







Petrographic and metallographic solutions from Buehler

Sectioning and blades

Abrasive cutters

Abrasive cutters are ideal for larger specimen sizes or automated cutting needs of samples. With diamond blades or abrasive wheels these systems are used for metallic samples of all kinds, some ceramics, larger samples and mixed materials.

	Abrasimet M	Abrasimatic 300	Delta manual	Abrasimet XL Pro
				
Wheel diameter	10in [254mm] 12in [305mm]	12in [305mm]	14in [305mm]	14in [305mm] 16in [406mm] 18in [457mm]
Cut types	Chop	Chop Y-feed with pulsing	Chop	Chop, Y-feed, planar pulsing
Manual movement	z-Axis	X-axis*, Y-axis, Z-axis	Z-axis	Y-Axis, Z-axis
Automated movement		Y-axis		X-axis, Y-axis, Z-axis
Maximum part size	636 x 330 x 109mm [25 x 13 x 4.3in]	406 x 3152 x 95mm [16 x 6 3.75in]	660 x 610 x 127mm [26 x 24 x 5in]	1245 x 610 x 178mm [49 x 24 x 7in]
Cutting capacity	109mm** [4.3in]	95mm [3.75in]	127mm** [5.00in]	178mm [7in]

*Optional items **Maximum cutting capacity assumes larger size blade with smallest flange

Precision cutters

Precision cutters are ideal for smaller specimens and provide a means of minimising sample damage and material removed during sectioning compared to a workshop saw, especially for samples which are fragile or friable. The sectioned surface finish is better and will not need excessively coarse abrasives to remove the minor damage.

	IsoMet low speed	Isomet 1000	Isomet high speed / high speed pro
			
Max wheel diameter	5in [127mm]	7in [178mm]	8in [203mm]
Cut style	Gravity fed	Gravity fed	Motorised feed
Sample/wheel movement	X-axis, Z-axis	X-axis, Z-axis X-axis, Y-axis	X-axis, (PRO Z-axis) X-axis, Y-axis, Z-axis
Maximum cutting capacity**	45mm [1.77in] Automatic stop, manual dressing in cut	64mm [2.5in] Manual dressing in cut, table attachment	76mm [2.8in]; 51 x 165 x 25mm [2 x 6.5 x 1in] Smartcut, pulse, laser align, automatic dressing
Typical applications	Very small or delicate samples, occasional need	Electronics, boards, composite panels, mounted samples	Larger samples, hard ceramics, complex shapes, high usage, fastest cut, programmability (repeat identical cuts)

**Maximum cutting capacity assumes larges size blade with smallest flange

Consumables and accessories

Precision and abrasive blades and accessories



Abrasive blades



Diamond and CBN precision blades



Coolant



Flange sets

Abrasive blades from 5" [127mm] up to 18" [455mm]

Premium resin-bonded

Designed for longer lifetime, these blades are a step above typical resin-bonded blades. These blades effectively cut through samples with high quality while lasting up to 3 times longer than a typical blade.

Acuthin blades

Buehler's line of AcuThin blades are the thinnest abrasive blades we offer. These rubber-bonded blades are designed to provide a high-quality cut while significantly minimizing material lost in the cutting process.

Precision blades from 3" [76mm] to 18" [450mm]

Diamond HC and CBN blades

Diamond and CBN blades offer thin blades that remove small amounts of material and reduce the surface damage.

Ideal choice when a precise and delicate cut is required.

Depending on the material being cut, a different combination of abrasive size, concentration and bond strength is needed. Buehler has developed blades for specific applications to ensure a high-quality result is achieved.

Abrasive and precision vices, mounts and chucks



Vertical clamping



Mount and saddle chucks



Kopal vices



Cam-lock speed vice

Often times, the samples being cut are not standard shapes and a unique clamping solution is required. Buehler's precision vices offer solutions for varying shapes and sizes to allow for precise and consistent cut locations.

Buehler has many different types of precision vices for various applications including slotted vices, sliding vices, single and double saddle chucks, glass slide chucks, mount chucks, wafer chucks, and more. Buehler's abrasive vice offering for abrasive cutting machines provides reliable and versatile clamping options that ensure the sample is secure and properly presented for sectioning.

Mounting equipment and systems

Castable (Cold) mounting

- Best method for sensitive materials
- Multiple samples can be mounted simultaneously
- More expensive (consumable cost per sample)
- Strong odour/fumes – extraction needed
- Some require careful measurement

Typical application

Electronic boards, delicate components/thin walled materials, ceramics, carbides, nitrides, biomaterials, porous materials, spray coatings.

Epoxy mounting systems

High performance choices

Buehler epoxies are formulated to excel in a wide variety of applications. Whether the priority is speed, pore penetration, or low curing temperature, there is a Buehler epoxy suited for every sample type

EpoKwick™ FC

Spend less time preparing and more time analysing.

