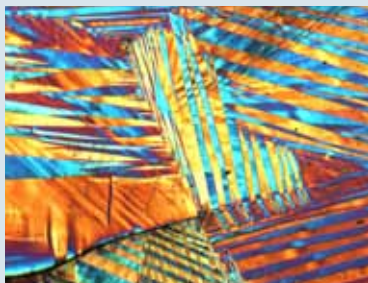
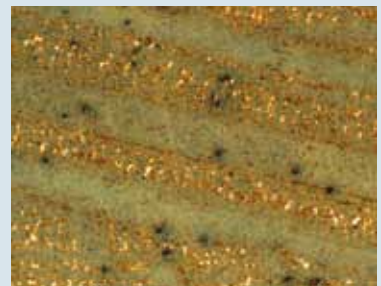
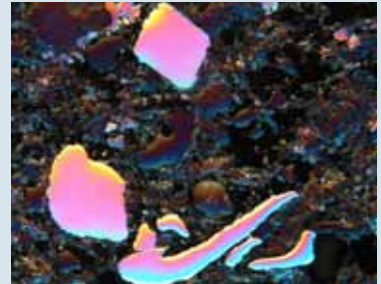
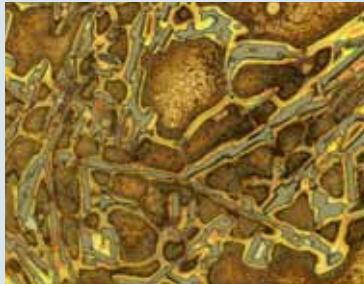
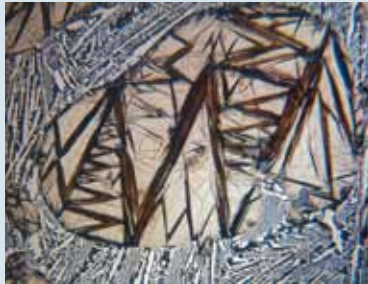
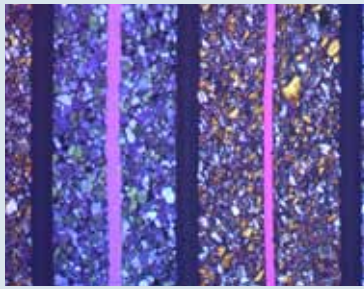
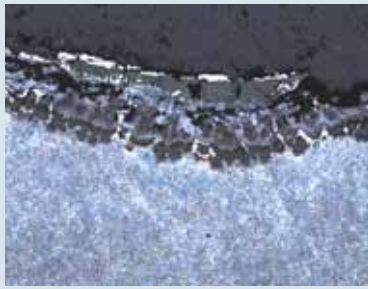


Buehler Buyer's Guide 2012



BUEHLER

Excellent Results. Easily Repeatable.™



Buehler is a worldwide leader in materials preparation and analysis. As your partner in all aspects, we provide not only a complete line of equipment and consumables, but a strong team dedicated to application knowledge, technical support, and when need be, service. With more than 80 locations across the globe offering telephone and email support, training courses, webinars, and one-on-one custom training, Buehler is there to offer support to our customers, industry and applications. Dedicated to your needs, we strive for fast consumable deliveries, efficient service support and 24/7 access to our online preparation guide.

One world, one company, all of your needs.

For descriptions of the above images, please see out 2012 Buehler Microstructural Calendar.



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www.buehler.com



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www.buehler.com

Ordering Information

Sales Policy:

Sales policy for domestic U.S.A. customers.

1. Prices subject to change without notice.
2. Minimum order \$100.00.
3. Taxes added where applicable.
4. Prices F.O.B Lake Bluff, Illinois.
5. Terms net 30 days with established credit.
6. Special order parts will require minimum order quantities and lead times. Please contact Buehler customer service (1-800-BUEHLER) for further information. All sales are final.

Customer Assistance:

For sales literature, order placement, price, delivery, order status or names and phone numbers of our nearest direct sales engineer, call: **1-800-BUEHLER** (1-800-283-4537) or email: custserv@buehler.com

For online consumables ordering, sales literature & Material Safety Data Sheets visit: www.buehler.com

For complete factory and field service through our facility in Lake Bluff, Illinois, call: **1-847-295-4542** or **1-800-BUEHLER** (1-800-283-4537).

For application and laboratory assistance, call: **1-847-295-6500**, **1-800-BUEHLER** (1-800-283-4537) or e-mail: techsupport@buehler.com

Your Satisfaction is Our Goal!

Fast Delivery

Over 90% of your consumables orders ship the same or next day! * That means you have the supplies you need, exactly when you need them. Count on Buehler to keep you stocked and ready for your next sample prep job or mission critical investigation.

Excellent Support

Our well trained lab staff has extensive, hands-on knowledge of applications, methods and product. They certainly have a lot of useful tips and best practices to share with you! Additionally, we offer more than 20 classes and seminars worldwide and can customize courses to your needs.

Efficient Service

In the event that you need service on a critical piece of equipment, contact your local service department for quick response and the quickest resolution possible. In addition to meeting unexpected needs, Buehler also provides calibration and cleaning, yearly calibration programs, service contracts and preventative maintenance programs.

**For orders placed before 2 PM CST.*



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**BUEHLER REMITTANCE
ADDRESS**

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SECTIONING

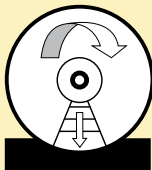
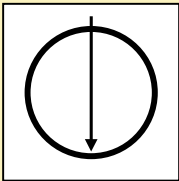
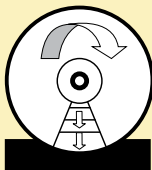
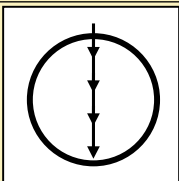

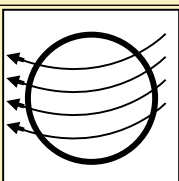
Sectioning At A Glance:

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SECTIONING TECHNICAL INFORMATION

Specimen preparation for microstructural examination involves a series of operations, the ease and success of each depends on the preceding step. The first cut impacts all subsequent steps and the impact can be quite detrimental if too much damage is induced during sectioning. In some cases, very large parts are initially cut with torch or plasma cutters, or band saws and then resectioned with abrasive or precision equipment. The proper equipment selection and technique will minimize the deformation. A key component in the sectioning technique is firm and stable vising of the part. If the vise is loose or clamped improperly the cut may be stalled, the abrasive wheel damaged or the part itself deformed.

CUTTING STYLE AND WHEEL PATH

<p>Chop Cutting The traditional form of machine operation. Wheel contact arc is governed by specimen size. Generally a struggle with large/difficult parts.</p>		
<p>Chop Cutting with Pulsing Wheel contact still governed by specimen size. The pulsing action gives a shock to the wheel causing abrasives to break away. Wheel wear is generally high with this method.</p>		
<p>Orbital Similar in action to traverse and increment but on a curved path. Simpler and quicker in operation. Part size is irrelevant as the orbital action produces a minimum contact arc area during cutting.</p>		

Abrasive Cutting Troubleshooting Guide

Problem	Possible Cause	Suggested Remedy
Burning (bluish discoloration)	Overheated specimen	<ul style="list-style-type: none"> • Increase coolant flow rate • Reduce cutting pressure • Select a wheel with softer bonding (faster breakdown)
Rapid wheel wear	Wheel bonding breaks down too rapidly	<ul style="list-style-type: none"> • Select a wheel with harder bonding • Reduce cutting pressure
Frequent wheel breakage	<ul style="list-style-type: none"> • Uneven coolant distribution • Loose specimen fixturing • Abrupt contact with specimen 	<ul style="list-style-type: none"> • Adjust coolant flow to be even on both sides of the wheel • Clamp the specimen more securely • Start cut contact carefully
Frequent wheel breakage	Wheel was previously cracked at start up	Handle carefully
Resistance to cutting	Slow wheel bond breakdown	<ul style="list-style-type: none"> • Select a wheel with softer bonding • Use a "pulse" cutting mode • Use cutter with oscillating motion or with Minimal Area of Contact Cutting* (MACC) ability
Stalled wheels	<ul style="list-style-type: none"> • Inadequate cutter capacity • Pinched blade due to movement of specimen 	<ul style="list-style-type: none"> • Use cutter with greater horsepower • Tighten the vise on one side less than on the other side • Reduce pressure or feed rate • Use with cutter oscillating motion or with MACC ability

*Minimal Area of Contact Cutting as on the Delta® Orbital Abrasive Cutter

ABRASIVE CUTTERS

The most commonly used sectioning device in the microstructural analysis laboratory is the abrasive cutter. Selecting the correct wheel for a specific application, including abrasive type, size, bond strength and overall wheel thickness is essential to achieving a good cut. In addition, abrasive sectioning should be performed wet, with an ample flow of coolant that includes both corrosion protection and lubrication. Proper technique will minimize surface damage and provide adequate cutting rates. There are many different abrasive cutters, accessories and consumables available. When selecting an abrasive cutter, consideration should be given to the sample size, volume of sectioning required and the variety of parts.



Approx. Weight: 300 lbs [136kg]

◀ AbrasiMet® 250 Abrasive Cutter

- Manual operation, 4Hp
- 10in [254mm] wheel capacity
- 12mm T-Slot Stainless Steel bed
- Includes mechanical brake
- Combine with PetroCut® Vise Table & Rock Clamps

(Series 10-2165 Recirculating System and vising (pg. 6) not included)

Available in the following voltage/frequency:

- 10-10106-260 [200-240VAC, 60Hz]
- 10-10106-460 [380-460VAC, 60Hz]
- 10-10106-250 [200-240VAC, 50Hz]
- 10-10106-400 [380-400VAC, 50Hz]

Tips, Tricks & Techniques:

For best performance from your cutter and wheels:

- Maintain the coolant & recirculating tank
- Make sure your flanges are properly installed
- Keep the hood open while not in use to avoid trapping humidity
- Wash cutter out frequently



PetroCut® Vise Table and Rock Clamp Kit (10-10106-000) for the AbrasiMet® 250
(10-10106-001 - Rock Clamp Kit)

AbrasiMatic® 300 Abrasive Cutter ▶

- Manual or automatic operation, 5Hp
- 12in [305mm] wheel capacity
- 12mm T-Slot Stainless Steel bed
- Optional X & Y-axis motion
- SmartCut™ feedback system included
- Touchscreen interface

(Includes SuperAlloy Abrasive Wheels. Series 10-2332 Recirculating System and vising (pg. 6) not included)

Available in the following voltage/frequency:

X-axis only:

- 10-2190-260 [200-240VAC, 60Hz]
- 10-2190-460 [380-460VAC, 60Hz]
- 10-2190-250 [200-240VAC, 50Hz]
- 10-2190-400 [380-400VAC, 50Hz]

X & Y-axis

- 10-2193-260 [200-240VAC, 60Hz]
- 10-2193-460 [380-460VAC, 60Hz]
- 10-2193-250 [200-240VAC, 50Hz]
- 10-2193-400 [380-400VAC, 50Hz]



Approx. Weight: 350 lbs [165kg]



Approx. Weight: 800 lbs [365kg]

◀ Delta® Manual Action Cutter

- Manual operation, 10Hp
- 14in [375mm] wheel capacity
- 14mm T-Slot Stainless Steel bed
- Includes electronic brake

(Series 10-2332 Recirculating System (pg. 8), Cool 2 and 2 T-Slot beds included. Vising (pg. 7) not included)

Available in the following voltage/frequency:

10-2213EB-260 [200-240VAC, 60Hz]
 10-2213EB-460 [380-460VAC, 60Hz]
 10-2213EB-400 [300-400VAC, 50Hz]

Accessories:

10-2326 T-Slot Bed, X & Y axis

Delta® Orbital and Chop Action Cutter ▶

- Automatic operation
- 12in [305mm] or 14in [375mm] wheel capacity
- 14mm T-Slot Stainless Steel bed
- Optional electronic brake
- SmartCut™ or SmartPulse™ feedback system included

(Transit frame, selection of abrasive wheels and 2 T-Slot beds included. Base cabinets, Series 10-2332 Recirculating System and vising (pg. 8) not included)

Available in the following voltage/frequency without electronic brake:

Orbital (12in/14in, 7.5Hp):

10-2218-260 / 10-2219-260 [200-240VAC, 60Hz]
 10-2218-460 / 10-2219-460 [380-460VAC, 60Hz]
 10-2218-400 / 10-2219-400 [300-400VAC, 50Hz]

Auto Chop (12in/14in, 7.5Hp):

10-2215-260 / 10-2216-260 [200-240VAC, 60Hz]
 10-2215-460 / 10-2216-460 [380-460VAC, 60Hz]
 10-2215-400 / 10-2216-400 [300-400VAC, 50Hz]

Available in the following voltage/frequency with electronic brake:

Orbital (12in/14in, 7.5Hp):

10-2218B-260 / 10-2219B-260 [200-240VAC, 60Hz]
 10-2218B-460 / 10-2219B-460 [380-460VAC, 60Hz]
 10-2218B-400 / 10-2219B-400 [300-400VAC, 50Hz]

Auto Chop (12in/14in, 7.5Hp):

10-2215B-260 / 10-2216B-260 [200-240VAC, 60Hz]
 10-2215B-460 / 10-2216B-460 [380-460VAC, 60Hz]
 10-2215B-400 / 10-2216B-400 [300-400VAC, 50Hz]



Approx. Weight: 800 lbs [365kg]

Accessories:

10-2225 T-Slot Bed, Y axis only
 10-2226 T-Slot Bed, X & Y axis
 10-2228 Base Cabinet, 1 door
 10-2230 Premium Cabinet, 2 doors
 10-2241 Serial Cutting Table



◀ Delta® Orbital and Chop Action Cutter

- Automatic operation
- 16in [400mm] or 18in [455mm] wheel capacity
- 14mm T-Slot Stainless Steel bed
- Optional electronic brake
- SmartCut™ or SmartPulse™ feedback system included

(Base cabinets and 3 T-Slot beds are included. Series 10-2332 Recirculating System and vising (pg. 8) not included)

Available in the following voltage/frequency without electronic brake:

Orbital (16in, 7.5Hp / 16in, 10Hp / 18in, 15Hp):

10-2317-260 / 10-2318-260 / 10-2319-260 [200-240VAC, 60Hz]
10-2317-460 / 10-2318-460 / 10-2319-460 [380-460VAC, 60Hz]
10-2317-400 / 10-2318-400 / 10-2319-400 [380-400VAC, 50Hz]

Auto Chop (16in, 10Hp):

10-2315-260 [200-240VAC, 60Hz]
10-2315-460 [380-460VAC, 60Hz]
10-2315-400 [380-400VAC, 50Hz]

Available in the following voltage/frequency with electronic brake:

Orbital (16in, 7.5Hp / 16in, 10Hp / 18in 15Hp):

10-2317B-260 / 10-2318B-260 / 10-2319B-260 [200-240VAC, 60Hz]
10-2317B-460 / 10-2318B-460 / 10-2319B-460 [380-460VAC, 60Hz]
10-2317B-400 / 10-2318B-400 / 10-2319B-400 [380-400VAC, 50Hz]

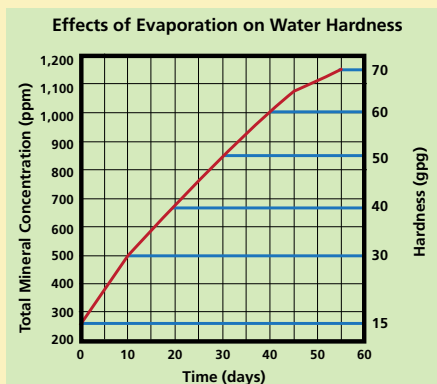
Auto Chop (16in, 10Hp):

10-2315B-260 [200-240VAC, 60Hz]
10-2315B-460 [380-460VAC, 60Hz]
10-2315B-400 [380-400VAC, 50Hz]

Accessories:

10-2325 T-Slot Bed, Y axis only
10-2326 T-Slot Bed X & Y axis
10-2341 Serial Cutting Table
10-2347 Side Splash Guards
10-3515 Angle Cutting Attachment

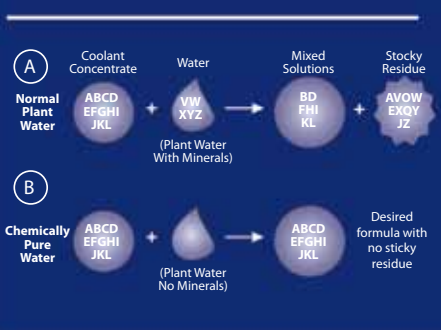
Coolant Care: Maintaining Your Recirculating System



Left - As water in the coolant tank evaporates, the remaining water becomes harder, reducing the effectiveness of the coolant. This graph shows that the hardness of the water will double in only ten days. This can be eliminated by using distilled or other chemically pure water.

Right - In this illustration, the elements of the coolant (represented by A-L) combine with the minerals in hard water (represented by V-Z), resulting in reduced coolant efficiency and a sticky residue. When mixed with chemically pure water, the coolant formula remains intact and performs as designed.

Water Effects



Did You Know?

Buehler's SmartCut and SmartPulse feedback systems automatically reduce the feedrate to ensure burn-free consistent cuts, prevent damage to machine or sample and to reduce wheel breakage.

Abrasive Cutter Accessories & Consumables



Speed Vise
with 12mm T-Nuts
10-3531



Riser Block for Speed
Vise with 12mm T-Nuts
10-3532



Fastener Vise
95-C1702
** Must be held by
another vise such
as MetKlamp*



Sliding Vise with
12mm T-Nuts
10-2170 (left)
10-2171 (right)



MetKlamp® Vise
with 12mm T-Nuts
95-C1701 (right)



MetKlamp® VII Cam-Lock Vise
with 12mm T-Nuts
95-C1821 (left)
95-C1822 (right)
95-C1821CT (left, close tolerance)
95-C1822CT (right, close tolerance)
95-C1804 (rebuild kit)

12mm T-Nuts fit AbrasiMet® 250, AbrasiMatic® 300, Delta AbrasiMet® and SamplMet® cutters.

Abrasive Wheel Choices for Select Buehler Cutters (qty 10)

Recommended Use	9in [229mm] for SamplMet®	10in [254mm] for AbrasiMet® Family	12in [305mm]	12in [305mm] for Delta® Orbital Family	12in [305mm] for Delta® Chop & AbrasiMatic® 300 Family
SuperAlloys		12-4205-010		12-4405-010	
Ferrous materials HRC60 & Up	10-4110-010	10-4210-010	10-4410-010	12-4410-010	12-4110-010
Ferrous materials HRC50-60	10-4112-010	10-4212-010	10-4412-010	12-4412-010	12-4112-010
Ferrous materials HRC35-50	10-4116-010	10-4216-010	10-4416-010	12-4416-010	12-4116-010
Ferrous materials HRC15-35	10-4120-010	10-4220-010	10-4420-010	12-4420-010	12-4120-010
Delicate Cutting	10-4127-010	10-4227-010	10-4427-010		
Non-ferrous materials, hard (Ti, U, Zr)	10-4145-010	10-4245-010	10-4445-010	12-4445-010 ^{SO}	12-4145-010
Non-ferrous materials, soft (Al, Cu, Brass)	10-4150-010	10-4250-010	10-4450-010	12-4450-010 ^{SO}	12-4150-010
AcuThin™ HRC ≤ 45	10-4160-010	10-4260-010	10-4360-010		
AcuThin™ HRC ≥ 45	10-4161-010	10-4261-010	10-4361-010		
BuehlerMet™ II Ferrous materials HRC50 & Up	10-5110-010	10-5210-010	10-5410-010		
BuehlerMet™ II Ferrous materials HRC35-50	10-5112-010	10-5212-010	10-5412-010		
BuehlerMet™ II Ferrous materials HRC15-35	10-5116-010	10-5216-010	10-5416-010		
BuehlerMet™ II Non-ferrous		10-5245-010	10-5445-010		
Petrographic & Geological (qty 1)		11-10074			

^{SO} - Special Order. Items may have long lead times and minimum orders.



