A complete line of Acrylic Mounting Systems, & Accessories

Acrylic Mounting Guide

www.buehler.com
WHY IS MOUNTING IMPORTANT?

Sample Quality
Mounting metallographic samples helps to protect and preserve edges during metallographic preparation. Maintaining specimen edges is crucial when evaluating the material surface.

Automation
Mounting enables automation of preparation processes, quality of material preparation, and eliminates subjectivity of operator. A secondary benefit of mounting is ease of handling during the preparation process in the event manual preparation is performed.

What is Proper Mounting?
The mounting process should not cause any damage to the microstructure of the specimen. It is important to understand what conditions will adversely affect the material being mounted and to choose a mounting technique accordingly.

Castable Mounting Systems
Recommended for mounting specimens that are sensitive to heat and/or pressure. The term “castable mounting” refers to mounting samples in either an epoxy or acrylic resin.

Not sure if acrylics are right for you? Learn more about Buehler’s epoxy mounting systems on our website.

Visit www.buehler.com for more information
Infiltration refers to the mount media’s capability to infiltrate sample features during molding. Porous materials, or those with cracks and fine features are best mounted using media with an excellent flow capable of filling these areas. Acrylic media selection can provide different levels of infiltration. For applications where infiltration is a priority, an epoxy media with use of a vacuum mounting system is recommended.

Clarity and Color
Clarity of media may be essential for viewing a particular region of interest during preparation, such as when cross-sectioning to a specific plane. Clarity can be improved for acrylic systems by mounting under pressure. Color of mount media is useful for quick identification of a particular type of sample, and to create contrast under the microscope.

Shrinking
Shrinkage gaps between the mounting media and the specimen may entrap abrasives that can become dislodged during subsequent preparation steps, contaminating the polishing cloth and causing damage to the sample surface. These gaps can also entrap suspensions, water, or etch solutions that may bleed out after preparation and obstruct clear view of the sample surface. Excessive shrinkage can even cause separation of layers or coatings and a loss of edge retention. A mounting media with low shrinkage and better adhesion to the specimen provides a higher quality mount and improved edge retention.

Edge Retention
Edge retention is the capability of mount media to preserve edge information on the encapsulated sample. Ideally, the media and sample abrade at a comparable rate. When the abrasion rate between the media and sample differs, the two are in different planes at their interface. This complicates inspection of the sample near the edge due to difficulty of focus in this region.

Cure Time
When increased throughput is necessary, acrylic mounting media offers cure times as low as five minutes. Faster cure times are often associated with higher peak temperatures.

Peak Exotherm
Some samples need to be protected from excessive heat. Low exotherm products should be used for heat sensitive samples. Consider the peak exotherm of each acrylic before media selection.

Infiltration
Infiltration refers to the mount media’s capability to infiltrate sample features during molding. Porous materials, or those with cracks and fine features are best mounted using media with an excellent flow capable of filling these areas. Acrylic media selection can provide different levels of infiltration. For applications where infiltration is a priority, an epoxy media with use of a vacuum mounting system is recommended.

Conductivity
Conductive media is useful when material characterization includes electron microscopy. In these applications, epoxy is used in conjunction with a conductive filler.

Chemical Resistance
Metallurgical samples that are intended to be etched after preparation require chemical-resistant mounting compounds that resist the attack of acidic and caustic solutions. For these samples, epoxy is the preferred media over acrylic.

To learn more about epoxy mounting systems, see our Epoxy Mounting Guide.

Visit www.buehler.com for more information
Acrylic Systems

Selecting the Right Acrylic Compound

With cure times as low as five minutes, our line of acrylics is designed to increase throughput in your mounting process while providing consistent results.

