting press. It is generally specified for higher throughput laboratories with already highly utilized manpower. The dual-mount capability with a single cycle doubles the output with virtually hands-free operation. The automatic cycle sequence can be conveniently monitored by the indicator lights, and the proper pressure is maintained and displayed throughout the cycle. Mold sizes are 1.25, 1.50, and 2.00 inch. An air gun is included to speed up debris removal and clean-up.



For mounting media, we offer thermoset and thermoplastic compounds for excellent edge retention and flow properties. (See our Microstructural Analysis Supplies catalog, form no. 203-826, for more information on media.)