Chain Clamping Vise with 14mm T-Nuts
46-0030



Sliding Vise with 14mm T-Nuts
10-3529 (left)
10-3530 (right)



Speed Vise with 14mm T-Nuts
10-3523



Horizontal Clamp for Speed Vise with 14mm T-Nuts
10-3526



MetKlamp® VII Cam-Lock Vise with 14mm T-Nuts
10-2245 (left)
10-2246 (right)



Riser Block for Speed Vise with 14mm T-Nuts
10-3528



Vee Block Clamp Kit with 14mm T-Nuts
10-3527



Adjustable Vee Blocks with 14mm T-Nuts
10-3525



Filter Conveyor Swarf Removal System
10-2333-260 [200-220VAC, 60Hz]
10-2333-460 [460VAC, 60Hz]



Recirculating Tank 7 gal [27ℓ]
(shown with 16-1497 Cart)
10-2165-260 [200-240VAC, 60Hz]
10-2165-460 [380-460VAC, 60Hz]
10-2165-250 [200-240VAC, 50Hz]
10-2165-400 [380-400VAC, 50Hz]



Recirculating Tank 22 gal [90ℓ]
10-2332-260 [200-240VAC, 60Hz]
10-2332-460 [380-460VAC, 60Hz]
10-2332-250 [200-240VAC, 50Hz]
10-2332-400 [380-400VAC, 50Hz]

14mm T-Nuts fit Delta® Manual and Delta® Orbital and Chop Action cutters.

Abrasive Wheel Choices for Select Buehler Cutters (qty 10)

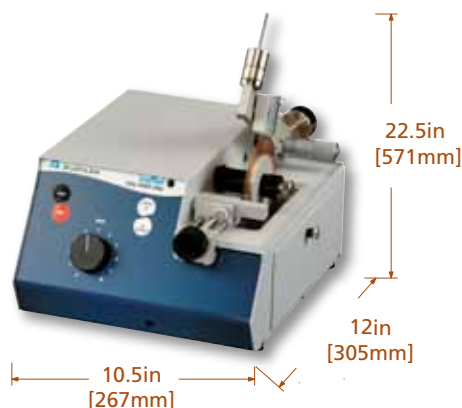
Recommended Use	14in [375mm] for Delta® Manual Cutter	14in [375mm] for Delta® Orbital Family	16in [400mm] for Delta® Orbital Family	18in [455mm] for Delta® Orbital Family
SuperAlloys		12-4305-010	12-5605-010	12-5805-010
Ferrous materials HRC60 & Up	10-4310-010	12-4310-010	12-5610-010	12-5810-010
Ferrous materials HRC50-60	10-4312-010	12-4312-010	12-5612-010	12-5812-010 ^{SO}
Ferrous materials HRC35-50	10-4316-010	12-4316-010	12-5616-010	12-5816-161 ^{SO}
Ferrous materials HRC15-35	10-4320-010	12-4320-010	12-5620-010	12-5820-010 ^{SO}
Delicate Cutting	10-4327-010			
Non-ferrous materials, hard (Ti, U, Zr)	10-4345-010	12-4345-010 ^{SO}	12-5645-010	12-5845-010
Non-ferrous materials, soft (Al, Cu, Brass)	10-4350-010		12-5650-010 ^{SO}	12-5850-010
BuehlerMet™ II Ferrous materials HRC50 & Up	10-5310-010			
BuehlerMet™ II Ferrous materials HRC35-50	10-5312-010			
BuehlerMet™ II Non-ferrous	10-5345-010			

^{SO} - Special Order. Items may have long lead times and minimum orders.

PRECISION SAWS

When sectioning small, delicate, or extremely hard materials, precision saws are a must. These saws primarily use thin, metal bonded diamond wafering blades which allow for more precise cuts, less material (kerf) loss and less induced deformation. Very thin abrasive wheels can also be used on larger models. Blade selection is based on the material type. The goal is to find a blade that will create the best surface finish while providing a suitable cut time for the operator. In order to have optimum cut times and minimal deformation, it is essential to use ample coolant. This will provide adequate coolant to keep the sample and blade cool, remove any debris from the cutting area and enable the abrasive to provide the best cutting action.

Options	IsoMet® Low Speed	IsoMet® 1000	IsoMet® 4000	IsoMet® 5000
Maximum Blade Diameter	5in [127mm]	7in [178mm]	8in [203mm]	8in [203mm]
Manual Cutting	X	X	X	X
Serial Sectioning			X	X
SmartCut™			X	X
Programmability				X
Grinding Capability				X



Approx. Weight: 25 lbs [11.3kg]

◀ IsoMet® Low Speed Saw

- Compact saw uses gravity feed system to provide constant feed rate
- Produces minimum deformation
- $\pm 5\mu\text{m}$ or $\pm 0.0001\text{in}$ positioning via manual micrometer
- 0.02Hp motor

(Includes 4in [102mm] IsoMet® Blade for general sectioning, assorted weights, dressing stick, IsoCut® Fluid, flanges and the following chucks: single saddle, irregular specimen and wafer)

Available in the following voltage/frequency:

11-1280-160 [115VAC, 50/60Hz]
 11-1280-250 [230VAC, 50/60Hz]
 11-1280-170 [115VAC, 50/60Hz]

IsoMet® 1000 ▶

- Simple to operate, gravity fed membrane panel controls
- Rotating vise for larger samples
- Optional table saw attachment
- 0.17Hp motor

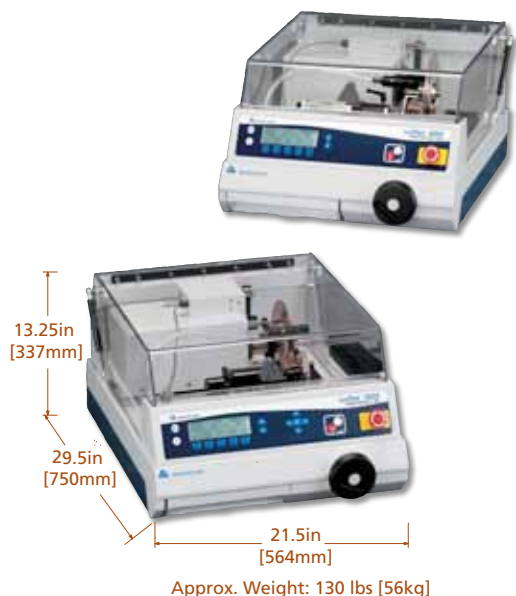
(Includes 6in [152mm] IsoMet® Blade for sectioning electronic substrates, assorted weights, dressing stick, Cool 2 Fluid, flanges and the following chucks: single saddle, irregular specimen and wafer)

Available in the following voltage/frequency:

11-2180 [85-264VAC, 50/60Hz]



Approx. Weight: 56 lbs [25kg]



◀ IsoMet® 4000 and 5000

- Simple to operate, automatic precision saw
- SmartCut™ adjusts feed rate to eliminate damage to system or sample
- Rotating vise for larger samples
- IsoMet® 5000 includes cup grinding capabilities and 55 preprogrammed methods
- Compatible with external recirculating system
- 1.25Hp motor

(Includes 7in [178mm] IsoCut® Blade for sectioning ferrous alloys and superalloys, 7" abrasive wheels, T-slot table, automatic dressing system, dressing stick, Cool 2 Fluid, 2 sets of flanges and the following chucks: irregular specimen, single saddle and 1.25in [32mm] round specimen)

Available in the following voltage/frequency:

IsoMet® 4000

11-2680 [85-264VAC, 50/60Hz]

IsoMet® 5000

11-2780 [85-264VAC, 50/60Hz]

11-2775 [85-264VAC, 50/60Hz] with external recirculation system

IsoMet® Low Speed Saw (LSS) Accessories



11-1181 Swivel Arm Assembly



11-1182 Blade Wiper



11-1194 Small Bone Chuck



11-1195 Plastic Guide Plate



11-2381 Goniometer



11-1196 Manual Feed Control Dressing Chuck



11-1199 Splash Guard Kit

IsoMet® LSS & 1000 Accessories



11-1183 Small, Double Saddle Chuck



11-1184 Bar & Tube Chuck



11-1185 Irregular Specimen Chuck



11-1186 Wafer Chuck

IsoMet® LSS & 1000 Accessories (cont'd)



11-1187 Single Saddle Chuck



11-1188 27 x 46mm Glass Slide Chuck



11-1189 1-1.25in [25-32mm] Mount Chuck

IsoMet® 1000 Accessories



11-2181 Rotating Chuck Assembly



11-2182 Table Saw Attachment



11-2183 800 gram Weight Set



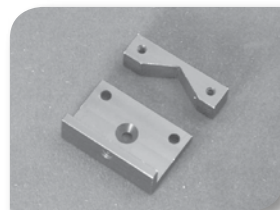
11-2184 Swivel Arm Accessory



11-2185 Goniometer



11-2186 Table Saw Splash Guard



11-2195 Universal Chuck for Rotating Vise



11-2285 Large, Single Saddle Chuck



11-2482 Fastener Chuck



11-2483 Large, Double Saddle Chuck



11-2484 27 x 46mm Glass Slide Chuck



11-2486 Wafer Chuck



11-2487 Medium, Single Saddle Chuck



11-2488 2 x 3in [50 x 76mm] Glass Slide Chuck



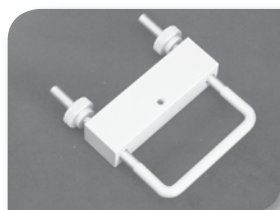
11-2489 1.5in [40mm] Mount Chuck



11-2491 Small Dovetail Saddle Chuck



11-2492 Large Dovetail Saddle Chuck



11-2494 Large Bone Chuck

IsoMet® 4000 & 5000 Accessories



11-2682 1.25in [32mm]
Double Saddle Chuck



11-2683 1.25in [32mm]
Single Saddle Chuck



11-2684 1.25in [32mm]
Mount Chuck



11-2685 1.5in [38mm]
Mount Chuck



11-2686 Irregular
Specimen Chuck



11-2687 Fastener Chuck



11-2691 Sliding Vise,
2.5in [65mm] maximum
opening



11-2692 Slotted Vise



11-2693 3-Axis
Goniometer



11-2695 Rotating Vise



11-2696 Automatic
Dressing System



11-2699 Precision
Positioning System, 1µm



11-2698 Angle Vise



11-2701 T-slot Y-axis bed



11-2702 T-slot X-axis bed



11-2703 Sliding Vise, 6in
[152mm] maximum opening



11-2704 Thermal Spray
Coating Chuck



11-2711 External
Recirculating System Kit



Precision Table

11-2694-160 [115VAC, 50/60Hz]

11-2694-250 [230VAC, 50/60Hz]

IsoMet® Precision Saw Accessories



11-1191 1.75in [44mm]
Flange Set



11-1192 1.38in [35mm]
Flange Set



11-1198 Dressing Block
Spacer



11-2678 2in [50mm]
Flange Set



11-2679 2.5in [64mm]
Flange Set



11-2282 3in [76mm]
Flange Set



11-2283 4in [100mm]
Flange Set



11-2284 5in [127mm]
Flange Set



11-2688 3in [76mm]
Precision Flange Set



11-2689 4in [100mm]
Precision Flange Set



11-2690 5in [127mm]
Precision Flange Set



11-2697 6in [152mm]
Precision Flange Set



11-2496 Chuck Padding

Did You Know?

The IsoMet® and IsoCut® blades are available in a wide range of diameters, abrasive type and concentration, allowing the user to select the best fit for their application. When evaluating your choices, keep in mind that the 3in [76mm] blades are intended for use with very small, delicate or valuable samples. These blades produce minimal kerf loss, but require special care. When used in an IsoMet® LSS, loads should be limited to less than 50grams with speeds less than 300rpm. A better choice is to use the Precision Table on an IsoMet® 4000 or 5000. Stepping up in diameter to a blade 4in [102mm] or larger will give you more stability in the blade and require less care.

Tips, Tricks & Techniques:

For the best performance from your Precision Saw System:

- Always tightly clamp your sample
- Use double saddle chucks for long parts such as rods
- Do not hand dress blades
- Encapsulate spheres, unusual shapes and friable materials
- Always use an appropriate flange size
- Soft, gummy materials can build up on the blade during the cut
 - Leaving the machine unattended could lead to blade breakage

PRECISION SECTIONING CONSUMABLES

Precision Sectioning Blades for IsoMet® Saws (qty 1)

Recommended Use	3in [76mm]	4in [102mm]	5in [127mm]	6in [152mm]	7in [178mm]	8in [203mm]	Dressing Stick
Use with Saws	Best on IsoMet® Low Speed Saw or 4000/5000 with Precision Table		All	All	1000 2000 4000 5000	1000 2000 4000 5000	1000 2000 4000 5000
30HC - Polymers Rubber, Soft Gummy Materials			11-4239		11-4241	11-4242 ^{SO}	N/A
20HC - Aggressive Sectioning of Metals			11-4215		11-4237	11-4283	11-1190 11-2490
15HC - Metal Matrix Composite, PCBs, Bone, Ti, TSC	11-10066	11-4244	11-4245	11-4246	11-4247	11-4248	11-1190 11-2490
20LC - Hard tough Materials, Structural Ceramics			11-4225		11-4227	11-4228	11-1190 11-2490
15LC - Hard Brittle Materials, Glass, Al ₂ O ₃ , Zr ₂ O ₃ , Concrete	11-10067	11-4254	11-4255	11-4276	11-4277	11-4279	11-1190 11-2490
10LC - Medium to Soft Ceramics, Glass Fiber Reinforced Composites	11-10068		11-4285		11-4287	11-4288 ^{SO}	11-1290 ^{SO} 11-2495 ^{SO}
5LC - Soft, Friable Ceramics, Composites with Fine Reinforcing, CaF ₂ , MgF ₂ , Carbon Composites	11-10069		11-4295				11-1290 ^{SO} 11-2495 ^{SO}
CBN LC - Fe, Co, Ni based alloys and superalloys	11-10070	11-4264	11-4265	11-4266	11-4267	11-4268	11-1190 11-2490
CBN HC - Fe, Co, Ni based alloys and superalloys		11-5264	11-5265	11-5266	11-5267	11-5268	11-1190 11-2490
Cup Grinder for Ferrous Material (IsoMet® 5000 only)				11-2720 ^{SO}			
Cup Grinder for Non-Ferrous Material (IsoMet® 5000 only)				11-2730 ^{SO}			
Cup Grinder for Ceramic & Geological Materials (IsoMet® 5000 only)			11-2740				

SO - Special Order. Items may have long lead times and minimum orders.

AcuThin™ Abrasive Wheels for IsoMet® 2000, 4000 and 5000 Precision Saws, 0.5in [13mm] Arbor (qty 10)

Recommended Use	5in [127mm]	7in [178mm]
Tool Steel, Hard Steel HRC45 & Up	10-4060-010	
Medium hard, soft steel HRC45 & Below	10-4061-010	
Steel, Stainless Steel		11-4207-010
Hard, soft non-ferrous materials		11-4217-010



Coolant

Product Name	1 qt [0.95ℓ]	33.8 oz [1ℓ]	1 gal [3.8ℓ]	5 gal [19ℓ]
IsoCut® Fluid*	11-1193-032		11-1193-128	
Cool 2 Fluid†		41-10102	41-10103	41-10104

* Oil based coolant only for use with the IsoMet® LSS or any saw with a maximum speed of 500rpm.

† Water miscible fluid concentrate. Recommended mix ratio is 1 part Cool 2 to 30 parts water.



MOUNTING

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MOUNTING

The two primary reasons for mounting are ease of handling and edge retention. Edge retention is the ability to distinguish the edge of the specimen from the mounting compound. The ease of handling comes into play both for manual polishing as well as placing the mounts in to an automated polisher. Edge retention is crucial if you are evaluating the surface for structural integrity, heat treatment effectiveness or corrosion effects. When deciding on which mounting technique to use consider the size and geometry of your part, the part's susceptibility to heat and pressure, the number of samples that must be prepared routinely and the time you have to achieve the task.

COMPRESSION MOUNTING

Compression mounting uses heat and pressure to encapsulate the sample in a mounting compound. This technique minimizes shrinkage thereby protecting and preserving edges as well as surface defects during preparation steps. Many presses include a controlled cool down cycle to further enhance the edge retention while decreasing the overall mounting cycle time. The resulting mount is consistent in size and shape and can be readily labeled.

SimpliMet® 2 ▶

- Hand operated hydraulic press
- Thermostatically controlled heater and slip on mold cooler complement the unit
- Duplex mold compatibilities
- Molds available in a variety of sizes (*sold separately*)

Available in the following 1 phase voltage/frequency:

20-1410-115 [115VAC, 50/60Hz]
20-1410-220 [220-240VAC, 50/60Hz]

Accessories for SimpliMet® 2:

20-2104	1in ID Mold Assembly	20-2204	1in ID Duplex Mold Assembly	20-2223-115	Automatic Heater, [115VAC, 60Hz, 1 phase]
20-2105	1.25in ID Mold Assembly	20-2205	1.25in ID Duplex Mold Assembly	20-2223-220	Automatic Heater, [220VAC, 50Hz, 1 phase]
20-2109	1.5in ID Mold Assembly	20-2209	1.5in ID Duplex Mold Assembly		
20-2127	25mm ID Mold Assembly	20-2303	Cooler with Air Fins		
20-2128	30mm ID Mold Assembly	20-2323	Water Cooler with fittings		



Tips, Tricks & Techniques:

To permanently label specimens when using opaque mounting compound:

- Place specimen in mold
- Fill most of the mold cylinder with mounting compound
- Add a thin layer of TransOptic™ Powder
- Place a typed label over the TransOptic™ Powder
- Cover the label with a second layer of TransOptic™ Powder
- Run the mounting cycle as usual





◀ SimpliMet® 1000

- Automatic electro-hydraulic press
- User selects pressure, temperature, heating time and mount size with easy to operate membrane panel
- Duplex mold capabilities
- Molds available in a variety of sizes (*sold separately*)

Available in the following 1 phase voltage/frequency:

20-1415 [85-264VAC, 50/60Hz]

SimpliMet® 3000 ▶

- Fully automatic electro-hydraulic press
- Programmable database allows user to store 25 mounting methods
- Duplex mold capabilities
- Molds available in a variety of sizes (*sold separately*)

Available in the following 1 phase voltage/frequency:

20-1435 [85-264VAC, 50/60Hz]



SimpliMet® 1000 & 3000 Molds:

20-2401 1in ID Duplex Mold Assembly
20-2402 1.25in ID Duplex Mold Assembly
20-2403 1.5in ID Duplex Mold Assembly
20-2404 2in ID Duplex Mold Assembly

20-2405 25mm ID Duplex Mold Assembly
20-2406 30mm ID Duplex Mold Assembly
20-2407 40mm ID Duplex Mold Assembly
20-2408 50mm ID Duplex Mold Assembly

Accessories for Compression Mounting

20-8185-002[†] Release Agent, 2oz [6mℓ]
20-8185-016[†] Release Agent, 16oz [470mℓ]
20-8185-032[†] Release Agent, 32oz [950mℓ]
20-3048 Powdered Mold Release, 1.6oz [45g]

[†] Restricted article, requires special packaging

Did You Know?

- You can minimize shrinkage and improve edge retention by cooling the mount to room temperature before removing from it the mounting press.
- Unfused or frosted mounting compound is often a sign of insufficient molding temperatures. Ensure that the temperature setting on the mounting press is 302°F [150°C] or higher and that the element is tight around the mold cylinder.
- Uncured mounts can be caused by too much moisture in the mounting compound. Make sure to properly close the mounting compound container between uses.
- Radial splitting of mounts is often caused by sharp edges on the samples or by samples too large for the mold size.