<table>
<thead>
<tr>
<th>Material</th>
<th>Properties</th>
<th>Cure Time</th>
<th>Peak Exotherm</th>
<th>Shore D</th>
</tr>
</thead>
<tbody>
<tr>
<td>SamplKwick</td>
<td>Go-to choice for general purpose applications. Does not exhibit an offensive odor of many acrylics on the market</td>
<td>5-8 min @ room temp</td>
<td>179°F [81°C]</td>
<td>85</td>
</tr>
<tr>
<td>VariKleer</td>
<td>Offers a semi-transparent mount with a reduced odor while curing</td>
<td>8 min @ room temp</td>
<td>212°F [100°C]</td>
<td>80</td>
</tr>
<tr>
<td>VariDur 10</td>
<td>Produces a crystal clear mount when cured under pressure (typically 2 bar)</td>
<td>5-15 min @ room temp</td>
<td>212°F [100°C]</td>
<td>84</td>
</tr>
<tr>
<td>VariDur 200</td>
<td>Quick curing acrylic with good edge retention ideal for mounting hard materials</td>
<td>5-8 min @ room temp</td>
<td>212°F [100°C]</td>
<td>85</td>
</tr>
<tr>
<td>VariDur 3003</td>
<td>Three-part acrylic with minimal shrinkage and high hardness, making it ideal for edge retention applications. Its chemical resistance resists against the attack of acidic and caustic solutions, which could impair viewing of the sample surface</td>
<td>15-30 min @ room temp</td>
<td>252°F [122°C]</td>
<td>90</td>
</tr>
</tbody>
</table>

Acrylic Mounting Tips

- Acrylics cure quickly so it is highly recommended to pour the mixture into the mold immediately after mixing to prevent “gelling”.
- Acrylic systems are not suitable for use with vacuum systems, nor are they for use with disposable mounting cups because the heat of the reaction will soften and deform the plastic cup.
- To improve edge retention for acrylic systems and encourage wicking into small gaps, coat the sample in the liquid hardener prior to mounting.
- Acrylic systems are sensitive to shelf life, which depends on proper storage. Keep out of excessive high or low temps and extreme humidity. It is good practice to date your containers when received.

Visit www.buehler.com for more information
### Material Properties

####Recommended Use

**General Purpose**

- **SamplKwick**
  - Go-to choice for general purpose applications. Does not exhibit an offensive odor of many acrylics on the market.
  - 5-8 min @ room temp 179°F [81°C]
  - Ideal for electronic applications. See our Industry Highlights on page 7 to learn more.

**Specialty**

- **VariDur 10**
  - Offers a semi-transparent mount with a reduced odor while curing. 8 min @ room temp 212°F [100°C]
  - Ideal for general use applications

- **VariKleer**
  - Produces a crystal clear mount when cured under pressure (typically 2 bar).
  - 5-15 min @ room temp 212°F [100°C]
  - Useful for acrylic applications where clarity is required

- **VariDur 200**
  - Quick curing acrylic with good edge retention ideal for mounting hard materials.
  - 5-8 min @ room temp 212°F [100°C]
  - Good for harder materials, and for color contrast at edges and cracks

- **VariDur 3003**
  - Three-part acrylic with minimal shrinkage and high hardness, making it ideal for edge retention applications. Its chemical resistance resists against the attack of acidic and caustic solutions, which could impair viewing of the sample surface.
  - 15-30 min @ room temp 252°F [122°C]
  - Best for hard materials where edge examination is critical.

### Selection Guide Notes

Values are compared to other Buehler medias and based on a one to three scale. Best values are ranked as a value of three.

<table>
<thead>
<tr>
<th>Edge Retention</th>
<th>Viscosity/Infiltration</th>
<th>Shrinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
</tr>
<tr>
<td>★★★</td>
<td>★</td>
<td>★★★</td>
</tr>
<tr>
<td>★★★★</td>
<td>★</td>
<td>★★★</td>
</tr>
</tbody>
</table>

**Ideal for electronic applications.**

*See our Industry Highlights on page 7 to learn more.*

**Ideal for general use applications**

**Useful for acrylic applications where clarity is required**

**Good for harder materials, and for color contrast at edges and cracks**

**Best for hard materials where edge examination is critical.**

---

**Partner with Buehler for your Success**

Buehler’s Material Scientists are experts in listening. Our team takes a consultative approach to address specific goals for the materials lab including minimizing training time, minimizing rework, or minimizing the total cost/number of steps in a process. Our applications experts frequently process samples in our labs giving them first-hand knowledge of not only the science but also the day-to-day challenges that materials labs can face. Our solutions strive to remove complexity from the preparation and analysis process making improvements easier to implement and easier to maintain.

