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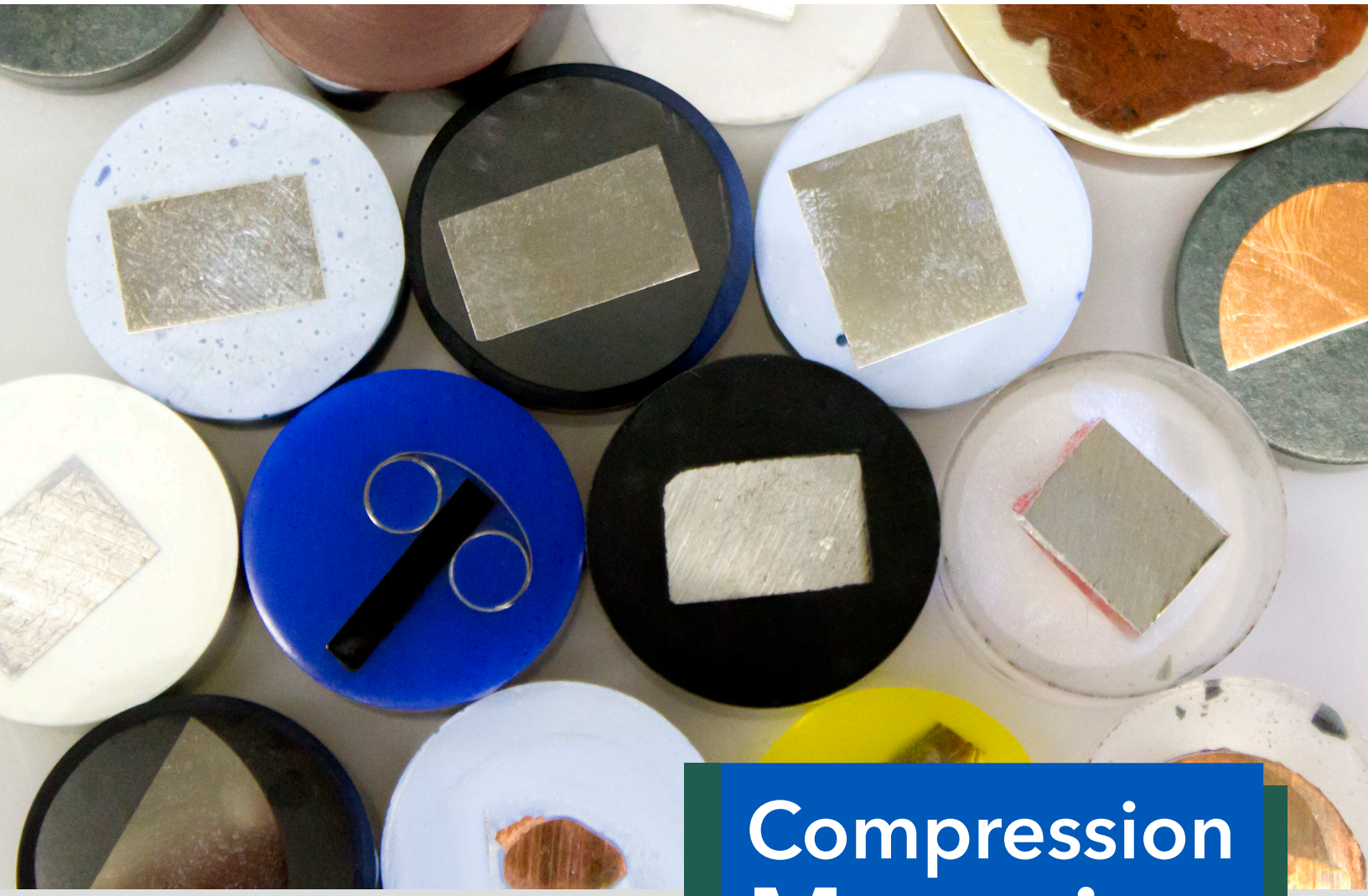


Compression Mounting Guide

A complete line of Compression Mounting Systems, Equipment & Accessories

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, considerably increasing throughput, quality of material preparation and eliminating 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 micro-structure of the specimen. Pressure and heat are the most likely sources of damage during the mounting process. It is important to understand whether these conditions will adversely affect the material being mounted and to choose a mounting technique accordingly.

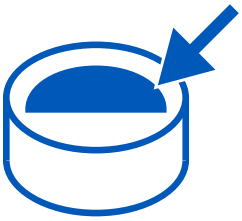
Compression Mounting

Compression mounting uses a mounting press to apply heat and pressure to encapsulate the sample in a mounting compound.