COMPRESSION MOUNTING COMPOUNDS

Material	Description	Color	Part Number	Color	Size
PhenoCure® 	<ul style="list-style-type: none"> Wood-flour filled phenolic thermoset resin recommended for general metallurgy Provides good edge retention and moderate shrinkage Most economical choice 		20-3200-080	Black	5 lbs [2.3kg]
			20-3100-400	Black	25 lbs [11.3kg]
			20-3200-080	Red	5 lbs [2.3kg]
			20-3200-400	Red	25 lbs [11.3kg]
PhenoCure® Premolds (500 pack) 	<ul style="list-style-type: none"> Preformed PhenoCure® wood-filled phenolic thermoset resin recommended for general metallurgy Simply place premold over specimen in mold cylinder. Premold flows around specimen during mounting cycle. Reduces mess and saves time 		20-3111-501	Black	1in [25mm]
			20-3112-501	Black	1.25in [32mm]
			20-3113-501	Black	1.5in [38mm]
			20-10090	Black	2in [50mm]
Diallyl Phthalate 	<ul style="list-style-type: none"> Filled thermoset resin recommended for mounting moderately hard materials <ul style="list-style-type: none"> Glass filled is recommended for etching Mineral (TiO₂) filled is harder than glass filled Provides good edge retention Available in blue 		20-3330-080	Blue	5 lbs [2.3kg] Mineral
			20-3340-080	Blue	5 lbs [2.3kg] Glass
EpoMet® 	<ul style="list-style-type: none"> Mineral (SiO₂) filled epoxy thermoset recommended for: <ul style="list-style-type: none"> Preserving edge information Mounting very hard materials Provides excellent edge retention & available in two particle sizes <ul style="list-style-type: none"> Granular (G): Larger particles create the best quality mounts in everyday metallography Fine (F): Smaller particles flow into fine features in specimens with complex geometries 		20-3381-070	Black F	4 lbs [1.8kg]
			20-3381-160	Black F	10 lbs [4.5kg]
			20-3381-400	Black F	25 lbs [11.3kg]
			20-3380-064	Black G	4 lbs [1.8kg]
			20-3380-160	Black G	10 lbs [4.5kg]
			20-3380-400	Black G	25 lbs [11.3kg]
ProbeMet® 	<ul style="list-style-type: none"> Copper (Cu) and Mineral (SiO₂) filled epoxy thermoset Conductive material with good edge retention Use in SEM analysis when copper is not of interest Can cause a Cu-Al galvanic couple on Aluminum (Al) specimens 		20-3385-064	Copper	4 lbs [1.8kg]
KonductoMet® 	<ul style="list-style-type: none"> Graphite and Mineral (SiO₂) filled phenolic thermoset recommended for SEM analysis of specimens when carbon is not the object of the analysis Moderate edge retention and harder than ProbeMet® 		20-3375-016	Black	1 lb [0.45kg]
			20-3375-400	Black	25 lbs [11.3kg]
TransOptic™ 	<ul style="list-style-type: none"> Thermoplastic acrylic recommended for general metallurgy when transparency of the mount is useful Easily extract specimens from mount by reheating mount Softer than other compression mounting compounds Requires special cooling cycle (available on SimpliMet® 3000) 		20-3400-080	Clear	5 lbs [2.3kg]

CASTABLE MOUNTING

Epoxy and Acrylic castable mounting systems are recommended for mounting specimens that are sensitive to high pressures and temperatures. Epoxy mounting systems provide good physical adherence, low shrinkage and excellent infiltration into pores and cracks. Acrylic mounting systems are typically selected for their short cure time. Dyes and fillers can be added to either system. Dyes can enhance pores and highlight the interference between the media and specimen. Conductive fillers allow castable mounting systems to be used in an SEM without additional processing.

Vacuum systems are used to evacuate air trapped in epoxy systems and specimens. This reduces or eliminates the gap at the specimen/epoxy interface, fills pores in the specimen with epoxy and enhances the end results.

Cast N' Vac Vacuum System ▶

- Compact, single sample vacuum system
- Recommended for use with epoxy mounting media

Available in the following 1 phase voltage/frequency:

20-3510-160 [115VAC, 60Hz]
20-3510-250 [220VAC, 50Hz]

Accessories for Cast N' Vac

20-3518 Silicon Stopper
20-3519 Hose Clamp
20-3520 Epoxy Supply Tubes



◀ Cast N' Vac 1000 Vacuum System

- Compact system for multiple samples
- Strong vacuum pump enhances results

Available in the following 1 phase voltage/frequency:

20-1382-160 [115VAC, 60Hz]
20-1382-250 [220VAC, 50Hz]

Accessories for Cast N' Vac 1000






20-2835 Drierite Dehydrating Agent
20-2842 Duo-Seal Vacuum Pump Oil, 1gal [3.78ℓ]
20-2845 Vacuum Table Liners (qty 100)

Tips, Tricks & Techniques:

For best results with epoxy castable mounting systems:



- Accurately weigh resin and hardener to get desired mix ratio and thoroughly mix components.
- Decrease cure time by gently heating epoxies in oven. Every 50°F [10°C] reduces gel time by 50% (*not recommended for EpoxiCure®*).
- Coat molds with Release Agent or Silicone Mold Release Spray prior to use.
- Preheat EpoHeat® for large mounts and single pours. Do not mix more than 90mℓ of EpoxiCure®, EpoThin™, EpoHeat® or EpoColor™. Mixing more than 90mℓ will cause epoxies to overheat.
- Refer to MSDS for proper handling instructions: www.buehler.com/productinfo/msds.htm.

Epoxy Systems

Material	Description	Resin		Hardener†	
		Part Number	Size	Part Number	Size
EpoxCure® 	<ul style="list-style-type: none"> • Clear, general purpose epoxy system • 6hr cure time at room temperature • <130°F [55°C] Peak Temperature • ~82 Shore D Hardness 	20-8130-032	32oz [0.95ℓ]	20-8132-008	8oz [0.24ℓ]
		20-8130-128	128oz [3.8ℓ]	20-8132-032	32oz [0.95ℓ]
EpoHeat® 	<ul style="list-style-type: none"> • Transparent yellow epoxy system • Long pot-life allows product to be mixed in large batches • 90min cure time in oven at 65° C • <338°F [170°C] Peak Temperature • ~85 Shore D Hardness 	20-8120-032	32oz [0.95ℓ]	20-8122-016	16oz [0.48ℓ]
EpoThin™ 	<ul style="list-style-type: none"> • Clear, very low viscosity epoxy system • 9hr cure time at room temperature • <130°F [55°C] Peak Temperature • ~78 Shore D Hardness 	20-8140-032	32oz [0.95ℓ]	20-8142-016	16oz [0.48ℓ]
		20-8140-128	128oz [3.8ℓ]	20-8142-032	32oz [0.95ℓ]
EpoKwick™ 	<ul style="list-style-type: none"> • Clear, very low viscosity epoxy system • 90min cure time at room temperature • <293°F [145°C] Peak Temperature • ~82 Shore D Hardness 	20-8136-128	128oz [3.8ℓ]	20-8132-032	32oz [0.95ℓ]
		Kit† 20-8128 Resin 32oz [0.95ℓ] Hardener 8oz [0.24ℓ] <i>(also includes 20 paper cups, 20 stirring sticks and 12 SamplKups®, 1.25in)</i> 20-8129 Resin 128oz [3.8ℓ] Hardener 32oz [0.95ℓ]			
EpoColor™ 	<ul style="list-style-type: none"> • Red epoxy system to highlight pores and cracks • 90min cure time at room temperature • <293°F [145°C] Peak Temperature • ~82 Shore D Hardness 	20-8143-032	32oz [0.95ℓ]	20-8144-008	8oz [0.24ℓ]

† Restricted article, requires special packaging

Acrylic Systems

Material	Description	Resin		Hardener†	
		Part Number	Size	Part Number	Size
SamplKwick™ 	<ul style="list-style-type: none"> • Translucent, general purpose acrylic system • 5-8 minute cure time at room temperature • ~179°F [79°C] Peak Temperature • ~85 Shore D Hardness 	20-3562	1 lb [0.45kg]	20-3564	12oz [0.36ℓ]
		20-3566	5 lbs [2.3kg]	20-3568	64oz [1.9ℓ]
		20-3562-025	25 lbs [11.3kg]	20-3564-320	2.5 gal [9.5ℓ]
		20-3562-100	100 lb [45kg]	20-3564-640	5 gal [19ℓ]
		Kit† 20-3560 Resin 1 lb [0.45kg] Hardener 12oz [0.36ℓ] <i>(also includes measuring scoop, 5 paper cups and 10 stirring sticks)</i>			
VariKleer™	<ul style="list-style-type: none"> • Clear, general purpose acrylic system - Requires pressure vessel for clear mounts • 10-15 minute cure time at room temperature • ~212°F [100°C] Peak Temperature • ~84 Shore D Hardness 	Kit† 20-3590 Resin 1kg Hardener 500mℓ <i>(also includes measuring scoop, 2 paper cups and 10 stirring sticks)</i>			
VariDur® 	<ul style="list-style-type: none"> • Grey, low viscosity acrylic system • 10 minute cure time at room temperature • ~170°F [77°C] Peak Temperature • ~85 Shore D Hardness 	20-3572	1 lb [0.45kg]	20-3574	12oz [0.36ℓ]
		20-3576	5 lbs [2.3kg]	20-3578	64oz [1.9ℓ]
		Kit† 20-3570 Resin 1 lb [0.45kg] Hardener 12oz [0.36ℓ] <i>(also includes measuring scoop, 5 paper cups and 10 stirring sticks)</i>			
VariDur® 3000	<ul style="list-style-type: none"> • Blue, mineral filled acrylic system • Hardest castable mounting system • 15-30 minute cure time at room temperature • ~252°F [122°C] Peak Temperature • ~90 Shore D 	Kit† 20-3580 Resin 1kg Hardener 500mℓ <i>(also includes measuring scoop, 2 paper cups and 10 stirring sticks)</i>			

† Restricted article, requires special packaging



Tips, Tricks & Techniques:

For best results with acrylic mounting systems:

- Quickly pour mixture into mold to prevent gelling in the mixing cup
- Do not use with vacuum systems or plastic ring forms
- Refer to MSDS for proper handling instructions: www.buehler.com/productinfo/MSDS.htm

Castable Mounting Accessories

20-8179-001 ^{SO}	Glass Plate, 5 x 7in [127 x 178mm]	40-8151†	TEM Epoxy, 2oz [6mℓ]
40-8100	ThermoPlastic Cement (qty 12)	20-8196	Flat Edge Filler, 1 lb [0.45kg]
40-8150*	Mounting Wax Crystalbond, 7 x 0.875in [178 x 22mm]	20-8500	Conductive Filler, 2 lb [0.9kg]
20-8145**	Mounting Wax Crystalbond LT, 7 x 1 x 0.5in [178 x 25 x 13mm]	20-8501 ^{SO}	Blue Pigment for castable systems, 1oz [3mℓ]
20-8192†	EdgeMet Electroless Nickel Kit®	20-8502 ^{SO}	Black Pigment for castable systems, 1oz [3mℓ]
20-8000 ^{SO}	Pumps for Gallon Size Epoxy Containers	20-8504 ^{SO}	Red Pigment for castable systems, 1oz [3mℓ]
20-8177-100	Paper Cups, 5oz [148mℓ] (qty. 100)	20-3046†	Silicone Mold Spray, 6oz [170g]
20-8175	Stirring Sticks, Wooden (qty. 1000)	20-8185-002†	Release Agent, 2oz [6mℓ]
20-8188	MetKleer™ Adhesive Bases, 4 x 5in [102 x 127mm] (qty 10)	20-8185-016†	Release Agent, 16oz [470mℓ]
		20-8185-032†	Release Agent, 32oz [950mℓ]

^{SO} - Special Order. Items may have long lead times and minimum orders.

* Flows at 250°F [121°C] ** Flows at 150°F [54°C]

† Restricted article, requires special packaging

ACCESSORIES

Support clips are for use in supporting specimens during mounting. The weight and hardness of the clips should be considered when choosing a clip. The stainless steel SamplKlip® is the heaviest clip, but may be too hard for use when preparing a soft material. The UniClip® is the next heaviest clip and is softer, making it more compatible with soft materials. For metallic specimens that are to be etched after preparation, one of the polymer clips (SamplKlip™ I, Specimen Support Clip, or UniClip®) is best to prevent interference with etching due to a stainless steel clip in contact with the specimen.



SamplKlip™ Support Clip – Stainless Steel (qty 100)*

For use with all mounting systems.

20-4000-100 0.25 H x 0.550 W x 0.350in L [6 x 14 x 9mm], 0.575g



Specimen Support Clip – Plastic (qty 1000)†

Best when used with castable mounting systems.

20-4001-000 0.25 H x 0.290 W x 0.375in L [6 x 7 x 9.5mm], 0.145g

* Compatible with specimens up to 0.200in [5mm] thick



SamplKlip™ I Support Clip – Plastic (qty 100)*

Best when used with castable mounting systems.

20-4100-100 0.25 H x 0.475 W x 0.3in L [~6 x 12 x 8mm], 0.230g

20-4100-100S 0.25 H x 0.425 W x 0.25in L [~6 x 11 x 6mm], 0.230g



UniClip Support Clip – Plastic (qty 1000)†

For use with all media. Orient with "legs" upward for compression mounting systems.

20-5100-100 0.4 H x 0.360 W x 0.500in L [10 x 9 x 13mm], 0.290g

† Compatible with specimens between 0.0035 – 0.090in [0.9 – 2.3mm]

Ring Forms & Castable Molds



Disposable Mounting Cups (qty 50)

can also be used as specimen caps

20-8280 1in
20-8281 1.25in
20-8282 1.5in
20-8283 2in



SamplKup™ (qty 12)

20-9178 1in	20-9177 25mm
20-9180 1.25in	20-9179 30mm
20-9181 1.5in	20-9182 40mm
20-9184 2in	20-9183 50mm



EPDM Mounting Cups (qty 5)

20-8181 1in
20-8182 1.25in
20-8183 1.5in
20-8184 2in



Silicone Molds (qty 1)

20-8483 ^{SO} 60mm
20-8484 55 x 30 x 22mm
20-8485 70 x 40 x 22mm



EPDM Rectangular Molds (qty 1)

20-6185 2.5 x 1.4 x 1.8in
[63 x 25 x 46mm]
20-6186 6 x 4 x 2in
[150 x 100 x 50mm]
20-6187 6 x 3 x 1in
[150 x 76 x 25mm]



Plastic Ring Forms & Recessed Discs

for best results, use with epoxy systems

Ring Forms (qty 100)	Recessed Discs (qty 1)
20-8151-100 1in	20-3521 ^{SO} 1in
20-8152-100 1.25in	20-3513 ^{SO} 1.25in
20-8153-100 1.5in	20-3514 ^{SO} 1.5in
20-8154-100 2in	20-3517 ^{SO} 2in

SO - Special Order. Items may have long lead times and minimum orders.



GRINDING-POLISHING

Grinding-Polishing At A Glance:

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GRINDER-POLISHERS

The grinding and polishing steps in a metallographic preparation method can be accomplished in many ways and combinations. Most steps are performed on a table-top unit that can be used for both grinding and polishing. There are also systems that are strictly for grinding.

The goal of any method is to prepare a final polished specimen free of deformation and suitable for analysis. The initial abrasive size should be as small as possible, yet be able to create a flat surface and remove any sectioning deformation. Each subsequent step should induce as little deformation as possible while removing any damage from the previous step. Using adequate lubrication, most commonly water, throughout the process will aid in minimizing deformation.

Comparison Chart

Grinder-Polisher	Platen Size/Qty.	Controls/ Programmable	Preparation Style / Z-axis Removal	Polishing Heads Available	Drive Adapter
MiniMet® 1000 	2.875in [73mm] 1 Platen	Membrane No	Semi-Automatic		
MetaServ® 250 	8in [203mm] 10in [254mm] 1 Platen	Membrane No	Manual, Semi-Automatic	Vector® LC 250 Vector®	60-9005 Single 60-9000 Central <i>Single included with specimen holder</i>
MetaServ® 250 Twin 	8in [203mm] 10in [254mm] 2 Platens	Membrane No	Manual, Semi-Automatic	Vector® LC 250	60-9005 Single
EcoMet® 250 	8in [203mm] 10in [254mm] 1 Platen	Membrane No	Manual, Semi-Automatic	AutoMet® 250	60-9000 Central 60-9005 Single
EcoMet® 300 	12in [305mm] 1 Platen	Membrane No	Manual, Semi-Automatic	AutoMet® 250 AutoMet® 300	60-9000 Central 60-9005 Single
EcoMet® 250 Pro 	8in [203mm] 10in [254mm] 1 Platen	Touch Screen Yes	Manual, Semi-Automatic Yes	AutoMet® 250	60-9000 Central 60-9005 Single
EcoMet® 300 Pro 	12in [305mm] 1 Platen	Touch Screen Yes	Manual, Semi-Automatic Yes	AutoMet® 250 AutoMet® 300	60-9000 Central 60-9005 Single
Vanguard 	8in [203mm] 6 Platens	Membrane Yes	Automatic		60-2499 Central <i>Single included with specimen holder</i>

MiniMet® 1000 Grinder-Polisher ▶

- Perfect for low volume applications
- Simple operation
- Semi-automatic preparation for single mounts

Available in the following 1 phase voltage/frequency:

69-1100 [85-264VAC, 50/60Hz]

**Accessories for MiniMet® 1000**

- | | |
|--|---|
| 69-1111 Caged Specimen Holder, for 1in [25mm] or 1.25in [32mm] Mounted Specimens | 69-1566 MiniMet® 1000 Precision Thinning Attachment |
| 69-1112 Caged Specimen Holder, for 1.5in [38mm] Mounted Specimens | 69-1567 Glass Disc, 2.145in [55mm] Diameter (qty 5) |
| 69-1500 Polishing Bowls, 4in [100mm] Diameter (1 each Black, White, Blue) | 69-1570 MiniMet® Electro-mechanical Attachment |
| 69-1502 Storage Caddy for MiniMet® Bowls (qty 3) | 69-1575 Electro-mechanical Accessories |
| 69-1510 Replacement Glass Discs (qty of 3) | 69-1580 MiniMet® Thin Section Attachment (includes 3 bowls, glass and section holder) |
| 69-1550 MiniMet® Alignment Fixture with 3 Drill Bits | 69-1581 Thin Section Bowls, 4.75in [121mm] (1 each Black, White, Blue) |
| 69-1552 Set of 3 Drill Bits (replacement) | 69-1582 Thin Section Glass Platens, 4in [100mm] (replacement) |
| 69-1561 Glass Specimen Supports | 69-1583 MiniMet® Thin Section Slide Holder, 26 x 48mm |
| 69-1562 Glass Circular Slides, 0.496in [13mm] Diameter (50 pieces) | 69-1590 MiniMet® Wafer Polishing Attachment |

Consumables for MiniMet® 1000

**Abrasive Discs, PSA Backed,
2.875in [73mm] (qty 100)**
Abrasive sizes given in ANSI [FEPA]

CarbiMet® 2 Discs

- 30-5170-120-102 – 120 [P120], 127µm
30-5170-180-102 – 180 [P180], 78µm
30-5170-240-102 – 240 [P280], 52µm
30-5170-320-102 – 320 [P400], 35µm
30-5170-400-102 – 400 [P800], 22µm
30-5170-600-102 – 600 [P1200], 15µm

- 30-5178-182 – Assorted, 10 each
120-600 [P120 - P1200]

MicroCut® Discs

- 30-5170-800-100 – 800 [P1500], 13µm
30-5170-012-100 – 1200 [P2500], 8µm



**Metal-Bonded Diamond
Discs, 2.875in [73mm]
(qty 1)**

UltraPrep™

- | | |
|-----------------|----------------|
| 69-1599 – 125µm | 69-1515 – 15µm |
| 69-1571 – 70µm | 69-1509 – 9µm |
| 69-1545 – 45µm | 69-1506 – 6µm |



**Diamond Lapping Films,
PSA Backed, 2.875in [73mm]
(qty 5)**

UltraPrep™ Type A

- | | |
|-------------------------------|------------------------------|
| 69-1791 ^{SO} – 0.1µm | 69-1806 ^{SO} – 6µm |
| 69-1795 ^{SO} – 0.5µm | 69-1809 ^{SO} – 9µm |
| 69-1801 ^{SO} – 1µm | 69-1815 ^{SO} – 15µm |
| 69-1803 ^{SO} – 3µm | 69-1830 – 30µm |

SO - Special Order. Items may have long lead times and minimum orders.