- Worldwide support labs
- Buehler SumMet Guide
- TechNotes and SumNotes
- Seminars, webinars, and classes

[Click Here to contact our Lab!]

[Click Here to register for our webinars]

Visit [www.buehler.com](http://www.buehler.com) for more information
**Mounting Ordering Information**

**Release Agents**
- **Release Agent** - A light petroleum distillate liquid that is applied with a swab.
  - 20-8186-004† 4oz [120mL]
  - 20-8186-032† 32oz [950mL]

† Restricted article, requires special packaging

**Mold Release Powder** - Non-hazardous wax powder that is applied using a brush.
- 20-3046 2oz [45g]

**Mold Release Spray**
- 20-3050-008 8oz [0.24L]

---

<table>
<thead>
<tr>
<th>Material</th>
<th>Part Number</th>
<th>Size</th>
<th>Part Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SamplKwick*</td>
<td>20-3562</td>
<td>1 lb [0.45kg]</td>
<td>20-3564</td>
<td>12oz [0.36L]</td>
</tr>
<tr>
<td></td>
<td>20-3566</td>
<td>5 lbs [2.3kg]</td>
<td>20-3568</td>
<td>64oz [1.9L]</td>
</tr>
<tr>
<td></td>
<td>20-3562-100</td>
<td>100 lb [45kg]</td>
<td>20-3564-640</td>
<td>5gal [19L]</td>
</tr>
<tr>
<td>VariKleer*</td>
<td>20-3591</td>
<td>2.2 lbs [1kg]</td>
<td>20-3592</td>
<td>16.9oz [500mL]</td>
</tr>
<tr>
<td></td>
<td>20-3591-002</td>
<td>4.4 lbs [2kg]</td>
<td>20-3592-001</td>
<td>33.8oz [1L]</td>
</tr>
<tr>
<td></td>
<td>20-3591-010</td>
<td>22 lbs [10kg]</td>
<td>20-3592-005</td>
<td>1.3gal [5L]</td>
</tr>
<tr>
<td>VariDur* 10</td>
<td>11-1027</td>
<td>2.2 lbs [1kg]</td>
<td>11-1029</td>
<td>16.9oz [500mL]</td>
</tr>
<tr>
<td></td>
<td>11-1031</td>
<td>22 lbs [10kg]</td>
<td>11-1033</td>
<td>1.3gal [5L]</td>
</tr>
<tr>
<td>VariDur* 200</td>
<td>11-1030</td>
<td>2.2 lbs [1kg]</td>
<td>11-1029</td>
<td>16.9oz [500mL]</td>
</tr>
<tr>
<td></td>
<td>11-1034</td>
<td>22 lbs [10kg]</td>
<td>11-1033</td>
<td>1.3gal [5L]</td>
</tr>
<tr>
<td>VariDur* 3003</td>
<td>20-3531</td>
<td>3.3 lbs [1.5kg]</td>
<td>20-3535</td>
<td>0.65gal [2.5L] Liquid 1</td>
</tr>
<tr>
<td>3-part system</td>
<td>20-3534</td>
<td>16.5 lbs [7.5kg]</td>
<td>20-3536</td>
<td>1.3gal [5L] Liquid 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-3532</td>
<td>Kit Contains:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.9oz [500mL] Liquid 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33.8oz [1L] Liquid 2</td>
</tr>
</tbody>
</table>

† Restricted article, requires special packaging

---

**Mounting Clips & Clamps**

**SamplKlip Support Clip**
- 20-4000-100 Stainless Steel (qty 100)

**UniClip Support Clip**
- 20-5100-100 Clear Plastic (qty 100)
- 113043 Black Plastic (qty 100)

---

**Castable Mounting Cups & Molds**

**SamplKup**
- Reusable with best dimensional stability and suitable for use with all Buehler castable systems. (Qty 12) *not for use in ovens

**EPDM Round & Rectangular Molds**
- Suitable for use with all Buehler castable systems. Best choice for large, rectangular mounts and for curing mounts in ovens