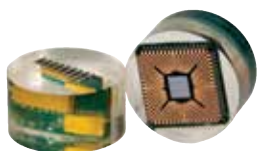
- Combines very low viscosity and extremely low shrinkage with good hardness and a faster cure
- Obtain the best sample prep quality even with highly porous samples
- Recommended for aerospace coatings and other applications with porous samples



EpoxiCure™ 2

General purpose epoxy system optimised for routine application.

- A balanced formula providing good hardness and low shrinkage
- Can be used with larger mounting cups



SimpliVac



Excellent pore impregnation in a compact format. Ideal for porous samples, failure analysis and investigation of cracks/delamination.

Using your compressed air source, this system quickly and efficiently pulls a vacuum to evacuate trapped air from any porous samples, resulting in optimized edge retention and additional support for processing delicate samples.

EpoThin™ 2

Protect samples with gentle low temperature epoxy.

- Combines low viscosity and low cure temperature
- Provides strong adherence and good pore penetration
- Recommended for electronic boards and heat sensitive materials



EpoHeat™ CLR

Save time with long pot life

- Can remain mixed at room temperature for 3 hours and cures in 60 minutes in the oven
- Water-like viscosity when heated
- Recommended for samples requiring maximum pore penetration and/or easy sample removal from mold



Acrylic mounting systems

Increased mounting throughput

With cure time as low as 5 minutes, our line of acrylics is designed to increase throughput in your mounting process while providing consistent results

SamplKwick™

SamplKwick offers quick cure times and excellent wetting characteristics making it ideal for electronics and PWB applications.



VariKleer™

VariKleer produces a crystal clear mount when cured under pressure making it ideal for applications where clarity is required.



VariDur™ 3003

VariDur 3003 is a three-part acrylic with minimal shrinkage and high hardness making it ideal for edge retention applications.



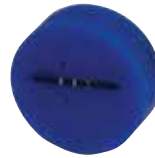
VariDur™ 10

VariDur 10 is a general purpose acrylic system offering a semi-transparent mount with a reduced odor while curing.



VariDur™ 200

VariDur 200 is a quick curing acrylic with good edge retention that is ideal for mounting hard materials.



Compression (hot) mounting

Compression mounting is the preferred method for samples insensitive to heat and pressure. Offering optimal edge preservation and highest throughput with lower consumable costs.

Simplimet 4000 mounting press

The fastest mounting press designed for 24/7 use. Eliminate bottlenecks at the mounting stage, rapidly transforming your cut samples to specimens ready for grinding and polishing.



Material	Recommended use	Colour	Hardness (Shore D)	Edge retention
PhenoCure	General purpose metallography	Black, red, green	~88	Good
Diallyl Phthalate – mineral	Moderately hard material	Blue	~91	Better
Diallyl Phthalate – glass filled	Moderately hard material for etching	Blue	~91	Better
EpoMet G (Granular)	Very hard material	Black	~94	Best
EpoMet F (Fine)	Very hard material with complex geometries	Black	~94	Best
TransOptic	When transparency of the mount is useful	Clear	~80	Good
KonductoMet	SEM analysis when carbon is not the object of analysis	Black	~88	Good
ProbeMet	SEM analysis when copper is not the object of interest. Great for electropolishing	Copper	~94	Better






Grinding and polishing

Automated and manual grinders and polishers with a broad range of consumables for any lab

The goal of the grinding and polishing steps is to prepare a final polished specimen that is free of deformation and suitable for analysis. This can be achieved in multiple ways depending on the overall goals of the lab. Whether a lab is looking for the quickest overall process, the best surface finish or versatility to prepare many different materials, Buehler has a solution for the grinding and polishing needs.

A grinder-polisher solution for any lab

Buehler offers a full line of easy-to-use machines. Choose from Buehler's manual, semi-automated or fully automated grinder-polishers to provide the perfect solution for your lab

	EcoMet 30 Manual	EcoMet 30 Semi-Auto	AutoMet 250	Automet 250 Pro	AutoMet 300 Pro
					
	A cost effective grinder-polisher with the essential functions. It has quick clean features to save time and effort, and is made from a durable metal casting for robustness and stability. It has and ergonomic manual use.	An entry level grinder-polisher with an emphasis on simplicity. All functions are easily accessible on an uncomplicated touch screen interface. It's compatible with a dispensing system to go hands-free during the polishing process and improve repeatability.	AutoMet 250 is an advanced grinder-polisher with more power to accommodate a greater capacity for high volume environments. The straightforward controls remove complexity from the grinding and polishing process.	With additional premium features. The enhanced programmability is highly intuitive with easy method storage. Improve repeatability with the automated dispensing system. The machine has z axis removal capabilities for grinding and polishing by depth.	Similar to the AutoMet 250 Pro, with a stronger motor and larger platen size to accommodate larger samples. It is also compatible with accessories such as PC-Met and PWB Met for PCB grinding and polishing.
Style	Manual	Semi-auto	Semi-auto	Semi-auto	Semi-auto
Platen count	Single or twin	Single or twin	Single	Single	Single
Platen sizes	8", 10" or 12"	8", 10" or 12"	8" or 10"	8" or 10"	10" or 12"
Controls	Knobs	Touch screen	Membrane	Touch screen	Touch screen
Dispensing capability		Dispensing (3 max)		Dispensing (5 max)	Dispensing (5 max)
Method storage				Methods	Methods
Removal by depth				Z-axis removal	Z-axis removal
Rinse and spin		X		X	X
Single force max capacity		4	6	6	6
Central force max capacity		12	12	12	12
Specimen max size		40mm	40mm	40mm	50mm