To Order, Call Toll-Free 1-800-BUEHLER (1-800-283-4537) or shop online at www.buehler.com

Consumables (cont'd)



Premium Polishing Cloths,
PSA Backed, 2.875in [73mm]
(qty 20)

Coarse

40-7112 ^{SO} UltraPad™
40-7442 UltraPol™
40-7052 Nylon

Fine

40-7212 MicroCloth®
40-7702 MasterTex®
40-7902 ChemoMet®

Intermediate

40-1102 TexMet® C
40-7502 TriDent™



Magnetic Backed Polishing
Cloths, 2.875in [73mm]
(qty 5)

41-10101 Apex® M Disc (qty 1)

Coarse

41-10096 Ultra MB

Intermediate

41-10097 TexMet® MB
41-10098 Satyn MB

Fine

41-10099 Chemia MB
41-10100 Micro MB

*SO - Special Order. Items may have long lead times and minimum orders.
For Polishing Suspensions, see page 45-48*

METASERV® 250 FAMILY

MetaServ® 250 Grinder-Polisher ▶

- Single or Twin Platens, 8in [203mm] or 10in [254mm]
- Manual use or upgrade with Vector® LC 250
- Vector® LC 250 Power Head supplies forces of 0-11 lbs [0-50N] per specimen (*single force only*)
- Compatible with Burst Dispensing System and Stadium Seating in manual and semi-automatic modes (*pg. 30*)

Available in the following 1 phase voltage/frequency:

49-10055 Single [85-264VAC, 50/60Hz]
49-10057 Twin [85-264VAC, 50/60Hz]



Approx. Weight: 44 lbs [20kg]



Approx. Weight: 82 lbs [37kg]



Approx. Weight: 119 lbs [54kg]



Approx. Weight: 157 lbs [71kg]

Top Row:
Left: 49-10055
Right: 49-10055 with
Vector® LC 250 Power Head

Bottom Row:
Left: 49-10057
Right: 49-10057 with
Vector® LC 250 Power Head

Accessories for Vector® LC 250 Power Head

60-10059-115	Vector® LC 250 Power Head [115VAC, 50/60Hz]
60-10059-230	Vector® LC 250 Power Head [230VAC, 50/60Hz]
69-1583	Glass Slide Holder, 1 x 2in (requires 60-10062)
63-1022	Retaining rings for 1in or 25mm holders
63-1023	Retaining rings for 1.25in or 30mm holders
63-1024	Retaining rings for 1.5in or 40mm holders
60-9005	Single Force Drive Adapter

Vector® LC 250 Single Force Specimen Holders

60-10060	4 x 1in
60-10061	4 x 1.25in
60-10062	4 x 1.5in
60-10063	4 x 25mm
60-10064	4 x 30mm
60-10065	4 x 40mm



Vector® LC 250 Power Head
compatible with single or twin
MetaServ® 250 Grinder-Polishers



◀ MetaServ® 250 with Vector® Power Head

- Available only with Vector® Power Head
- Central force applies forces of 4-60lbs [20-300N] per holder, accommodating 3-6 specimens at a time
- Single force applies forces of 0-15lbs [0-75N] per specimen accommodating 1-4 specimens at a time
- Compatible with Burst Dispensing System and Stadium Seating in manual and semi-automatic modes (pg. 30)

Available in the following 1 phase voltage & frequency:

49-10056 [85-264VAC, 50/60Hz] (includes Vector® Power Head)

Accessories for Vector® Power Head

Vector® Single Force Specimen Holders

This power head will apply forces of 0-15lbs [0-75N] per specimen, accommodating 1-4 specimens at a time.

60-3001	4 x 1in specimens	69-1584	1 x 2in Slide holder (requires 60-3000)
60-3002	4 x 1.25in specimens	63-1022	Retaining rings for 1in or 25mm holders
60-3003	4 x 1.5in specimens	63-1023	Retaining rings for 1.25in or 30mm holders
60-3004	4 x 25mm specimens	63-1024	Retaining rings for 1.5in or 40mm holders
60-3005	4 x 30mm specimens	60-3000	Specimen holder for slides
60-3006	4 x 40mm specimens		

Vector® Central Force Specimen Holders

This power head will apply forces of 4-60lbs [20-300N] per specimen, accommodating 3-6 specimens at a time.

60-2409	Rectangular, 4 x 1 x 1.25 [25 x 32mm]	60-2487	3 x 40mm specimens
60-2422	Teardrop, 6 x 1.125in [32mm]	60-2408	Blank Holder
60-2482	6 x 1in [25mm]	60-2499	Central Force Drive Adapter (required)
60-2483	6 x 1.25in [32mm]		
60-2585	3 x 1.5in [38mm]		
60-2486	6 x 30mm specimens		

Tips, Tricks & Techniques:

To ensure specimens are loaded plane to one another, always use a loading plate. This simple step can save significant grinding time.

ECOMET® 250/300 GRINDER-POLISHER FAMILY AND AUTOMET® 250/300 POWER HEAD FAMILY

EcoMet® 250 & 250 Pro Grinder-Polisher ▶

- Membrane or touch screen controls
- Manual use or upgrade with AutoMet® 250 Power Head for semi-automatic use
- Durable construction, well lit, ergonomic platen removal
- Retractable water hose for washdown
- Pro version offers programmability, Z-axis removal and full integration with Burst Dispensing System
- Membrane version compatible with Burst Dispensing System and Stadium Seating in manual and semi-automatic modes (pg. 30)

Available in the following 1 phase voltage & frequency:

- 49-7200 Membrane controlled base [85-264VAC, 50/60Hz]
 49-7201 Pro, touch screen controlled base [85-264VAC, 50/60Hz]
 49-7250 Membrane controlled base with AutoMet® 250 Power Head [85-264VAC, 50/60Hz]
 49-7251 Pro, touch screen controlled base with AutoMet® 250 Power Head [85-264VAC, 50/60Hz]
 60-7230 AutoMet® 250 Power Head [85-264VAC, 50/60Hz] (*must be installed by an authorized Buehler representative*)

Top: 49-7200 Left: 49-7250 Right: 49-7251



Accessories for EcoMet® 250 & 250 Pro

EcoMet® 250 Grinder-Polisher Accessories

- 40-4061 8in [203mm] Aluminum Platen
 40-0500 10in [254mm] Aluminum Platen
 60-9080 Disposable Bowl Liner (qty 5)
 60-9000 Central Force Drive Adapter
 60-9005 Single Force Drive Adapter
 60-9092 Cone Design Single Force Tips (qty 6)
 60-9093 U-Cup Design Single Force Tips (qty 6)

AutoMet® 250 Power Head Single Force Specimen Holders

- 60-9010 6 x 1in
 60-9011 6 x 1.25in
 60-9012 6 x 1.5in
 60-9020 6 x 25mm
 60-9021 6 x 30mm
 60-9022 6 x 40mm

Central Force Specimen Holders for AutoMet® 250, Vector® Power Head & Vanguard 2000



Barrel Specimen Holders

- 60-2484 3 x 1.25in
 60-2485 3 x 1.5in
 60-2487 3 x 40mm



Barrel Specimen Holders

- 60-2482 6 x 1in
 60-2483 6 x 1.25in
 60-2486 6 x 30mm



Blank Specimen Holder

60-2408



Teardrop Specimen Holder

- 60-2422 6 x 1.25in
 [32mm]



Rectangular Specimen Holder

- 60-2409 4 x 1 x 1.25in
 [25.4 x 32mm]

EcoMet® 300 & 300 Pro Grinder-Polisher ▶

- Membrane or touch screen controls
- Manual use or upgrade with AutoMet® 250 or 300 Power Head
- Durable construction, well lit, ergonomic platen removal
- Retractable water hose for washdown
- Pro version offers programmability, Z-axis removal and full integration with Burst Dispensing System
- Membrane version compatible with Burst Dispensing System and Stadium Seating in manual and semi-automatic modes (pg. 30)

Available in the following 1 phase voltage & frequency:

- 49-7210 Membrane controlled base [170-240VAC, 50/60Hz]
- 49-7211 Pro touch screen controlled base [170-240VAC, 50/60Hz]
- 49-7660 Membrane controlled base with AutoMet® 300 Power Head [170-240VAC, 50/60Hz]
- 49-7261 Pro touch screen controlled base with AutoMet® 300 Power Head [170-240VAC, 50/60Hz]
- 49-7255 Membrane controlled base with AutoMet® 250 Power Head [170-240VAC, 50/60Hz]
- 49-7256 Pro touch screen controlled base with AutoMet® 250 Power Head [170-240VAC, 50/60Hz]
- 60-7230 AutoMet® 300 Power Head [170-240VAC, 50/60Hz] (*must be installed by an authorized Buehler representative*)

Top: 49-7210, Left: 49-7255, Right: 49-7256



Accessories for EcoMet® 300 & 300 Pro

- 49-1777 12in [302mm] Aluminum Platen
- 60-9081 Disposable Bowl Liner (qty 5)
- 60-9040 6 x 2in (*for use with Distance Rings*)

Distance Rings for 60-9040 (qty 6)

- 60-2106 1in and 25mm
- 60-2103 1.25in
- 60-2104 1.5in
- 60-2102 30mm
- 60-2105 40mm

AutoMet® 300 Power Head Single Force Specimen Holders

- 60-9060 6 x 1in
- 60-9061 6 x 1.25in
- 60-9062 6 x 1.5in
- 60-9063 6 x 2in
- 60-9070 6 x 25mm
- 60-9071 6 x 30mm
- 60-9072 6 x 40mm
- 60-9073 6 x 50mm

Central Force Specimen Holders for AutoMet® 300



Barrel Specimen Holders

- 60-5283 6 x 1.5in [38mm]
- 60-5288 6 x 40mm
- 60-5289 3 x 2in [50mm]
- 60-5299 5 x 2in [50mm]



Barrel Specimen Holders

- 60-5281 10 x 1in [25mm]
- 60-5282 10 x 1.25in [32mm]
- 60-5287 10 x 30mm



Blank Specimen Holder

60-5254



Teardrop Specimen Holders

- 60-5252 1.25in [32mm]
- 60-5253 1.5in [32mm]
- 60-5296 2in [50mm]



Rectangular Specimen Holders

- 60-5245 5 x 2 x 1.375in [50 x 35mm]
- 60-5250 3 x 3 x 1.375in [76 x 35mm]
- 60-5297 5 x 55 x 30mm
- 60-5298 3 x 70 x 40mm

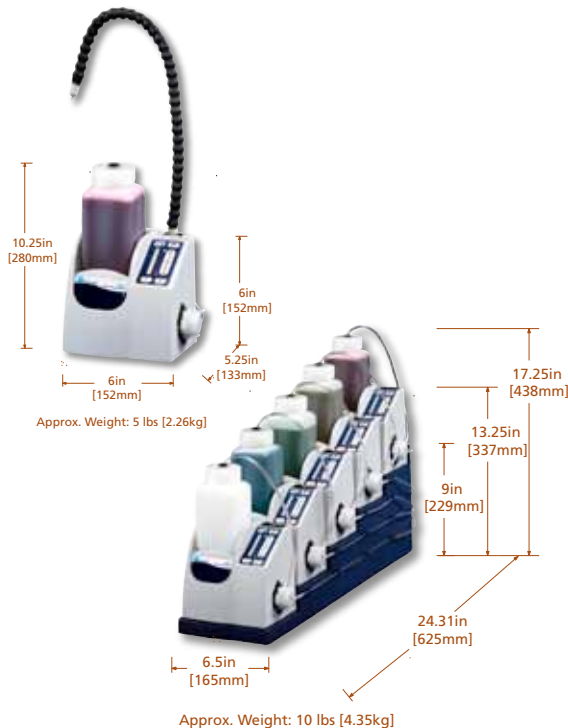
Target Holders ▶

- Designed for precise material removal to specified depths
- Includes one ceramic and one steel stop ring



- 60-8097 Target Holder for 1 x 3in [25 x 76mm] glass slide (mounted stop ring)
- 60-8100 Target Holder for 26 x 48mm glass slide (histologic holder)
- 60-8101 Target Holder for 1in [25mm] mounted specimens
- 60-8102 Target Holder for 1.25in [32mm] mounted specimens
- 60-8103 Target Holder for 1.5in [38mm] mounted specimens

- 60-8112 Target Holder for 30mm mounted specimens
- 60-8113 Target Holder for 40mm mounted specimens
- 60-8110 Replacement stop ring, ceramic coating
- 60-8111 Replacement stop ring, hardened steel surface
- 60-9049 Specimen Holder for Target Holders
(Drive Adapter required)



◀ Burst Dispensing System

- Increases consistency through automation and repeatability
- Compatible with all polishing abrasives with magnetically driven stir bar that prevents settling of suspensions
- Easily and quickly replace tubing and pump head for easy maintenance
- Connect up to 5 modules

Available in the following 1 phase voltage/frequency:

40-10005 [85-264VAC, 50/60Hz] (includes 40-2825 Power Cord)

Accessories for Burst

- 40-10004 Stadium Seating Module
- 40-10006 Dispensing Arm for AutoMet® 250/300
- 40-10002 USB Cable, module to EcoMet® Pro
- 40-2832 USB Cable, module to module (qty 3)
- 40-2704 Cable, module to Grinder-Polisher
- 40-2825 Power Cord, 12V (powers 5 modules)

- 40-2822 Dispensing Stand
- 40-2823 Hand Switch
- 40-2824 Bottle, 16oz [480mL]
- 00-10099 Replacement Pump
- 00-10100 Stir Bar

Did You Know?

The Burst operates in three different modes:

- In Manual Mode, it is compatible with all grinder polisher makes and models. Dispensing rate is set on the front panel with the Burst cycle controlled via the front panel or the hand switch.
- In Semi-Automatic Mode, it is compatible with: AutoMet® 250/300/2000/3000, Vector®, PowerPro™, MetaServ® 250. Dispensing rate is set on the front panel with the Burst cycle controlled via the power head or grinder polisher.
- In Automatic Mode, it is compatible with EcoMet® Pro Systems. All Burst settings are controlled by the EcoMet® Pro.

Vanguard 2000 ▶

- Fully automatic, 6 platen system
- Prepares up to 6 specimens at a time in single or central force
- Includes dispensing system, ultrasonic cleaner and specimen dryer
- 50 method programming

Available in the following 1 phase voltage/frequency:

63-2000 [170-264VAC, 50/60Hz]

Accessories for Vanguard 2000

- 40-3824 Dispensing Bottles (qty 7)
- 60-2499 Central Force Drive Adapter
- 63-1001 Aluminum Platen for Vanguard Systems, 8in [203mm]
- 63-1008 Vanguard 2000 Apex® Platen
- 63-1022 Single Force Retaining Rings, 6 x 1in [25mm]
- 63-1023 Single Force Retaining Rings, 6 x 1.25in [32mm] and 30mm
- 60-1024 Single Force Retaining Rings, 3 x 1.5in [38mm] and 40mm

Vanguard 2000 Single Force Specimen Holders

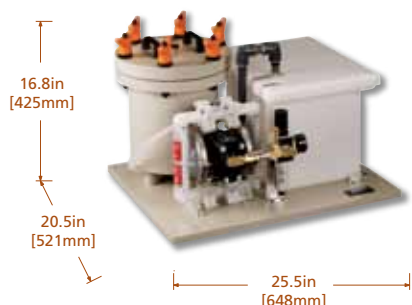
- 63-1002 6 x 1in [25mm]
- 63-1004 6 x 1.25in [32mm]
- 63-1005 3 x 1.5 [38mm]
- 63-1006 6 x 30mm
- 63-1007 3 x 40mm

Vanguard 2000 Central Force Specimen Holders

Refer to page 28



GRINDER-POLISHER SUPPORT EQUIPMENT



Approx. Weight: EnvironMet® Recirculating Filter System - 57 lbs [26kg]
EnvironMet® Filtering System - 36 lbs [16kg]

◀ EnvironMet™ Systems

- Uses fresh water at each step
- Recirculating version removes up to 1µm particulates
- Filter version removes up to 100µm particulates
- Requires no electrical connections
- 6gal [23ℓ] capacity

49-2500 EnvironMet™ Recirculating Filter System

49-2501 EnvironMet™ Filter System

Accessories for EnvironMet™ Systems

49-2510 Replacement 1µm Filter Paper (qty 100)

49-2520 Replacement 100µm Swarf Bag

49-2530 Caster Kit

49-2540 Fungicide, 4oz [118mℓ]

UltraMet® Ultrasonic Cleaners ▶

- Quickly clean specimens in between preparation steps
- Built in timer and continuous cleaning cycle

Available in the following 1 phase voltage/frequency:

UltraMet® 2002 Ultrasonic Cleaner, 0.75gal [2.8ℓ]

75-2002-115 [115VAC, 60Hz]

75-2002-220 [220VAC, 50Hz]

UltraMet® 2005 Ultrasonic Cleaner, 2.5gal [2.8ℓ]

75-2005-115 [115VAC, 60Hz]

75-2005-220 [220VAC, 50Hz]



Approx. Weight: UltraMet® 2002 - 10 lbs [4.5kg]
UltraMet® 2005 - 14 lbs [6.3kg]

Accessories & Consumables for UltraMet® Ultrasonic Cleaners

75-3012 Tank Cover for UltraMet® 2002

75-3013 Insert Tray, solid, for UltraMet® 2002

75-3014 Insert Tray, perforated stainless steel, for UltraMet® 2002

75-5012 Tank Cover for UltraMet® 2005

75-5013 Insert Tray, solid, for UltraMet® 2005

75-5014 Insert Tray, perforated stainless steel, for UltraMet® 2005

75-5015 Specimen Holder Bracket for UltraMet® 2005

75-6000-032 UltraMet® 2 Sonic Cleaner, 32oz [0.95ℓ]

VibroMet® 2 Vibratory Polisher ▶

- Unique horizontal motion provides high quality polish
- Excellent for EBSD preparation
- 12in [305mm] bowl size

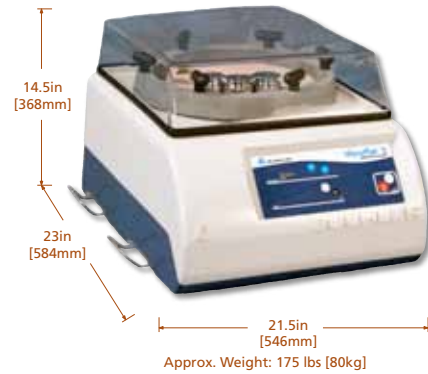
Available in the following 1 phase voltage/frequency:

67-1635-160 [115VAC, 60Hz]
67-1635-250 [220VAC, 50Hz]

Accessories for VibroMet® 2

67-1525 Specimen Holder, 2in and 50mm (qty 3)
67-1526 Specimen Holder, 1in and 25mm (qty 3)
67-1527 Specimen Holder, 1.25in [32mm] (qty 3)
67-1528 Specimen Holder, 1.5in [38mm] (qty 3)

67-1529 Specimen Weights (qty 9)
67-1541 Loading Fixture, 2in and 50mm
67-1540 Loading Fixture, 1in and 25mm, 1.25in [32mm], 1.5in [38mm]

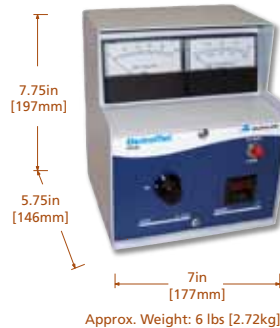


ElectroMet® 4



Approx. Weight: 60 lbs [27.3kg]

ElectroMet®



Approx. Weight: 6 lbs [2.72kg]