**EPDM Round Molds (Qty 5)**
- 20-8181 1in dia x 5/8in H
- 20-8182 1.25in dia x 5/8in H
- 20-8183 1.5in dia x 5/8in H
- 20-8184 2in dia x 1in H

**EPDM Rectangular Molds (Qty 1)**
- 20-7185 2.2 x 1.2 x 0.9in [55 x 30 x 22mm]
- 20-6185 2.5 x 1.4 x 1.8in [63 x 25 x 46mm]
- 20-7186 2.8 x 1.6 x 0.9in [70 x 40 x 22mm]
- 20-6186 6 x 4 x 2in [150 x 100 x 50mm]
- 20-6187 6 x 3 x 1in [150 x 76 x 25mm]

Visit [www.buehler.com](http://www.buehler.com) for more information
Industry Highlight: **Electronics**

**Printed Circuit Board Preparation for Quality Control**

Buehler knows that quality control throughout the Printed Circuit Board (PCB) manufacturing process is critical. It’s important to detect any deviations from required manufacturing standards as early as possible, and to avoid adding more processing steps to any defective product. This reduces scrap, increases productivity, and achieves a more cost-effective operation.

Our team of experts have established techniques for preparing PCB samples that provide quick, repeatable results. We developed SamplKwick acrylic resin specifically for this application, with a fast cure time under ten minutes and excellent wetting characteristics.

**SamplKwick**

Speed up your process using SamplKwick acrylic. An excellent choice for rapid and effective encapsulation of PCB coupons. Buehler’s SamplKwick offers good penetration and the edge retention needed for great electronics preparation.

**Did you know?**

SamplKwick does not exhibit the offensive odor of many acrylics on the market.

Your **Partner** for Efficiency

Our focus is ensuring your team has the tools they need to get the job done effectively. With acrylic mixing ratios less precise than other castable mounting solutions, Buehler’s SamplKwick is the easy-to-use solution. Your lab is moving fast, and with less sensitive mixing, you can focus on what’s critical – maintaining samples suitable for quality control.

**Increase your throughput with the PC-Met**

Built for high volume PCB sample preparation, this addition to your process can hold up to 36 coupons and is able to accurately target the center of coupon features. To save time and increase throughput, SamplKwick can be filled directly into each cavity. Once cured, the sample holder is quickly ready for grinding and polishing. Want to learn more about the PC-Met?

**PC-Met**

Precision high volume printed wiring board accessory

(a) Coupons mounted into holder prior to pouring the resin (b) cured mounts in the mounting assembly (c) the grinding fixture with the molding plate removed

Visit [www.buehler.com](http://www.buehler.com) for more information
Buehler Worldwide Locations

Solutions for Materials Preparation, Testing and Analysis

Lake Bluff, IL, US
Binghampton, NY, US
Coventry, UK
Dardilly, FR
Leinfelden-Echterdingen, DE
Shanghai, CN
Tokyo, JP

BUEHLER
41 Waukegan Road, Lake Bluff, Illinois 60044
P: 847 295 6500 | 800 BUEHLER (800 283 4537)
W: www.buehler.com | E: info@buehler.com

North America-South America Offices
BUEHLER Worldwide Headquarters
P: 847 295 6500 | 800 BUEHLER (800 283 4537)
W: www.buehler.com | E: info@buehler.com

Europe Offices
BUEHLER Germany - Leinfelden-Echterdingen
European Headquarters
P: +49 (0) 711 4904690-0
E: info.eu@buehler.com

BUEHLER France - Dardilly
P: +33 (0) 800 89 73 71
E: info.eu@buehler.com

BUEHLER United Kingdom - Coventry
P: +44 (0) 800 707 6273
E: info.eu@buehler.com

Asia-Pacific Offices
BUEHLER Japan
P: +81 03 5439 5077 | F: +81 03 3452 7220
E: info.japan@buehler.com

BUEHLER China - Shanghai
ITW Test & Measurement (Shanghai) Co., Ltd.
P: +86 400 111 8683 | F: +86 21 5428 2679
E: info.cn@buehler.com

Visit www.buehler.com for more information on a Buehler location near you.

© 2022 BUEHLER, a division of Illinois Tool Works Inc.