This technique provides an excellent quality sample quickly and protects the edges during the preparation process. Compression Mounting is the preferred method for processing a high volume of **samples that are not susceptible to heat or pressure.**

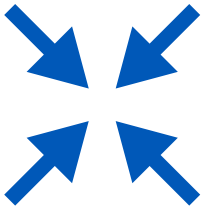
Compression Mounting

Choosing a compression mounting media depends on the sample type and demands of the application.



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.



Shrinking

When significant shrinking of compression media occurs, there may be a gap between the media and sample. Such gaps may entrap abrasives that can become dislodged during subsequent preparation steps and damage the sample surface disproportionately. Shrink gaps can also entrap suspensions, water, or etch solutions that may bleed out after preparation and obstruct clear view of the sample surface. Shrinking may also lead to a loss of edge-retention.

Infiltration

Infiltration refers to the mount media's capability to infiltrate fine 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.

Clarity

Clarity of media may be essential for viewing a particular region of interest during preparation, such as when cross-sectioning to a specific plane. A mounting press capable of special thermoplastic cooling is necessary for optimal clarity.

Chemical Resistance

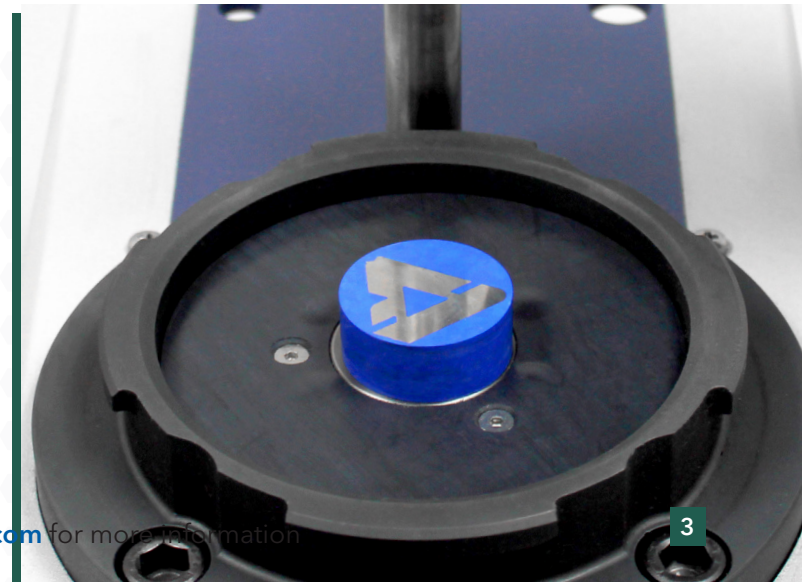
Metallurgical samples that are intended to be etched after preparation require chemical-resistant mounting compounds that resist the attack of acidic and caustic solutions.

Conductivity

Conductive media is useful when material characterization includes electron microscopy. Conductive media assists in elimination of charging, the collection of current on the sample surface that interferes with imaging.

Color & Identification

Color of mount media is useful for quick identification of a particular type of sample.



Compression Mounting Compounds

Selecting the Right Compression Compound

When selecting a compression mounting compound, it is important to consider the abrasion resistance of the material, conductivity requirements, further analysis needs and clarity level.

EpoMet™

PhenoCure™

Diallyl Phthalate

TransOptic

ProbeMet

KonductoMet

Compression Compound Selection Guide

Material	Properties	Shore D Hardness	Edge Retention	Viscosity/ Infiltration	Shrinkage
EpoMet® G	Abrasion-resistant epoxy thermoset that provides excellent edge retention, chemical resistance and eliminates shrinking	94	★★★	★★	★★★
EpoMet® F	In addition to the qualities supplied by EpoMet G, EpoMet F provides the best infiltration of compresion mounting media	94	★★★	★★★	★★★
PhenoCure®	General purpose mount media offered in three colors, ideal for easy identification of samples	88	★★	★	★
PhenoCure® LP	Low-phenol, general purpose mount media with reduced hazards and enhanced edge retention	88	★★	★	★
Diallyl Phthalate - Mineral Filled	Mineral or glass filled thermoset resins with moderately high abrasion-resistance and high chemical resistance.	91	★★	★★	★★
Diallyl Phthalate - Glass Filled		91	★★★	★★	★★
TransOptic®	A transparent thermoplastic acrylic that allows the user to easily extract the specimen from the mount by reheating.	80	★	★★	★
ProbeMet®	A copper and mineral filled phenolic thermoset for electron microscopy. ProbeMet is the most conductive media available and best in all cases where copper is not of interest in the sample	94	★★★	★★★	★★★
KonductoMet™	A graphite and mineral filled phenolic thermoset for electron microscopy when carbon is not of interest.	88	★★	★	★★

Compression Mounting Tips

Gaps between the mounting compound and sample are related to differences in expansion coefficient and ability of the media to adhere to the sample. Use of a slightly lower molding temperature and fully cooling under pressure will reduce shrinking with most mounting compounds.