◀ ElectroMet® Polisher-Etcher & Etcher

- Efficient electro polishing system
- Parameter Retention
- Etching system reveals microstructure quickly

Available in the following 1 phase voltage & frequency:

ElectroMet® 4 Polisher-Etcher

70-1830-115 [115VAC, 60Hz]
70-1830-220 [220-240VAC, 50Hz]

(Includes ElectroMet® 4 Power Source, Polishing Cell and Etching Cell)

ElectroMet® Etcher*

70-1710-115 [115VAC, 50/60Hz]
70-1715-220 [230VAC, 50/60Hz]

Accessories for ElectroMet®

70-1831-115 ElectroMet® 4 Power Source
[115VAC, 60Hz, 1 phase]
70-1831-220 ElectroMet® 4 Power Source
[220-240VAC, 50Hz, 1 phase]
70-1832 ElectroMet® 4 Polishing Cell

70-1735 Electrolyte Tank
70-2015 Masks (qty 5)
70-2100 Stainless Steel Cathodes
70-2105 Copper Cathode
70-3100 Etching Cell

GRINDER-POLISHER ACCESSORIES



Paper Holding Band

30-2008 8in [203mm]
95-2825 10in [254mm]
46-2013 12in [305mm]



Cloth Clamp

40-2058 8in [203mm]
95-2826 10in [254mm]
46-2012 12in [305mm]



Histologic Precision Grinding Fixture

(may be used for a variety of applications)

60-8100



Drive Adapter

60-9000 Central Force, AutoMet® 250/300
60-9005 Single Force, AutoMet® 250/300, Vector® LC 250
60-2499 Central Force, Vanguard®, Vector®



Aluminum Platens

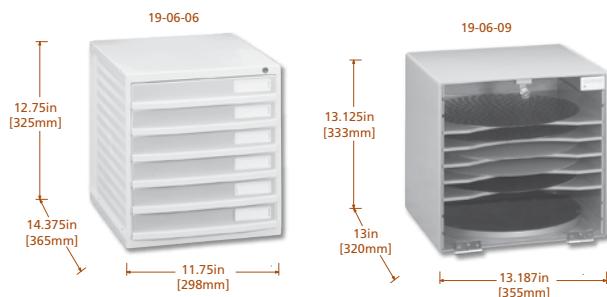
40-4061 8in [203mm]
40-0500 10in [254mm]
49-1777 12in [305mm]



Loading Fixtures & Plates

(for central force specimen holders)

60-2410 Loading Fixture
60-2411 Reversible Plate for 8in [203mm] and 10in [254mm]
60-2412 Reversible Plate for 10in [254mm] and 12in [305mm]
60-2413 Reversible Plate for 8in [203mm] and 12in [305mm]



◀ Apex® Storage Cabinets

- Durable, easy to clean storage of platens and surfaces
- Two models:
 - 8in [203mm] / 10in [254mm]
 - 12in [305mm]

19-06-06 Apex® Cabinet for 8in [203mm] / 10in [254mm] discs and platens

19-06-09 Apex® Cabinet for 12in [305mm] discs and platens

19-06-10 Additional Shelves for 19-06-09

Dessicator Storage Cabinet ▶

- Specially designed for ideal, moisture free conditions of up to 500 mounted specimens
- Also holds platens, polishing cloths and abrasive discs up to 12in [305mm]
- Dessicator canisters sold separately

20-1445 Dessicator Storage Cabinet

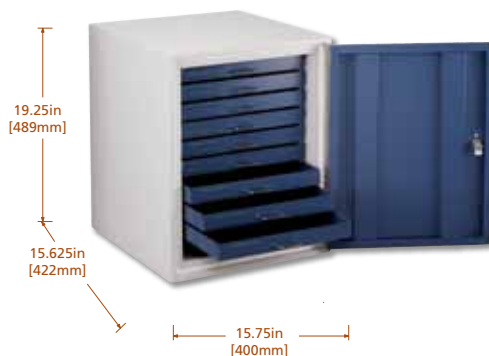
Accessories for Dessicator Storage Cabinet

20-1446 Spacer Tray, 1in [25mm]
20-1447 Spacer Tray, 1.25in [32mm]
20-1448 Spacer Tray, 1.5in [38mm]

20-1449 Dessiccant

20-8174 Specimen Storage Cups, 1.25in [32mm] mounts

20-8190 MetCoat™ Protective Spray, 6oz [170g]



GRINDING CONSUMABLES

When selecting a grinding surface there are several factors to consider: amount of material to remove, durability of the grinding surface and the material type.

SiC paper provides rapid material removal for most metal and alloys with minimal sample deformation. However the majority of the material removal occurs within the first minute. For optimum material removal on harder materials, such as sintered carbides and ceramics, sintered metal bonded and resin bonded diamond discs should be used. An additional advantage of diamond discs is their longevity.

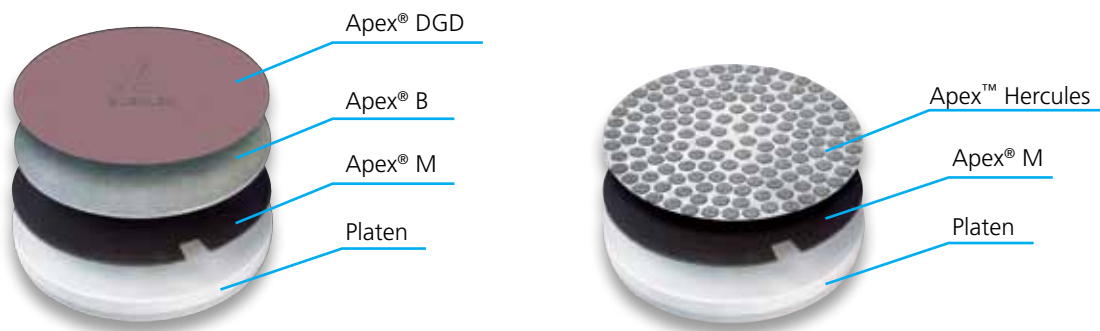
Diamond lapping films have been designed for various material applications including microelectronic devices, wafers ceramics, and optical fibers. Fixed abrasives such as UltraPrep™ Diamond Films offer excellent finishing capabilities, less abrasive embedding and more uniform material removal.

For heavy stock removal in the initial metallographic grinding stages, ZirMet® Abrasive Discs can be used on automatic preparation systems as well as high speed manual grinders.

Apex® Quick-Change Magnetic System

A magnetic-based system used in conjunction with either abrasive surfaces or polishing cloths. Apex® consists of two components. The first is Apex® M, long-life magnetic disc with a pressure sensitive adhesive (PSA) backing on one side and can be used on any conventional platen. The second component is Apex® B bimetallic plate and is used between Apex® M and any PSA backed abrasive, polishing cloth or other consumable of choice.

The MagnoSystem is an alternative offering, also comprised of two components. Apex® MagnoDisc or MagnoFix is a direct substitute for Apex® M, while the MagnoMet or MagnoPad are similar but single layers plates like Apex® B.



Type	8in [203mm]	10in [254mm]	12in [305mm]
Apex® M Discs - PSA Backed Magnetic Disc (qty 1)	41-2739-608-001	41-2739-610-001	41-2739-612-001
Apex® B Bimetallic Plate (qty 1)	41-2739-208-001	41-2739-210-001	41-2739-212-001
Apex® MagnoDisc - Aluminum Platen with MagnoFix Installed (qty 1)	16-2071	16-2571	16-3071 ^{SO}
Apex® MagnoFix - PSA Backed Magnetic Disc (qty 1)	16-2070	16-2570 ^{SO}	16-3070 ^{SO}
Apex® MagnoMet Metallic Plates (qty 5)	16-2072	16-2572	16-3072
Apex® MagnoPad Teflon® Coated Metallic Plates (qty 5)	16-2073	16-2573	16-3073

^{SO} - Special Order. Items may have long lead times and minimum orders.

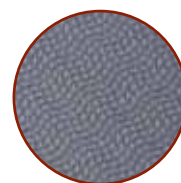
Apex® CGD & DGD Color ▶

- Coarse grinding discs (CGD) provide aggressive removal and excellent flatness on a long wear surface
- Standard discs provide more moderate removal and excellent edge retention and flatness on a long wear surface
- Consumable of choice for Z-axis controlled material removal
- Use water only



Apex® CGD (Coarse Grinding Disc) (qty 1)

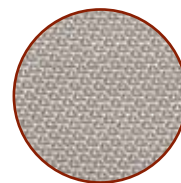
Color – Micron	8in [203mm]	10in [254mm] ^{SO}	12in [305mm]
Grey – 320µm	41-10006	41-10009	41-10012
Green – 240µm	41-10007	41-10010	41-10013
Black – 125µm	41-10008	41-10011	41-10014



Close up of the surface of Apex® CGD

Apex® DGD Color (Diamond Grinding Discs) (qty 1)

Color – Micron	8in [203mm]	10in [254mm] ^{SO}	12in [305mm]
Green – 240µm	41-3308	41-3310	41-3312
Black – 125µm	41-3408	41-3410	41-3412
Red – 75µm	41-3508	41-3510	41-3512
Purple – 55µm	41-3608	41-3610	41-3612
Yellow – 35µm	41-3708	41-3710	41-3712
White – 15µm	41-3808	41-3810	41-3812
Blue – 8µm	41-3908	41-3910	41-3912



Close up of the surface of Apex® DGD Color

SO - Special Order. Items may have long lead times and minimum orders.

Did You Know?

Using Apex® CGD or DGD, you can significantly reducing your grinding times while acheiving excellent flatness and edge retention. These versatile, long wear discs are suitable for most material applications and reduce change over time and. Using just water, they produce far less mess during preparation, especially when used to replace a more traditional diamond and polishing cloth step. While not required for continued performance, they can be periodically dressed to refresh grinding rates, particularly when used to on gummy materials.



◀ Apex® DGD (Diamond Grinding Discs)

- Excellent for ceramics, glass, TSC and more
- Consumable of choice for Z-axis controlled material removal
- Fixed abrasive surface providing long-wear, high removal rates and superb edge retention and flatness
- Use water only

Apex® DGD (Diamond Grinding Discs) (qty 1)

Micron	8in [203mm]	10in [254mm]	12in [305mm]
165µm	41-5008	41-5010	41-5012
125µm	41-5108	41-5110	41-5112
70µm	41-5208	41-5210	41-5212
45µm	41-5308	41-5310	41-5312
30µm	41-5408	41-5410	41-5412
15µm	41-5508	41-5510	41-5512
9µm	41-5608	41-5610	41-5612
6µm	41-5708	41-5710	41-5712
3µm	41-5808	41-5810	41-5812
0.5µm	41-5908	41-5910	41-5912



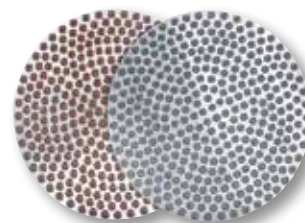
15-6190 Diamond Dressing Sticks (qty 1) can be used periodically to dress Apex® DGD and DGD Color discs

Apex™ Hercules Rigid Grinding Discs ▶

- Use with Apex® M, MagnoDisc and MagnoFix
- Add MetaDi® or MetaDi® Supreme Diamond Suspension

Apex™ Hercules Rigid Grinding Discs (qty 1)

Type	8in [203mm]	10in [254mm]	12in [305mm]
Apex™ Hercules H For materials ≥ HRC20, HV236	41-2740-308-001	41-2740-310-001	41-2740-312-001
Apex™ Hercules S For materials < HRC20, HV236	41-2740-408-001	41-2740-410-001	41-2740-412-001



Did You Know?

Choosing the right disc for your material and application can make preparation results better, faster or both.

- Choose Apex® Hercules H for hard materials such as ceramics and hardened steel where long disc life is desired.
- Choose Apex® Hercules S for best flatness on steel, nickel and aluminum alloys, nitrided steel and thermal spray.



◀ UltraPrep™ Diamond Discs

- Excellent for a wide variety of materials
- Use water only

UltraPrep™ Resin-Bonded Diamond Discs, PSA Backed (qty 1)

Diamond Size	Box Code	8in [203mm] ^{SO}	12in [305mm] ^{SO}
30µm	Orange	15-6330	15-6430
9µm	Blue	15-6309	15-6409
3µm	Yellow	15-6303	15-6403

SO - Special Order. Items may have long lead times and minimum orders.

UltraPrep™ Metal-Bonded Diamond Discs, PSA Backed (qty 1)

Diamond Size	Box Code	10in [254mm]	12in [305mm]
125µm	Black	15-6199	15-6299
70µm	Red	15-6170	15-6270
45µm	Yellow	15-6145	15-6245
15µm	White	15-6115	15-6215
9µm	Blue	15-6109	15-6209
6µm	Light Purple	15-6106	15-6206



15-6190 Diamond Dressing Sticks (qty 1) can be used periodically to dress UltraPrep™ discs

ZirMet® Abrasive Discs ▶

- Long wear zirconia alumina abrasive discs
- High material removal

PSA backed discs, 12in [305mm] (qty 25)

Abrasive sizes given in ANSI [FEPA]

15-5132-060-025 – 60 [P60]
 15-5132-120-025 – 120 [P120]
 15-5132-180-025 – 180 [P180]
 15-5132-220-025 – 220 [P240]



Silicon Carbide Powder

Abrasive sizes given in ANSI [FEPA]

40-6400-120-080 – 120 [P120], 127µm
 40-6405-240-080 – 240 [P280], 52µm
 40-6407-320-080 – 320 [P400], 35µm
 40-6410-400-080 – 400 [P800], 26µm
 40-6415-600-080 – 600 [P1200], 15µm
 40-6418-000-080 – 1000 [P2000], 10µm

◀ Abrasive Powders

- For fine grinding on cast iron, tin or cloth-covered platens
- Mix with distilled water to desired consistency
- 5 lb [2.3kg] containers

Aluminum Oxide Powder

Abrasive sizes given in ANSI [FEPA]

40-6425-400-080 – 400 [P800], 26µm
 40-6430-600-080 – 600 [P1200], 15µm
 40-6612-125-080 – 13µm
 40-6609-095-080 – 10µm
 40-6605-050-080 – 5µm
 40-6603-030-080 – 3µm

CarbiMet® 2 Abrasive Discs ▶

- Designed for superior grinding performance
- Provides rapid material removal and uniform surface finish
- Exceptional Life to Material Removal Ratio
- Premium water resistant "C" weight paper



CarbiMet® 2 & MicroCut® Abrasive Discs, Plain Backed (qty 100)

Grit Size ANSI [FEPA]	Approx. Micron Size	8in [203mm]	10in [254mm]	12in [305mm]
60 [P60]	269	30-5108-060-102	30-5125-1-060-102	30-5121-060-102
120 [P120]	127	30-5108-120-102	30-5125-1-120-102	30-5121-120-102
180 [P180]	78	30-5108-180-102	30-5125-1-180-102	30-5121-180-102
240 [P280]	52	30-5108-240-102	30-5125-1-240-102	30-5121-240-102
320 [P400]	35	30-5108-320-102	30-5125-1-320-102	30-5121-320-102
400 [P800]	22	30-5108-400-102	30-5125-1-400-102	30-5121-400-102
600 [P1200]	15	30-5108-600-102	30-5125-1-600-102	30-5121-600-102
800 [P1500] MicroCut® Disc	13	30-5538-800-100	30-5125-1-800-100	30-5542-800-100
1200 [P2500] MicroCut® Disc	8	30-5538-012-100	30-5125-1-012-100	30-5542-012-100
Assorted 60-600 [P60-P1200] (qty 70)		30-5108-102	30-5125-1-102	30-5121-102
MetGrip™ Liners (qty 10)		30-8508	30-8510	30-8512

CarbiMet® 2 & MicroCut® Abrasive Discs, PSA Backed (qty 100)

Grit Size ANSI [FEPA]	Approx. Micron Size	8in [203mm]	10in [254mm]	12in [305mm]
60 [P60]	269			30-5112-060-102
120 [P120]	127	30-5118-120-102	30-5125-3-120-102	30-5112-120-102
180 [P180]	78	30-5118-180-102	30-5125-3-180-102	30-5112-180-102
240 [P280]	52	30-5118-240-102	30-5125-3-240-102	30-5112-240-102
320 [P400]	35	30-5118-320-102	30-5125-3-320-102	30-5112-320-102
400 [P800]	22	30-5118-400-102	30-5125-3-400-102	30-5112-400-102
600 [P1200]	15	30-5118-600-102	30-5125-3-600-102	30-5112-600-102
800 [P1500] MicroCut® Disc	13	30-5528-800-100	30-5125-3-800-100	30-5532-800-100
1200 [P2500] MicroCut® Disc	8	30-5528-012-100	30-5125-3-012-100	30-5532-012-100
Assorted 60-600 [P60-P1200] (qty 70)		30-5118-102	30-5125-3-102	30-5112-102



◀ BuehlerMet® II Abrasive Discs

- Consistent cutting performance
- Developed for less critical laboratory grinding
- Manual or semi-automatic applications
- Standard water resistant "C" weight paper

BuehlerMet® II Abrasive Discs, Plain Backed (qty 100)

Grit Size ANSI [FEPA]	Approx. Micron Size	8in [203mm]	10in [254mm]	12in [305mm]
60 [P60]	269	30-5308-060-102	30-5310-060-102	30-5321-060-102
120 [P120]	127	30-5308-120-102	30-5310-120-102	30-5321-120-102
180 [P180]	78	30-5308-180-102	30-5310-180-102	30-5321-180-102
240 [P280]	52	30-5308-240-102	30-5310-240-102	30-5321-240-102
320 [P400]	35	30-5308-320-102	30-5310-320-102	30-5321-320-102
400 [P800]	22	30-5308-400-102	30-5310-400-102	30-5321-400-102
600 [P1200]	15	30-5308-600-102	30-5310-600-102	30-5321-600-102
Assorted 60-600 [P60-P1200] (qty 70)		30-5308-102	30-5310-102	30-5321-102
MetGrip™ Liners (qty 10)		30-8508	30-8510	30-8512

BuehlerMet® II Abrasive Discs, PSA Backed (qty 100)

Grit Size ANSI [FEPA]	Approx. Micron Size	8in [203mm]	10in [254mm]	12in [305mm]
60 [P60]	269	30-5318-060-102	30-5328-060-102	30-5312-060-102
120 [P120]	127	30-5318-120-102	30-5328-120-102	30-5312-120-102
180 [P180]	78	30-5318-180-102	30-5328-180-102	30-5312-180-102
240 [P280]	52	30-5318-240-102	30-5328-240-102	30-5312-240-102
320 [P400]	35	30-5318-320-102	30-5328-320-102	30-5312-320-102
400 [P800]	22	30-5318-400-102	30-5328-400-102	30-5312-400-102
600 [P1200]	15	30-5318-600-102	30-5328-600-102	30-5312-600-102
Assorted 60-600 [P60-P1200] (qty 70)		30-5318-102	30-5328-102	30-5312-102

Tips, Tricks & Techniques:

MetGrip™ Liners can be used with plain backed papers.



ReVel Discs ▶

- Saves time by reducing preparation steps
- Use water only
- Choose ReVel A for hard, ferrous materials and coatings
- Choose ReVel B for Nickel Based Alloys

ReVel Discs (qty 5)

Type	8in [203mm]	10in [254mm]	12in [305mm]
ReVel A	41-10044	41-10045	41-10046
ReVel B	41-10047	41-10048	41-10049



◀ FibrMet® Abrasive Discs

- For fine grinding applications on glass, epoxy or polymers
- Produces fine surface finish
- Choose from either aluminum oxide or silicon carbide

FibrMet® Abrasive Discs (qty 50)

Color – Micron	Material	4in [102mm] PSA Backed	8in [203mm] PSA Backed	8in [203mm] Plain Backed	12in [305mm] PSA Backed
Off White – 0.05µm	Al ₂ O ₃		69-3175 ^{SO}	69-3275	
White – 0.3µm	Al ₂ O ₃	69-3104*	69-3174*	69-3274 ^{SO}	69-3124*
Green – 1µm	Al ₂ O ₃	69-3103*	69-3173		69-3123*
Pink – 3µm	Al ₂ O ₃	69-3102*	69-3172*	69-3272	69-3122*
Grey – 3µm	SiC	69-3912 ^{SO}			
Light Blue – 9µm	Al ₂ O ₃	69-3101*	69-3171	69-3271	69-3121*
Yellow – 12µm	Al ₂ O ₃	69-3100*	69-3170		69-3120*
Grey – 15µm	SiC	69-3107*			

*Bulk packs of 1000 discs are available in these sizes. Add "000" to the end of the catalog number to order in quantities of 1000.
SO - Special Order. Items may have long lead times and minimum orders.