Consumables for grinding and polishing

An extensive selection of grinding papers, diamond discs, polishing cloths and diamond suspensions to provide consistent and repeatable preparation results.

Grinding and polishing



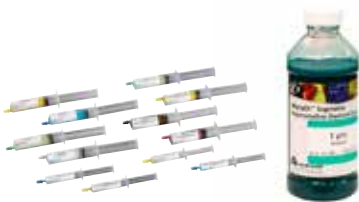
Carbimet™
silicon carbide
papers



Diamond
grinding discs



Polishing
cloths



Diamond suspensions
and pastes



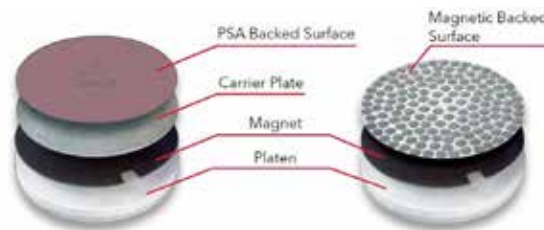
Final polishing
suspensions

Platen systems

The choice of platen system depends on the goals of the lab and the products being used in the preparation process. The magnetic system can be adapted for use with nearly all products while all the Apex S system provides the fastest solution for changing between grinding papers.

Magnetic system

- Versatile system that allows easy removal and storage of grinding and polishing consumables
- First, adhere a PSA backed magnet to the aluminium platen
- Directly apply magnetic backed surfaces for use or utilise a carrier plate for PSA backed surfaces



Apex S system

- High friction backing system that is the ideal choice to reduce changeover times between grinding paper steps
- Choose the PSA backed film for use directly on aluminium platen or the magnetic based film for use with a magnetic based system



Diamond grinding discs

Get more value from your grinding with less disc changes

Diamond grinding discs offer a long-wear surface that provides excellent surface flatness for a wide variety of materials. Buehler offers multiple different types of products depending on the material being processed

- Long life with consistent results
- Ideal solution for automation
- Process a wide variety of materials with customised solutions



Speciality equipment

Vibromet 2

VibroMet 2 Vibratory Polisher is designed to prepare high quality polished surfaces on a wide variety of materials, including EBSD applications.

The 7200 cycles per minute horizontal motion produces a very effective polishing action, providing superior results, exceptional flatness and less deformation.

When to use Vibratory Polishing

- Delicate for very ductile samples
- Large unmounted samples
- When an exceptional finish is needed (SEM/EBSD)
- Speed is not of high importance

Note: used in addition to traditional mechanical preparation



Minimet 1000

A low volume, single specimen machine capable of preparing a wide variety of materials. Space saving design employs geometric action, increasing specimen consistency.



ElectroMet 4

The ElectroMet 4 system provide both electropolishing and etching capabilities to enable efficient sample preparation.



PetroThin

The PetroThin Thin Sectioning System is a precise, easy-to-use instrument for re-sectioning and thinning a wide variety of samples, such as rocks and minerals, ceramics, concrete, bone, and teeth for performing materials characterisation.

Precise cut location control

- Two precision micrometers are used for controlling re-sectioning and thinning
- Precision of resections and grinds material within +/- 5um

Process large samples

- Prepare slides up to 50.8 x 76.2mm
- 8in diamond blade and 8in diamond grinding cup included



Increase accuracy and parallelism of samples

- To avoid the need to remove the glass slide between steps with a diamond cutting blade and a diamond grinding cup wheel
- Single spindle design ensures parallelism of sample by eliminating the need to remove the glass slide between steps

Hardness testers

Wilson, Vickers-Knoop, Rockwell and Brinell hardness testers

- Multifunction or specialised
- Automated or Manual



Rockwell™



Vickers/Knoop



Universal/Brinell

Hardness analysis and control software



Sample blocks and accessories



In Australia:

For customer service, call 1300-735-292
To email an order, ordersau@thermofisher.com

In New Zealand:

For customer service, call 0800-933-966
To email an order, ordersnz@thermofisher.com

Find out more at thermofisher.com

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