Circumferential splitting results from formation of gases in the media during molding. This may be caused by absorbed moisture. Ensure storage of media is in a cool, dry place. Use pre-load settings to assist in release of gases while media is in the liquid state.

Radial splitting of mounts is often caused by sharp edges on the sample or by samples that are too large for the mold. Round off sharp corneres and move speciment farther from the edge of the mount.

Selection Guide Notes

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

TransOptic requires a mounting press such as the SimpliMet 4000 capable of a special, thermoplastic cooling cycle to ensure optimal clarity.

Color Identification	Chemical Resistance	Conductivity	Recommended Use
●	★★★		Very hard material
●	★★★		Very hard material with complex geometries
● ● ●	★		General purpose metallography
●	★		General purpose metallography with a lower hazard level
●	★★★		Moderately hard material
●	★★★		Moderately hard material for etching
○	★		When transparency of the mount is useful
●	★★	⚡	Great for Electropolishing and electro etching. Can be used for SEM when copper is not of interest
●	★	⚡	SEM analysis when ProbeMet is not suitable

Compression Mounting Tips *continued...*

Bulging or soft mounts are caused by insufficient time at temperature. Increase the cure time.

Unfused mounts may have a frosted appearance, this is caused by insufficient molding pressure or time at temperature.

Lack of clarity, "cotton balling", in TransOptic is caused by a failure to reach proper molding temperature or insufficient time at temperature. Crazing in TransOptic is caused by insufficient or too rapid cooling. Increase cooling time, use thermoplastic cooling settings (available on SimpliMet 4000).

Mounting Ordering Information

Compression Mounting Compounds

	Color	Part Number	Size
PhenoCure Powder	Black	20-3100-080	5 lbs [2.3kg]
		20-3100-400	25 lbs [11.3kg]
		20-3100-500	40 lbs [18.1kg]
	Red	20-3200-080	5 lbs [2.3kg]
		20-3200-400	25 lbs [11.3kg]
		20-3200-500	40 lbs [18.1kg]
	Green	20-3300-080	5 lbs [2.3kg]
		20-3300-400	25 lbs [11.3kg]
		20-3300-500	40 lbs [18.1kg]
PhenoCure Premolds	Black	20-3111-501	1in [25mm]
		20-3112-501	1.25in [32mm]
		20-3113-501	1.5in [38mm]
		20-10090	1.75in [45mm]
	Red	20-3212-501	1.25in [32mm]
		20-3213-501	1.5in [38mm]
	Green	20-3312-501	1.25in [32mm]
		20-3313-501	1.5in [38mm]
Diallyl Phthalate	Blue	20-3330-080•	5 lbs [2.3kg]
		20-3340-080*	5 lbs [2.3kg]

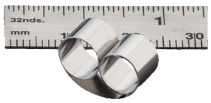
*Glass Filled •Mineral Filled

	Color	Part Number	Size
EpoMet F	Black	20-3381-070	4 lbs [1.8kg]
		20-3381-160	10 lbs [4.5kg]
		20-3381-400	25 lbs [11.3kg]
EpoMet G	Black	20-3380-064	4 lbs [1.8kg]
		20-3380-160	10 lbs [4.5kg]
		20-3380-400	25 lbs [11.3kg]
		20-3380-500	40 lbs [18.1kg]
KonductoMet	Black	20-3375-016	1 lbs [.45kg]
		20-3375-400	25 lbs [11.3kg]
TransOptic	Clear	20-3400-080	5 lbs [2.3kg]
ProbeMet	Copper	20-3385-064	4 lbs [1.8kg]

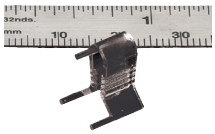
Mounting Media Calculator

Scan the QR code to optimize your mount media usage with our Mounting Media Calculator!

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)

Release Agents

Apply release agent or mold release powder to the upper and lower molds rams at the end of each shift or day of use to reduce potential of mount media sticking to mount mold.

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.
20-3048 2oz [45g]

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

Compression Mounting Equipment

SimpliMet™ 4000

High reliability in 24/7 use envirionments

The SimpliMet 4000, was tested in extreme conditions, and simulated the duty cycle of the busiest labs in the world, providing high reliability in continuous use environments.