Tips, Tricks & Techniques:

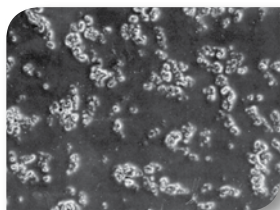
- In selecting a grinding surface, choose the finest abrasive that will efficiently achieve planarity.
- To choose which type of grinding surface, consider:
 - CarbiMet® 2 if you process many types of materials. Use for only 1-2 minutes per disc.
 - Apex® DGD or DGD Color for very hard materials, fewer grinding steps, controlled material removal and less change over.
 - FibrMet® or UltraPrep™ Lapping Films for small fragile specimens, electronics and fiber optics.

Did You Know?

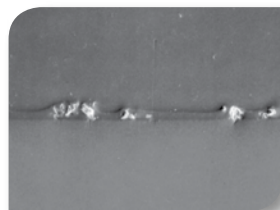
FibrMet® Abrasive Discs are formulated for fine grinding applications where diamond is not required. Their fine size distribution and superb abrasive characteristics make them the best choice for grinding epoxy beads, glass ferrules and glass or polymer fibers.

UltraPrep™ Diamond Lapping Films ▶

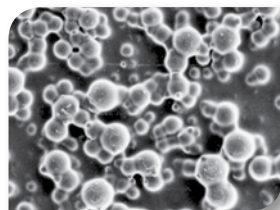
- For fine grinding of hard materials such as ceramic
- Two types available:
 - Type A for finer surface and more gentle material removal
 - Type B for more aggressive material removal



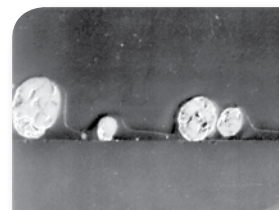
SEM image, UltraPrep™, Type A surface



SEM Cross-section of UltraPrep™, Type A



SEM image, UltraPrep™, Type B surface



SEM Cross-section of UltraPrep™, Type B

UltraPrep™ Diamond Lapping Films (qty 5)

Color – Micron	4in [102mm] Type A, PSA Backed	8in [203mm] Type A, PSA Backed	8in [203mm] Type A, Plain Backed	8in [203mm] Type B, PSA Backed	8in [203mm] Type B, Plain Backed
Light Grey – 0.1µm	69-3118 ^{SO}	15-6791	15-6792		
White – 0.5µm	69-3117 ^{SO}	15-6795	15-6796	15-6495 ^{SO}	15-6496 ^{SO}
Lavendar – 1µm	69-3116	15-6801	15-6802	15-6501 ^{SO}	15-6502 ^{SO}
Pink – 3µm	69-3115	15-6803	15-6804	15-6503	15-6504 ^{SO}
Brown – 6µm	69-3114	15-6806	15-6807	15-6506 ^{SO}	
Blue – 9µm	69-3113	15-6809	15-6810	15-6509 ^{SO}	15-6510 ^{SO}
Orange/Brown – 15µm	69-3112	15-6815	15-6816		
Green – 30µm	69-3111 ^{SO}	15-6830	15-6831		

^{SO} - Special Order. Items may have long lead times and minimum orders.

Replicating Materials for Field Applications

Field metallography is necessitated by certain applications. Both Replicating Tape and Replicating Media provide users the ability to produce a portable copy of the microstructure of interest. Replicating Tape requires some skill for producing excellent results. Replicating Media is a simple two part system that easily captures the surface detail.

- 57-5005 Disc Holder, hard rubber, 1in [25mm]
- 57-5003 Disc Holder, hard rubber, 2.875in [73mm]
- 57-5000 Replicating Tape, 1 x 0.005 x 25in [25 x 0.13 x 8mm]
- 57-5001 Replicating Adhesive Bases, 1 x 3in [25 x 76mm] (qty 30)
- 57-5002* Replicating Kit
- 57-5004 Flapper Wheel, 60 [P60] grit
- 57-6000 Manual Applicator for Replicating Media
- 57-6001 Static Mixers (qty 10)

- 57-6002 Replicating Media 1/7, 1.7oz [50mℓ] (1min working time, 7min cure time)
- 57-6003 Replicating Media 7/30T, 1.7oz [50mℓ] (7min working time, 30min cure time)
- 57-6100** Replicating Set

* Replicating Kit includes 10 each 3 x 3in [76 x 76mm] Replicating Sheets and Adhesive Bases

** Replicating Set includes 1 each of 57-6000, 57-6001, 57-6002



POLISHING CLOTH GUIDE

	Cloth	Usage Guide	Recommended Micron Size	Abrasive Type	Applications
COARSE	UltraPad™	Used to replace multiple SiC grinding surfaces	6µm & Up	Diamond	Ferrous materials and thermal spray coatings
	Ultra MB	Excellent surface finish, used to retain flatness in medium to hard specimens	6µm & Up	Diamond	Minerals, coals, ceramics, inclusion, retention in steels, and refractory metals
	UltraPol™	Excellent surface finish, used to retain flatness in medium to hard specimens	6µm & Up	Diamond	Minerals, coals, ceramics, inclusion, retention in steels, and refractory metals
	Nylon	Used for material removal and flatness of hard specimens	6µm & Up	Diamond	Ferrous materials, sintered carbides and cast irons
	TexMet® P	Used for material removal and flatness of hard specimens	6µm & Up	Diamond	Ceramics, carbides, petrographic, hard metals, glass, and metal matrix composites
INTERMEDIATE	TexMet® MB	Most popular cloth for intermediate steps	15-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals, ceramics, electronic packages, PCB's, thermal spray coatings, cast irons, cermets, minerals, composites, plastics
	TexMet® C	Most popular cloth for intermediate steps	15-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals, ceramics, electronic packages, PCB's, thermal spray coatings, cast irons, cermets, minerals, composites, plastics
	TriDent™	Used to maximize flatness and retain phases while providing excellent surface finish	15-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals, microelectronics, coatings
	VerduTex	Used for rough and final polishing	9-1µm	Diamond	Ferrous and nonferrous metals, microelectronics, coatings
	Satyn MB	Used to maximize flatness and retain phases while providing excellent surface finish	9-1µm	Diamond	Ferrous and nonferrous metals, microelectronics, coatings
	VelTex	Ideal for final polishing	9-1µm	Diamond	Steel, nonferrous and soft metals
	WhiteFelt™	General usage for intermediate to fine steps	6-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals
	PoliCloth	General usage	6-1µm	Diamond	Cast iron, copper and aluminum alloys, coal and other soft metals
	MicroCloth®	Most popular general usage final polishing cloth	5-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals, ceramics, composites, PCBs, cast irons, cermets, plastics, electronics
FINE	Micro MB	Medium napped cloth for final polishing	5-0.02µm	Diamond Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous metals, ceramics, composites, PCBs, cast irons, cermets, plastics, electronics
	MicroFloc	Good results when used with unmounted specimen	0.06µm-0.02µm	Al ₂ O ₃ , SiO ₂	Ferrous and nonferrous materials
	MasterTex®	Softer final polishing finish	1-0.05µm	Al ₂ O ₃ , SiO ₂	Soft nonferrous and microelectronic packages
	ChemoMet®	General usage cloth that removes smear metal from tough materials during chemomechanical polishing	1-0.02µm	Al ₂ O ₃ , SiO ₂	Titanium, stainless steel, lead/tin, solders, electronic packages, soft nonferrous metals, plastics
	Chemia MB	General usage cloth that removes smear metal from tough materials during chemomechanical polishing	1-0.02µm	Al ₂ O ₃ , SiO ₂	Titanium, stainless steel, lead/tin, solders, electronic packages, soft nonferrous metals, plastics



◀ Polishing Cloths

- Premium performance cloths for all material applications
- Engineered for long life & superior surface finish

Premium Polishing Cloths, PSA Backed & Magnetic Backed (MB)

	Cloth	Quantity	8in [203mm]	10in [254mm]	12in [305mm]
COARSE	UltraPad™	10	40-7118	40-7120	40-7122
	Ultra MB	5	41-10041	41-10042	41-10043
	UltraPol™	10	40-7448	40-7450	40-7452
	Nylon	10	40-7068	40-7070	40-7072
	TexMet® P	5	40-7638	40-7640 ^{SO}	40-7642
INTERMEDIATE	TexMet® MB	5	41-10035	41-10036	41-10037
	TexMet® C	10	40-1108	40-1110	40-1112
	TriDent™	10	40-7518	40-7520	40-7522
	VerduTex	10	40-8018	40-8020 ^{SO}	40-8022
	Satyn MB	5	41-10038	41-10039	41-10040
	VelTex	10	40-8218	40-8220 ^{SO}	40-8222 ^{SO}
	WhiteFelt™	5	16-2002	16-2502 ^{SO}	16-3002 ^{SO}
	PoliCloth	10	40-8418	40-8420	40-8422
FINE	MicroCloth®	10	40-7218	40-7220	40-7222
	Micro MB	5	41-10093	41-10094	41-10095
	MicroFloc	10	40-8318 ^{SO}	40-8320 ^{SO}	40-8322 ^{SO}
	MasterTex®	10	40-7738	40-7740	40-7742
	ChemoMet®	10	40-7918	40-7920	40-7922
	Chemia MB	5	41-10032	41-10033	41-10034

SO - Special Order. Items may have long lead times and minimum orders.

Tips, Tricks & Techniques

- When laying a cloth on a bimetallic plate or platen, start at an edge or use a roller to prevent air bubbles from being trapped under a cloth.
- A dry cloth will scratch specimens and can cause tearing. Wet a new cloth with an abrasive suspension, extender or water.
- Use each cloth with abrasive of a single particle size only. Doing otherwise will cause undesirable scratches on specimen.
- Rinse cloth briefly under water after each polishing cycle to maintain their integrity.

DIAMOND POLISHING SUSPENSIONS & PASTES

Diamond is routinely used for the preparation of metals, ceramics and minerals due to the high removal rates. The cutting rate is even further enhanced when selecting polycrystalline diamond rather than monocrystalline. The increased number of facets on the polycrystalline structure enables efficient cutting and minimal deformation.

When working with water sensitive or soft materials that have a tendency to embed abrasive particles the paste is your best choice. However, if you are interested in a fully automated approach, diamond suspensions are required.

MetaDi® Supreme Polycrystalline Diamond Suspension

Color – Diamond Size	8oz [0.24ℓ]	32oz [0.95ℓ]	1gal [3.8ℓ] Refill
Charcoal – 0.05µm	40-6627		
Charcoal – 0.1µm	40-6628		
Grey – 0.25µm	40-6629		40-6629-128
Blue – 1µm	40-6630	40-6630-032	40-6630-128
Green – 3µm	40-6631	40-6631-032	40-6631-128
Yellow – 6µm	40-6632	40-6632-032	40-6632-128
Deep Red – 9µm	40-6633	40-6633-032	40-6633-128
Brown – 15µm	40-6634	40-6634-032	40-6634-128



GRINDING-POLISHING

MetaDi® Monocrystalline Diamond Suspension



Color – Diamond Size	16oz [0.47ℓ]	32oz [0.95ℓ]	1gal [3.8ℓ]	16oz [0.47ℓ] Oil
Blue – 1µm	40-6530	40-6530-032	40-6530-128	40-6540
Green – 3µm	40-6531	40-6531-032	40-6531-128	40-6541
Yellow – 6µm	40-6532	40-6532-032	40-6532-128	40-6542
Deep Red – 9µm	40-6533	40-6533-032	40-6533-128	40-6543
Brown – 15µm	40-6534	40-6534-032	40-6534-128	40-6544

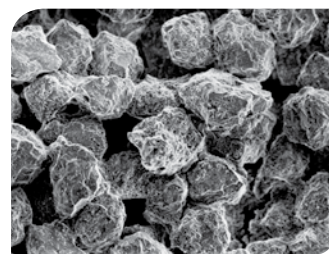
Did You Know?

- MetaDi® Diamond Suspensions are the industry standard for routine metallographic, petrographic, and ceramographic applications due to high removal rates and quick, easy cleaning of specimens.
- Monocrystalline diamond particles consist of single grains that have sharp edges which ensure clean and efficient cutting action providing high material removal rates.
- Polycrystalline diamond particles consist of angular, blocky shaped grains providing numerous cutting facets, resulting in less deformation and a superior surface finish.
- MetaDi® Diamond Products are nontoxic, noncombustible, and environmentally safe.

MetaDi® Ultra Polycrystalline Diamond Paste, 20g

Color – Diamond Size	Catalog Number
Blue – 1µm	40-1-6301
Green – 3µm	40-1-6303
Yellow – 6µm	40-1-6305
Deep Red – 9µm	40-1-6307
Brown – 15µm	40-1-6309

*This product is grey in color with color coded packaging
MetaDi® Fluid is recommended for use with all MetaDi® Pastes and most material applications*

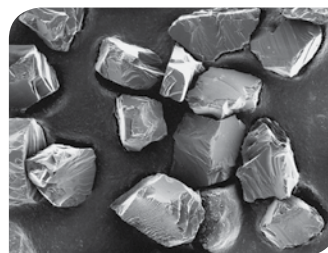


Angular, blocky-shaped polycrystalline diamond of MetaDi® Ultra provide numerous cutting facets on the particle surface, resulting in less deformation.

MetaDi® & MetaDi® II Monocrystalline Diamond Paste

Color – Diamond Size	Size	MetaDi® Heavy Concentration	MetaDi® II Medium Concentration
Grey – 0.25µm	5g	40-6112	40-6241
Grey – 0.25µm	20g	40-6102	40-6240
Blue – 1µm	5g	40-6138	40-6244
Blue – 1µm	20g	40-6128	40-6243
Green – 3µm	5g	40-6152	40-6247
Green – 3µm	20g	40-6142	40-6246
Yellow – 6µm	5g	40-6172	40-6250
Yellow – 6µm	20g	40-6162	40-6249
Deep Red – 9µm	5g	40-6192	40-6253
Deep Red – 9µm	20g	40-6182	40-6252
Brown – 15µm	5g	40-6212	40-6256
Brown – 15µm	20g	40-6202	40-6255

MetaDi® Fluid is recommended for use with all MetaDi® Pastes and most material applications



Sharp edges of monocrystalline diamonds of MetaDi® Diamond Paste ensure clean and efficient cutting action.

Accessories for MetaDi®

60-3255	Applicator Bottle, 8oz [0.24ℓ]	40-8142-128	Polishing Oil, 1gal [3.8ℓ]
40-6650	Spray Pump for 8oz [0.24ℓ] bottles	60-3250-006	AutoMet® Lapping Oil, 6oz [0.18ℓ]
40-6016	MetaDi® Fluid, 16oz [0.47ℓ] (water soluble)	60-3250-128	AutoMet® Lapping Oil, 1gal [3.8ℓ]
40-6032	MetaDi® Fluid, 32oz [0.95ℓ] (water soluble)		
40-6064-085	MetaDi® Fluid, 85oz [2.5ℓ] (water soluble)		

Did You Know?

- Diamond paste products are best suited to materials prone to diamond embedding.
- Pastes are typically applied to a clean cloth by rotating the platen at approximately 50rpm and by placing the syringe tip about 2in [5cm] out from the center of the platen. Start dispensing the paste onto the cloth, resulting in a spiral pattern, if the bead is raised, too much product has been dispensed.
- Polishing Oil & AutoMet® Lapping Oil recommended for use with MetaDi® Pastes or materials sensitive to water.








FINAL POLISHING SUSPENSIONS

Final polish solutions remove the final layer of surface deformation often invisible to the naked eye. Yet the removal of this deformation is essential when evaluating with high magnifications, polarized light, differential interference contrast as well as using EBSD techniques. A variety of application specific suspensions are available to provide superior performance.



MasterMet®, mechanochemical colloidal silica (SiO_2), is especially suited for ferrous and nonferrous materials, titanium, semiconductors and hard materials such as ceramics.

Water sensitive materials can be handled with MasterPolish® which contains little water. The solution provides high material removal rate due to a combination of the high pH and blending of alumina and colloidal silica abrasives.

Alumina solutions are best for soft materials such as aluminum, brass, copper, precious metals and electronics. In addition, MasterPrep® is well suited for automated dispensing.

Material	Characteristics	Part Number	Size
MasterPrep® Alumina 	<ul style="list-style-type: none"> Sol-gel alumina suspension ~8.5pH Excellent for minerals, ferrous metals, low melting point alloys, carbides, PWB's, precious metals and electronics 	63-6377-006 40-6377-032 40-6377-064	6oz [0.18ℓ] 32oz [0.95ℓ] 64oz [1.9ℓ]
MasterMet® Colloidal Silica 	<ul style="list-style-type: none"> Amorphous colloidal silica suspension ~10pH Chemo-mechanical polishing action Excellent for metals, minerals, ceramics and polymers 	40-6370-006 40-6370-064	6oz [0.18ℓ] 64oz [1.9ℓ]
MasterMet® 2 Non-Crystallizing Colloidal Silica 	<ul style="list-style-type: none"> Non-crystallizing amorphous colloidal silica suspension ~10.5pH Chemo-mechanical polishing action 	40-6380-006 40-6380-064	6oz [0.18ℓ] 64oz [1.9ℓ]
MasterPolish® Final Polish 	<ul style="list-style-type: none"> Blend of 0.05μm high purity alumina and colloidal silica ~9pH Contains minimal water and is optimal for water sensitive materials Excellent for most magnesium alloys, cobalt alloys, most iron alloys, nickel, metal matrix composites 	40-10084	32oz [0.95ℓ]
MasterPolish® 2 Final Polish 	<ul style="list-style-type: none"> Chemo-mechanical polishing action ~10pH Excellent for sapphire, glass, alumina, silicon nitride, metal/ceramic composites 	40-6376-032	32oz [0.95ℓ]

Final Polishing Suspensions (cont'd)

Material	Characteristics	Part Number	Micron	Size
MicroPolish® Alumina Powder & Suspension 	<ul style="list-style-type: none"> Agglomerated alumina offers higher removal rates than other aluminas of the same size Good for use on magnesium, lead and their alloys 	Powders		
		40-10075	0.05µm	1 lb [0.45kg]
		40-10077	0.3µm	1 lb [0.45kg]
		40-10079	1µm	1 lb [0.45kg]
		40-10076	0.05µm	5 lb [2.3kg]
		40-10078	0.3µm	5 lb [2.3kg]
		40-10080	1µm	5 lb [2.3kg]
		Suspensions		
		40-10083	0.05µm	6oz [0.18ℓ]
		40-10082	0.3µm	6oz [0.18ℓ]
		40-10081	1µm	6oz [0.18ℓ]
MicroPolish® II Alumina Powder & Suspension 	<ul style="list-style-type: none"> High quality deagglomerated alumina Produces better surface finishes than agglomerated versions Suitable for most minerals and metals 	Powders		
		40-6323-016	0.3µm	1 lb [0.45kg]
		40-6321-016	1µm	1 lb [0.45kg]
		40-6323-080	0.3µm	5 lb [2.3kg]
		40-6321-080	1µm	5 lb [2.3kg]
		Suspensions		
		40-6363-006	0.3µm	6oz [0.18ℓ]
		40-6363-128	0.3µm	1gal [3.8ℓ]
		40-6361-006	1µm	6oz [0.18ℓ]

PlanarMet® Stone Cup Coarse Grinder ▶

- Efficient first step grinding
- Built-in mist and filter system
- Recirculating system included
- Variety of chuck options

Available in the following 3 phase voltage/frequency:

PlanarMet®

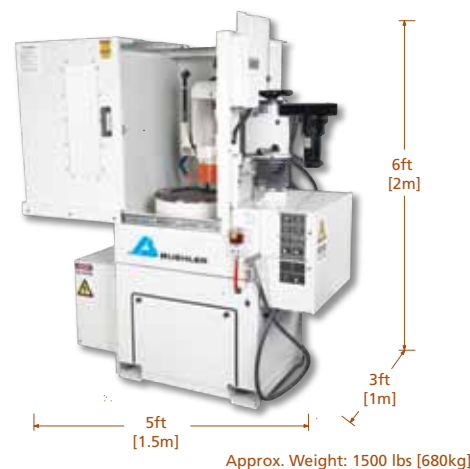
49-7260-230 [230VAC, 60Hz]
 49-7260-460 [460VAC, 60Hz]
 49-7260-400 [380VAC, 50Hz]

PlanarMet® with Magnetic Chuck

49-7260M-230 [230VAC, 60Hz]
 49-7260M-460 [460VAC, 60Hz]

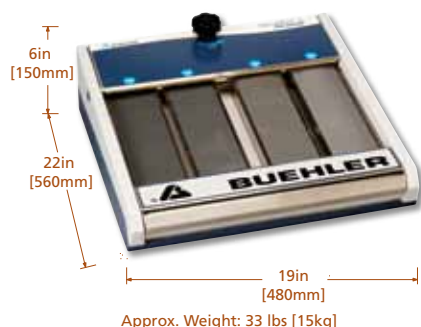
Accessories & Consumables for PlanarMet®

49-7270 SiC Cup Grinder, 8in [203mm]
 49-7271 Al₂O₃ Cup Grinder, 8in [203mm]
 49-7272 Diamond Cup Grinder, 8in [203mm]
 49-7275 Ceramic Seeded Gel, 8in [203mm]
 49-7273 Three Jaw Chuck
 49-7274 Magnetic Chuck



BELT GRINDERS

Belt grinders use relatively coarse abrasive belts to quickly remove burrs, flatten samples, or round edges not required for examination. Stationary grinders have four rolls or strips of increasingly fine silicon carbide papers on which specimens can be manually ground. Both types of units allow for wet grinding to minimize specimen damage.



◀ HandiMet® 2 Roll Grinder

- Convenient and economical manual grinder
- Self contained 4-stage grinding system
- Includes water cooling

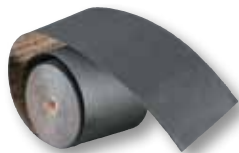
Available in the following configurations:

39-1572 HandiMet® 2

Compatible with CarbiMet® 2 Rolls, 3.44in x 60ft [18 x 87mm]

Abrasive sizes given in ANSI [FEPA]

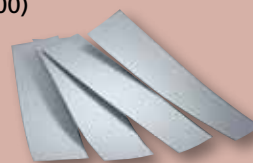
30-5143-240-002 240 [P280], 52µm
 30-5143-320-002 320 [P400], 35µm
 30-5143-400-002 400 [P800], 22µm
 30-5143-600-002 600 [P1200], 15µm



Legacy Grinders use CarbiMet® 2 Strips, 3 x 11in [76 x 279mm] (qty 100)

Abrasive sizes given in ANSI [FEPA]

30-5160-240-102 240 [P280]
 30-5160-320-102 320 [P400]
 30-5160-400-102 400 [P800]
 30-5160-600-102 600 [P1200]



GRINDING-POLISHING

SurfMet® I Belt Surfacers ▶

- High speed manual coarse grinder ideal for metallographic, spectrographic and macrohardness test specimen preparation
- Convenient sink and faucet for rinsing specimens

Available in the following 1 phase voltage/frequency:

16-1270-160 [115VAC, 60Hz]
 16-1270-250 [220-240VAC, 50Hz]



Accessories & Consumables for SurfMet® I

10-1250-160 Recirculating System [115VAC, 50/60Hz, 1 phase]	16-1279 Copper Wear Plate Retrofit Kit
10-1250-250 Recirculating Tank [220VAC, 50/60Hz, 1 phase]	16-1497 Recirculating System Cart
16-1278 Wear Plate Retrofit Kit	

Compatible with CarbiMet® MetSplice® Belts and ZirMet® MetSplice Belts, 4 x 36in [102 x 914mm]

Abrasive sizes given in ANSI [FEPA]

CarbiMet® MetSplice® Belts (Silicon Carbide) (qty 10)

16-5200-050-010 50 [P50], 326µm
 16-5200-080-010 80 [P80], 201µm
 16-5200-120-010 120 [P120], 127µm
 16-5200-180-010 180 [P180], 78µm
 16-5200-240-010 240 [P280], 52µm
 16-5200-320-010 320 [P400], 35µm
 16-5200-400-010 400 [P800], 22µm
 16-5200-600-010 600 [P1200], 15µm

ZirMet® MetSplice® Belts (Zirconia) (qty 5)

16-5400-060-005 60 [P60], 269µm
 16-5400-120-005 120 [P120], 127µm
 16-5400-180-005 ^{SO} 180 [P180], 78µm
 16-5400-220-005 ^{SO} 220 [P240], 52µm



^{SO} - Special Order. Items may have long lead times and minimum orders.

To Order, Call Toll-Free 1-800-BUEHLER (1-800-283-4537) or shop online at www.buehler.com

IMAGING & MEASUREMENT



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MICROSCOPY

Microscopy, analysis of features or microstructures, and other analytical testing is usually performed on specimens once they have been sectioned, mounted, and prepared with suitable grinding and polishing steps to reveal the features of interest. In general, the type of information that is of interest will dictate the type of microscope that will be most suitable for the application.

Microscopes offered by Buehler generally fall into the categories of stereo microscopes, upright microscopes, or inverted microscopes. Inverted microscopes are commonly referred to as metallurgical microscopes. Microscopes may offer episcopic (reflected light) observation, diascopic (transmitted light) observation, or both possibilities. Illumination may be delivered in bright field mode (BF) or dark field mode (DF), and several techniques such as differential interference contrast (DIC) and polarized light microscopy make use of the nature of light to reveal specific pieces of information when studying materials.

STEREO MICROSCOPES

Nikon SMZ745 Zoom Stereomicroscope ▶

- Ideal for inspection use with a wide range of stands and illumination possibilities
- 7.5:1 zoom ratio
- 0.67x - 5x magnification
- 45° eyepiece orientation
- Erect/unreversed image 360° rotatable with dual lateral zooming knobs with on/off clickstops

Available in the following standard configurations:

0708-50000 Nikon SMZ745 on plain stand, 10x eyepieces (*does not include an illuminator*)

0708-50001 Nikon SMZ745T on plain stand, 10x eyepieces, includes a camera port (*does not include an illuminator*)

Accessories for Nikon SMZ745

See FibrFlex Illuminator on next page



◀ Nikon SMZ800 Zoom Stereomicroscope

- Ideal for inspection use with a wide range of stands and illumination possibilities
- 6.3:1 zoom ratio
- 5x - 378x magnification
- Coaxial illumination available for metallographic specimens
- Variety of stands, digital imaging and other accessories are available

Available in the following standard configuration:

0708-50010 Nikon SMZ800 on plain stand, 10x eyepieces, 1x objective (*does not include an illuminator*)

Accessories for Nikon SMZ800

0708-3440 P-IBSS2 single port beam splitter (*accepts 0710-2125 or 0706-0150*)

0710-2125 C-mount adapter 0.55x, direct mount

0706-0150 LV-TV ISO adapter tube

0706-0176 C-mount ISO adapter 1x (*requires 0706-0150*)

0709-7073 C-mount ISO adapter 0.7x (*requires 0706-0150*)

Also see FibrFlex Illuminator on next page.





◀ Nikon SMZ1000 Zoom Stereomicroscope

- Ideal for inspection use with a wide range of stands and illumination possibilities
- 10:1 zoom ratio
- 4x - 480x magnification
- Variety of stands, digital imaging and other accessories are available

Available in the following standard configurations:

- 0708-1000 Nikon SMZ1000 on plain stand, 10x eyepieces, 1x objective (*does not include a camera port or illuminator*)
- 0708-1001 Nikon SMZ1000 on plain stand, 10x eyepieces, 1x objective, beam splitter and camera port with LV-TV ISO adapter tube (*does not include an illuminator*)

Accessories for Nikon SMZ1000

0708-3440 P-IBSS2 single port beam splitter (*accepts 0710-2125 or 0706-0150*)

0710-2125 C-mount adapter 0.55x, direct mount

0706-0150 LV-TV ISO adapter tube

0706-0176 C-mount ISO adapter 1x (*requires 0706-0150*)

0709-7073 C-mount ISO adapter 0.7x (*requires 0706-0150*)

Also see FibrFlex Illuminator below.

Nikon SMZ1500 Zoom Stereomicroscope ▶

- Ideal for inspection use with a wide range of stands and illumination possibilities
- 15:1 zoom ratio
- 3.75x - 540x magnification
- High resolution optics included with a variety of illumination, stands, digital imaging and other accessories available

Available in the following standard configuration:

- 0708-50030 Nikon SMZ1500 on plain stand, 10x eyepieces, 1x objective (*does not include an illuminator*)

Accessories for Nikon SMZ1500

0708-3440 P-IBSS2 single port beam splitter (*accepts 0710-2125 or 0706-0150*)

0710-2125 C-mount adapter 0.55x, direct mount

0706-0150 LV-TV ISO adapter tube

0706-0176 C-mount ISO adapter 1x (*requires 0706-0150*)

0709-7073 C-mount ISO adapter 0.7x (*requires 0706-0150*)

Also see FibrFlex Illuminator below



◀ FibrFlex Fiber Optic Illuminator

- Versatile illumination system with multiple applications
- Includes 150W tungsten halogen illuminator

Available in the following configurations:

- 0723-0000 FibrFlex System with 150W Illuminator and Double Light Pipe
- 0723-0110 FibrFlex Illuminator, 150W
- 0723-0112 FibrFlex Single Light Tube
- 0723-0114 FibrFlex Double Light Tube
- 0723-0115 Fiber Optic Ring Light
- 0723-0144 Ring Light Adapter

INVERTED INDUSTRIAL MICROSCOPES



◀ ViewMet™ Inverted Microscope

- Entry level, inverted microscope for general purpose applications

Available in the following standard configuration:

0760-1000 Includes main body, trinocular head, c-mount, mechanical stage with 15 x 15mm XY travel, 6V/30W illumination, a pair of 10x eyepieces and 5x, 10x, 20x and 50x Plan Achromat objectives, diffusion, yellow, green and blue filters, power cord, instruction manual and dust cover

Brightfield Objectives

- 0750-0005 5x Plan Achromat Objectives Lens, NA 0.12, W.D. 18.30mm
- 0750-0010 10x Plan Achromat Objective Lens, NA 0.25, W.D. 8.9mm
- 0750-0020 20x Plan Achromat Objective Lens, NA 0.40, W.D. 8.7mm
- 0750-0050 50x Plan Achromat Objective Lens, NA 0.70, W.D. 2.02mm
- 0750-0080 80x Plan Achromat Objective Lens, NA 0.80, W.D. 0.96mm
- 0750-0100 100x Plan Achromat Objective Lens, NA 1.25, oil, W.D. 0.36mm

Accessories

- 0755-0011 10x Eyepiece, diopter adjustable with reticle holder (required when ordering reticle)
- 0755-0025 Micrometer Eyepiece Reticle, 10mm/10mm
- 0755-0030 Grain Size Reticle
- 0755-0150 Diffusion Filter
- 0755-0155 Green Filter
- 0755-0160 Yellow Filter
- 0755-0165 Blue Filter

Nikon Eclipse MA100 Inverted Microscope ▶

- Compact, durable, inverted microscope
- High Numerical Aperature (NA) Nikon CFI 60 optics, three plate stage, brightfield 5-position nosepiece and integrated camera port
- Internal power supply utilizes 6V/30W halogen bulbs

Available in the following standard configuration:

0710-50001 Nikon MA100 inverted microscope, with ISO camera port, lamphouse and 30W bulb, NCB11 and ND4 filters, 10x eyepieces, manually driven XY stage (50 x 50mm travel), 5-position nosepiece, includes 5x, 10x, 20x, 50x CFI LU Epi Plan Fluor objectives.

Accessories for Nikon Eclipse MA100

- 0710-0240 MA-P/A EPI polarizer and analyzer set
- 0715-1700 100X CFI LU Epi Plan Fluor objective
- 0706-0176 C-mount ISO adapter 1x
- 0709-7073 C-mount ISO adapter 0.7x





◀ Nikon Eclipse MA200 Inverted Microscope

- Innovative design optimized for ergonomic efficiency
- High numerical aperture CFI 60 optics for optimal performance across all observation modes
- May be configured for various modes of operation: BF, DF, DIC, etc.

Available in the following standard configurations:

0710-50010 Nikon MA200 in BF configuration. Includes lamp house with 50W bulb, trinocular head, 10x eyepieces, manual XY stage with insert (50 x 50mm travel), ISO camera ports on body and trinocular head, 6-position nosepiece with 5x, 10x, 20x, 50x CFI LU Epi Plan Fluor objectives.

0710-50020 Nikon MA200 in BF / DF configuration. Includes lamp house with 50W bulb, trinocular head, 10x eyepieces, manual XY stage with insert (50 x 50mm travel), ISO camera ports on body and trinocular head, 5-position nosepiece with 5x, 10x, 20x, 50x CFI LU BD Epi Plan Fluor objectives.

0710-50030 Nikon MA200 in BF / DF / DIC configuration. Includes lamp house with 50W bulb, trinocular head, 10x eyepieces, manual XY stage with insert (50 x 50mm travel), polarizer and analyzer set, L-DIHC high contrast Normarski prism, ISO camera ports on body and trinocular head, 5-position nosepiece with 5x, 10x, 20x, 50x CFI LU BD Epi Plan Fluor objectives.

Accessories for Nikon Eclipse MA200

0710-2160 MA2-MC Intelligent Magnification Module for all ports 1x, 1.5x, 2.0x

0715-1700 100X CFI LU Epi Plan Fluor objective

0709-1509 100x CFI LU BD Epi Plan Fluor objective

0710-2135 MA2-PA EPI Polarizer & Analyzer Set (*included in 0710-50030*)

0710-2125 C-mount adapter 0.55x, direct mount

0706-0150 LV-TV ISO adapter tube

0706-0176 C-mount ISO adapter 1x (*requires 0706-0150*)

0709-7073 C-mount ISO adapter 0.7x (*requires 0706-0150*)

UPRIGHT INDUSTRIAL MICROSCOPES

Nikon Eclipse LV100D Upright Microscope ▶

- Suitable for both reflected and transmitted light applications
- CFI infinity corrected optical design with 60mm parfocal length
- CFI LU Plan Fluor objectives feature high Numerical Aperture (NA), long working distances and an extended transmission wavelength range
- Variety of stages, illuminators, nosepieces and camera adapters are available

Available in the following standard configurations:

0789-50010 Nikon LV100D-U. Upright microscope in BF / DF configuration with episcopic (reflected) and diascopic (transmitted) illumination capabilities. Includes illuminator, lamphouses, and 50W bulbs for episcopic and diascopic illumination, trinocular head with 10x eyepieces, manual XY stage, NCB11 and ND4 filters, 4-40x condenser, 5-position nosepiece with 5x, 10x, 20x, 50x CFI LU BD Epi Plan Fluor objectives.

Accessories for Nikon Eclipse LV100D

0709-1509 100x CFI LU BD Epi Plan Fluor objective

0710-2125 C-mount adapter 0.55x, direct mount

0706-0150 LV-TV ISO adapter tube

0706-0176 C-mount ISO adapter 1x (*requires 0706-0150*)

0709-7073 C-mount ISO adapter 0.7x (*requires 0706-0150*)



Nikon Eclipse LV150 Upright Microscope ▶

- CFI infinity corrected optical design with 60mm parfocal length
- Stand is designed to reduce electrostatic discharge (ESD) for sensitive applications
- CFI LU Plan Fluor objectives feature high Numerical Aperture (NA), long working distances and an extended transmission wavelength range
- New epi-illumination modules allow either the selection of brightfield, darkfield, simple polarizing and DIC or fluorescence
- Variety of stages, illuminators and nosepieces are available

Available in the following standard configuration:

0709-50010 Nikon LV150. Upright microscope in BF / DF configuration with episcopic (reflected) illumination capability. Includes illuminator, lamphouses, and 50W bulb for illumination, trinocular head with 10x eyepieces, manual XY stage, 5-position nosepiece with 5x, 10x, 20x, 50x CFI LU BD Epi Plan Fluor objectives.

Accessories for Nikon Eclipse LV150

0712-0736 YM-PO rotatable polarizer
0709-1432 L-AN analyzer

0708-3918 L-DIHC high contrast Nomarski prism
0709-1509 100x CFI LU BD Epi Plan Fluor objective



◀ Nikon Eclipse AZ100

- Combines the advantages of a stereo microscope, such as a wide-field of view and long-working distance with the adaptability of an upright industrial microscope
- Utilizes 1x - 8x mono zoom optics, providing a 5x - 500x magnification range
- Variety of optics, fluorescence, oblique illuminator and simple polarization are available

Contact your local Buehler representative for more information on various selected options, eyepieces and accessories

Accessories for all Upright Microscopes

0799-0124 Leveling Press Kit (*includes Leveling Press, Plasticine Tray and 4 Metal Slides*)
0422-1000 Leveling Press
1522-0300 Plasticine Clay
1522-0100 Metal Slides



Spare Bulbs for Microscopes & Illuminators

0718-0105 12V/150W bulb for Nikon Eclipse LV150, LV100D, MA100 & MA200
0512-0230 12V/35W bulb for Zeiss Axiovert® 40 Mat
0718-0102 12V/100W bulb for Zeiss Axiovert® 40 Mat
0518-0100 6V/30W bulb for Zeiss Axiovert® 23 CA
0618-0115 24V/150W Quartz Halogen for UniMet Microscope
0707-6223 150W Quartz Halogen for FibrFlex Illuminator
0707-6342 6V/10W bulb for Nikon SMZ Stereo Halogen Illuminator
0708-3314 6V/20W bulb with reflector for Nikon SMZ Stereo
0708-3391 12V/100W, 600 hour lamp for AZ100 Fiber Illuminator
0708-4125 100W Halogen bulb for MA200 Transmitted light

0718-0100 6V/20W Tungsten Halogen for Nikon Optiphot® M & Labophot®
0718-0103 12V/100W bulb for Nikon Epiphot®, L150 and ME600L
0718-0112 21V/50W bulb for Nikon Epiphot®, L150, ME600L
0718-0120 6V/10W Fiber Optic Illuminator
0708-4246 6V/30W Halogen Bulb for DigiMet® 2000, SMZ1000, SMZ1500 & MA100
0755-0210 6V/30W bulb for ViewMet™
0818-0100 PortaMet® Microscope (0801-0105)
0818-0109 FibrSkopec® 2 Microscope, 6V/8W, light diffusing
0818-0110 FibrSkopec® Portable Microscope
1418-0106 Tungsten Bulb, prefocused (GE-1631), 6V/2.75amp

DIGITAL IMAGING EQUIPMENT & SOFTWARE

OmniMet® delivers powerful image analysis possibilities combined with flexible database functionality. Customize OmniMet® with intuitive user friendly point-and-click measurement possibilities, pre-programmed analysis routines, or with capabilities for running user programmable analysis scripts. The database utilizes a multi-tiered approach to logically organize numerous users and image data with unprecedented ease.

The OmniMet® system offers seamless point-and-click integration of microscopes, cameras, and image analysis software via an intuitive Microsoft® Windows® interface. In general any standard format image may be viewed directly from a calibrated microscope or be imported into OmniMet® for analysis. OmniMet® software is offered at different levels of flexibility, functionality, and analytical power to meet the metrology needs of every laboratory requiring image data archiving and quantitative image analysis.