Optimize Productivity in Your Space

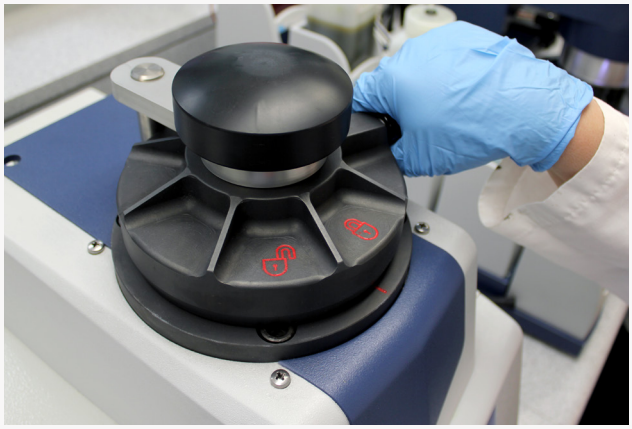
The SimpliMet 4000 packs fast mounting cycles into limited bench space, optimizing productivity. Fast duplex mounting allows two mounts to be made during the same cycle with negligible increase in cycle time.

Ease of use saves time and protects sample quality

Simple user interface eliminates errors and protects the quality of your sample prep. Everything you need is right on the front panel. Use your press out of the box without the wait.

Part Number	Mold Assembly
20-1011-5001	with 1in Mold
20-1011-5025	with 25mm Mold
20-1011-5125	with 1.25in Mold
20-1011-5030	with 30mm Mold

Part Number	Mold Assembly
20-1011-5150	with 1.5in Mold
20-1011-5040	with 40mm Mold
20-1011-5050	with 50mm Mold



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

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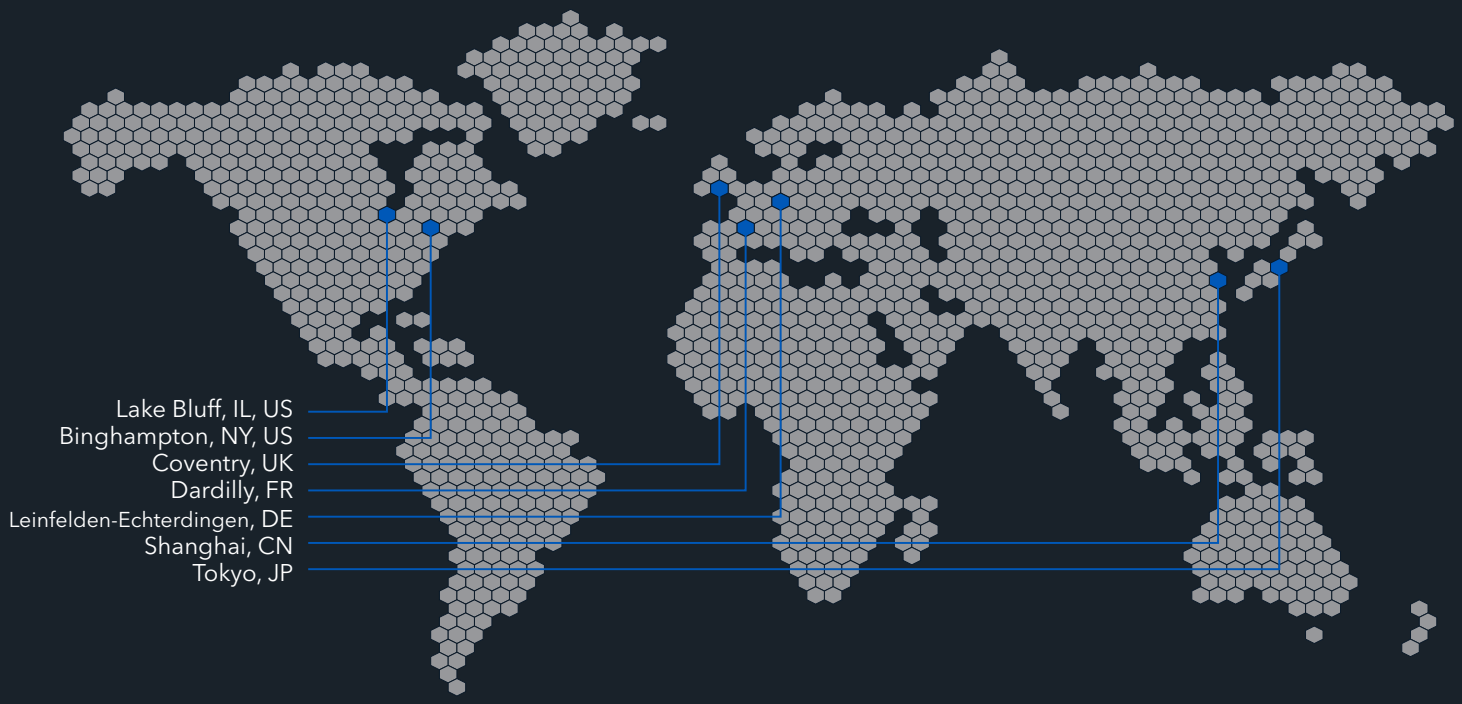

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