OmniMet® Modular Digital Imaging System & Software Solutions

- Flexible platform with preconfigured software or hardware packages and optional accessories
- Local Area Network (LAN) support offered by OmniMet® Viewer Module
- Systems include Microsoft® Windows® and Office Software
- All systems include operations manual, OmniMet® mouse pad, Buehler® SumMet® guide

Available Configurations (Training available through webinars. Contact Buehler for details.)

Systems*	Software**	Configuration
86-0008	86-2200	OmniMet® Viewer allows networked (LAN) users to view images, databases, measurements, and print reports completed on the higher level OmniMet® imaging systems. Requires purchase of at least one higher level OmniMet® imaging system to capture images and generate results.
86-0005	86-2100	OmniMet® Capture Basic offers image capture, calibration, simple measurements, and templates for presenting information and images. Manual interactive measurements include length, parallel width, area, curve (string) length, text annotation, and scale bars. It also incorporates further interactive measurement tools radius, angle and counting such as create reports in Microsoft® Word with a single mouse click or select from sample report templates.
86-0006	86-4100	OmniMet® Capture Advanced expands upon the capabilities of OmniMet® Capture Basic. The numeric data can be accessed from a separate result window or stored long term in the database. Premium Measurement Modules may be added. Easy export of data to Microsoft® Excel is offered for unprecedented simple data manipulation and customized report generation.
86-3001	86-3005	OmniMet® Express is a simple "push-button", affordable image analysis solution for laboratories that require a variety of imaging capabilities. It incorporates all options offered on the lower level OmniMet® imaging systems and additionally offers the capabilities to execute automated analysis scripts. A series of optional Advanced Analysis, Premium Measurement and Premium Analysis Modules addressing metallographic applications are also available. These analysis routine scripts may be run and edited to suit the specimens being measured. Custom analysis routine scripts for specific solutions may be purchased from Buehler. Quantitative measurements can be enhanced with professional report generation in Microsoft® Word or Excel.
86-1005	87-1002	OmniMet® Enterprise is a powerful analytical tool that incorporates all features offered on the lower OmniMet® imaging systems and additionally, it includes an analysis routine ScriptBuilder that enables the user to write and customize routines for automated analysis of their specific applications. Standard interactive measurement tools and Advanced Analysis Modules are part of the Enterprise offering. Optional Premium Measurement and Premium Analysis Modules may be added. Custom analysis routine scripts for specific solutions may be purchased from Buehler. Quantitative measurements and automated analysis can be enhanced with professional report generation Microsoft® Word or Excel.

* All systems include workstation, keyboard and mouse. Camera, monitors, printers and microscopes sold separately. OmniMet® Viewer cannot capture images or make measurements on images in the database.

** Software only solutions may be purchase without a workstation and minimum computer specifications are available from your Buehler representative.

Buehler Individual Software Modules & Features

Description	Viewer	Basic	Advanced	Express	Enterprise
Database Functionality					
Database Interface & Creation	•	•	•	•	•
Database Administration		•	•	•	•
Image Control					
Load and Save	•	•	•	•	•
Brightness, Auto-White Balance, Rotate, Color Correction, Digital Zoom, Presentation, Calibration & Annotation	•	•	•	•	•
Imaging Modules					
Multi-Focal Images (see details for 86-4130)	◇	◇	◇	◇	◇
Mosaic Multiple Image Stitching Module (see details for 86-4140)	◇	◇	◇	◇	◇
Data Presentation					
Report Data, Report Generator (requires Microsoft® Office programs)	•	•	•	•	•
Results Window with measurements log			•	•	•
Color Threshold (size, intensity), 16 report and Measure Bitplanes				•	•
Hardware Interfacing					
Camera Interface (USB, EEE I394, Capture Cards, DirectShow, Twain, etc.) & Motorized Stage Controller		•	•	•	•
Measurement & Analysis Modules					
Length, Width, Area, Exterior Curve Length	•	•	•	•	•
Circle Radius, Angles, Object Counting		•	•	•	•
Advanced Analysis Modules				◇	•
Premium Measurement Modules			◇	◇	◇
Premium Analysis Modules				◇	◇
Automated Image Analysis					
Running Preprogrammed Analysis Routines				•	•
Custom Routines (86-3010)				◇	◇
ScriptBuilder for Writing Analysis Routines					•

• Included with package

◇ Optional module (purchased separately)

Optional Modules

Imaging Modules

86-4130 OmniMet® Multi-Focal Images Used to create focused images from multiple images of the same specimen when the viewing surface exists in different focal planes. Beneficial for removing edge rounding or viewing rougher surfaces when sharply focused images are required for analysis.

81-4140 OmniMet® Mosaic Multiple Image Stitching Used to stitch multiple images together to create one large, calibrated stitched image. Measurements are possible on the stitched image. Useful for documenting features larger than one field of view. A motorized stage is not required.

Advanced Analysis Modules

86-3050 Manual Interactive Thickness Module Measurements of line lengths with statistics for length and thickness measurements.

86-3100 Grain Size Module Automated grain size measurements in accordance with ASTM E112. Average grain size by intercept methods and grain size distributions using areas are delivered. Additional processing identifies ALA grain size and duplex populations in accordance to ASTM E930 and ASTM E1181 where appropriate. ISO 643 compliant.

86-3300 Coating Layer Thickness Module Measures coating, plating or layer thickness of cross-sectioned samples in compliance with ASTM B487.

86-3500 Particle Sizing Module Detects and measures particles in a field of view providing statistics on quantity and size distribution. Suitable for non-agglomerated particulates, precipitates, and powders.

86-3550 Porosity Assessment Module Provides automated measurements of fine holes or pores in a material.

86-3750 Dendritic Spacing Module Delivers measurements of lengths between dendrite arms in cast aluminum alloys.

Premium Analysis Modules

86-3150 Intercept Grain Size Module Automated grain size determination delivering average grain size per field using straight line and circular intercept methods in accordance with ASTM E112.

To Order, Call Toll-Free 1-800-BUEHLER (1-800-283-4537) or shop online at www.buehler.com

Optional Modules (cont'd)

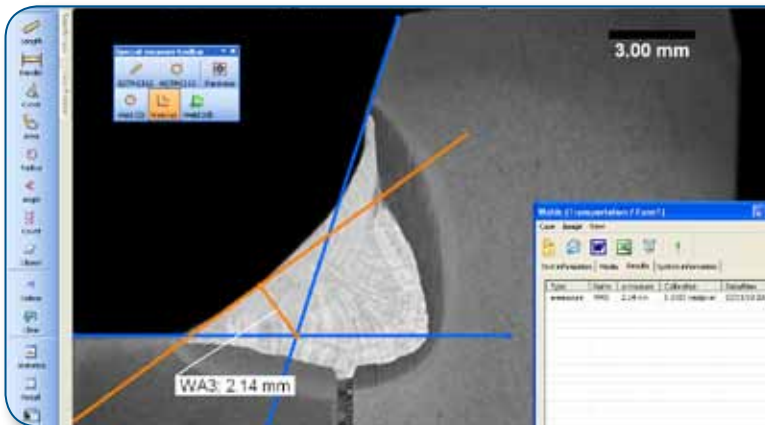
Premium Analysis Modules (cont'd)

- 86-3310 **Surface Roughness Module** Surface roughness measurements in accordance with ASME B46.1-02
- 86-3350 **Decarburization Depth Assessment Module** Determines depth of total or partial decarburization according to the relative amount of free ferrite present according to ASTM E1077.
- 86-3400 **Graphite in Cast Iron Module** Automated analysis of graphite in cast iron in accordance with ASTM A247. Measures size and class count of graphite nodules and area percentages of ferrite graphite and pearlite. For gray iron graphite length is also provided.
- 86-3525 **Cleanliness Assessment Module** Provides cleanliness assessment of particles on filter paper meeting the requirements of ISO 4406.
- 86-3600 **Indentation Hardness Module** Provides the capability to measure and analyze Knoop and Vickers indents in accordance with ASTM E384. Reports can be exported in HK, HV, HRC, and HRB scales with graphical displays of the hardness profile.
- 86-3700 **Banding Assessment Module** Determines the degree of microstructural banding in conformance with ASTM E1268. Delivers quantitative information on the degree of orientation, anisotropy index, and mean feature spacing.

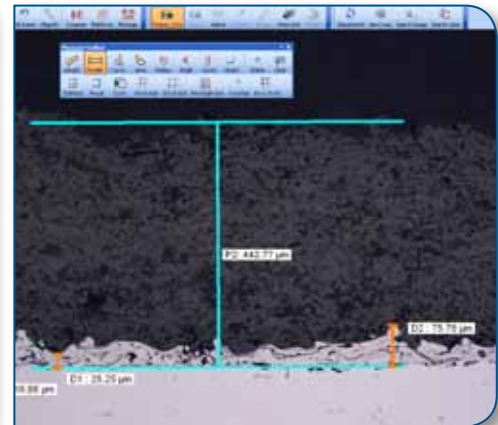
- 86-3850 **Inclusion Rating Module** Determines area percentage, mean free path distances, and average numbers of intercepts for oxide and sulfide stringers in ferrous metals in accordance with ASTM E1245.

Premium Measurement Modules

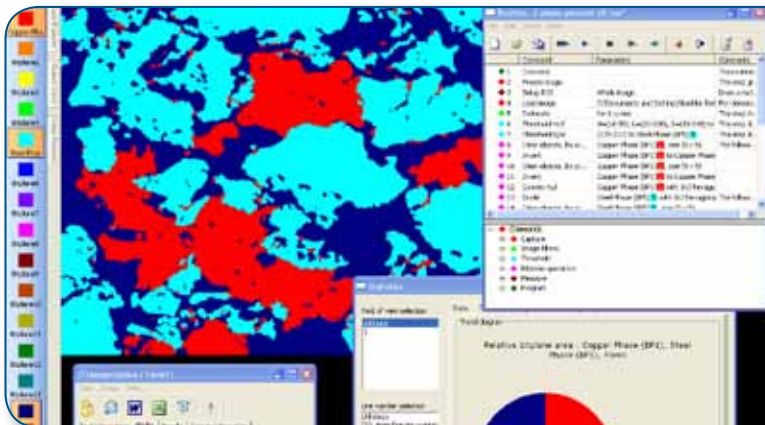
- 86-4110 **OmniMet® Object Measurements Module** 'Single phase' image analysis for measurements of image features and field characteristics: Area Fraction, Area Position, Number of Objects, Perimeter, Compactness, Length, Feret Diameter, Center of Gravity, Inclusion and Exclusion of Objects by Size.
- 86-4115 **OmniMet® Weld Module** Measurement tools for determining weld characteristics. Use a circle radius to determine effective weld depth, angular A-measurements, or full weld outline characterization to determine effective depth, penetration and area.
- 86-4120 **OmniMet® Hardness Module** Measure Vickers and Knoop indentations interactively, quickly, and easily. Allows load force in gf or kgf and delivers accurate HV/HK values along with the diagonal indent dimensions.
- 86-4125 **OmniMet® Grain Size Module** Measure grain size interactively using ASTM-E112 methodology with linear intercept or circle intercept methods.



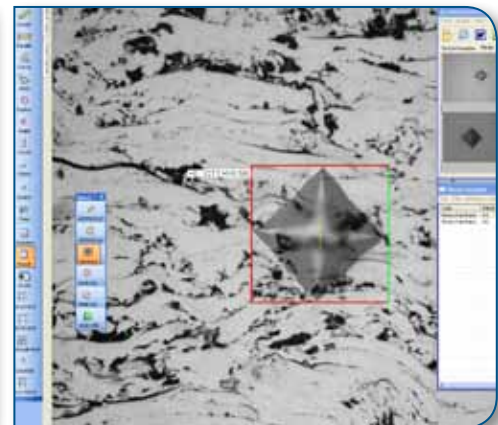
Characterizing a Welded Joint: Welded joints can be assessed using different methods within the OmniMet® Welding Module. In this figure, an "A-measure" of the weld joint is depicted.



Manual Interactive Measurements: Measure image features interactively using point-and-click tools. Images can be captured, measurements made, stored in the database or printed in reports.



Interpreting Phases in Microstructures: Area measurements of different phases can be achieved with ease using OmniMet® analysis methods and routines. Distribution charts and trends with statistics describing the microstructure are immediately accessible.



Interpreting Hardness Indentation: Vickers or Knoop hardness indents can be analyzed at the click of a button. Load forced and measurement scales may be configured by the user.

Accessories

Monitors:

85-0142 Monitor, LCD with 1600 x 1200 display capability

Cameras:

86-0274 uEye 1460-C, 0.5in, CMOS, 11fps, 2048x1024, 3.15MP, QXGA, C-mount digital USB color camera
 86-0270 uEye 1465LE-C, 0.5in, CMOS, 11fps, 2048x1536, 3.3MP, SUXGA, C-mount digital USB color camera, (0.8MP, up to 37fps using 2x2 pixel binning)
 86-10004 uEye 1480-C, 0.5in, CMOS, 5-6fps, 2560x1920, 5MP, QXGA, C-mount digital USB color camera
 86-10005 uEye 1490-C, 0.5in, CMOS, 3fps, 3840x2748, 10MP, QHDTV, C-mount digital USB color camera
 86-0276 uEye 2230-C, 0.33in, CCD, 30fps, 1024x768, 0.79MP, XGA, C-mount digital USB color camera
 86-0278 uEye 2240-C, 0.5in, CCD, 30fps, 1280x1024, 1.31MP, SXGA, C-mount digital USB color camera
 86-0280 uEye 2250-C, 0.55in, CCD, 15fps, 1600x1200, 1.92MP, UXGA, C-mount digital USB color camera

Full Page Data and Image Printers:

85-6020-160 Inkjet printer, color
 85-6030-160 Laser printer, color

Miscellaneous Accessories:

86-5105 OmniMet® I/A Foot Pedal Switch
 86-5120 OmniMet® Objective Bar Coding System
 86-5125 OmniMet® Bar Code Scanner
 1390-3002 Stage Micrometer, mm-Inch NIST Certified

C-Mount Adapters:

0710-2125 C-mount adapter 0.55x, direct mount
 0706-0150 LV-TV ISO adapter tube
 0706-0176 C-mount ISO adapter 1x (*normally requires 0706-0150*)
 0709-7073 C-mount ISO adapter 0.7x (*normally requires 0706-0150*)
 0506-0200 0.32x – 0.8x Zoom C-mount adapter for Zeiss® Axiovert® 25CA and Axiovert® 40 MAT
 0755-0200 C-mount Adapter for ViewMet® Microscope
 0607-0176 C-mount Adapter for Buehler DigiMet® Microscope
 1390-0302 1x C-Mount direct projection adapter for Buehler MicroMet® 5100 series microindentation hardness testers
 1390-0354 Nikon 1X C-Mount adapter and projection lens for Nikon Optiphot® and Epiphot® models
 1390-0359 1x projection lens combination C-Mount adapter for Buehler MicroMet® 2100 series microindentation hardness testers
 1390-0369 Nikon 1X C-Mount adapter and projection lens for Nikon Eclipse® models
 1390-0385 C-Mount adapter for up to 0.66in (16.9mm) cameras on Olympus PMG3
 1390-0390 Olympus U-TV 1x video port for Olympus BX-60

Video Copy Stand & Accessories:

85-4000-160 Standard Illuminated Video Copy Stand
 1390-0325 Zoom 7000 Macro Lens 18mm-108mm
 1390-0329 TV Lens 16mm f 1.6 Iris

Motorized stage and focus packages (compatible only with OmniMet® Capture Basic version 9.0 and higher):

86-10003 Motorized stage and focus drive for Nikon MA200
 86-5405 Motorized stage and focus drive for Nikon Epiphot® 200/300, 100mm x 100mm stage scan size
 86-5415 Motorized stage and focus drive for Olympus PMG3®, 100mm x 100mm stage scan size
 86-5420 Motorized stage and focus drive for Zeiss Axiovert® 40MAT, 100mm x 100mm stage scan size
 86-5435 Motorized stage and focus drive for Nikon Eclipse® ME600 and L150, 100mm x 100mm stage scan size
 86-5440 Motorized stage and focus drive for Olympus BX60®, 100mm x 100mm stage scan size
 86-5450 Motorized stage and focus drive for Buehler DigiMet® 2000 100mm x 100mm stage scan size

Upgrades and Updates*:

Existing customers may update their OmniMet® software to the latest versions. Additionally lower level OmniMet® software packages may be upgraded to higher level packages for increased functionality.

Upgrade OmniMet® to a higher functional level:

Upgrade From / To	Capture Advanced	Express	Enterprise
Capture Basic	86-4002	86-3002	86-1002
Capture Advanced		86-3004	86-1004
Express			86-1003

Update OmniMet® to the latest software release:

86-4204 Update Capture Basic
 86-4204 Update Capture Advanced
 86-4201 Update Express
 86-4203 Update Enterprise

* Customer license number and site ID MUST BE INCLUDED with purchase order. Training is not included but is a strongly recommended.

Training:

86-2000-000† On-site installation by Buehler representative
 86-2000-001† One day on-site training
 86-2000-002† Two day on-site training (*for Enterprise System only*)

† Not available in all worldwide locations

MICROINDENTATION HARDNESS TESTING

Microindentation hardness testing is widely used to study the hardness or changes in hardness of materials. The technique involves driving an indenter into the surface of a material under a known loading force and studying the geometry of the resultant indent. The dimensions of this indent are then used to make a determination of the hardness of the material. Several scales exist for measuring hardness, and in general microindentation hardness is measured in either Vickers or Knoop scales, each with its own specific indenter geometry. Common applications that utilize microindentation hardness include, but are not limited to, studying surface hardening treatments, investigation of homogeneity of a material, characterization of weldments, phase identification, and determination of the hardness of specimens too small for traditional bulk indentation tests.

Did You Know?

Several factors may influence the accuracy and precision of microindentation hardness testing?

Instrument Factors

- Accuracy of the applied load
- Inertia effects, speed of loading
- Lateral movement of the indenter or specimen
- Indentation time
- Indenter shape deviations
- Damage to the indenter
- Inadequate spacing between indents or form edges
- Angle of indentation

Measurement Factors

- Calibration of the measurement system
- Numerical aperture of the objective
- Magnification
- Inadequate image quality
- Uniformity of illumination
- Distortion in optics
- Operator's visual acuity
- Focusing of the image

Material Factors

- Heterogeneity of the specimen
- Strength of crystallographic texture, if present
- Quality of specimen preparation
- Low reflectivity or transparency
- Creep during indentation
- Fracture during indentation
- Oil, grease or dirt on indenter or specimen

OmniMet® MHT packages may be added to automate the microindentation hardness testing (MHT) process. Automation increases productivity, consistency, efficiency, and repeatability by automatic placement of multiple indentations and by using image analysis of the indent for hardness measurement. Different levels of automation are available to suit the specific application that is being solved.



MicroMet® 6000 Series Hardness Tester

- Versatile, affordable and reliable solution for accurate microindentation hardness testing
- Designed so that an experienced hardness testing operator can use immediately without training
- Ideal for quality control and materials research
- Dead weight loads from 0.01kg - 2kg

See all available configurations on the next page.

Features

- Ease of use with hybrid User Interface
- Touch screen for set-up
- Hard-switch controls for daily operation
- All system settings available within 3 menu steps
- USB interfaces for data export and automation
- LED illumination
- Full OmniMet® MHT integration

Applications

- Ferrous, steels, and non-ferrous metals
- IC wafers
- Thin plastics, metal foils & laminates, platings, coatings, surface layers
- Heat treatment effects, case hardening
- Hardness depth of carburized layers
- Ceramics & Carbides
- Hardness resulting from welding or deposition

Specifications

- Eyepiece 10x with digital filar for measuring
- Motorized turret, 3 (1I, 20), 4(1I, 30) or 6(2I, 40) positions
- Long work distance LWD optics minimizes risks
- XY Stage, manual with micrometers or motorized with software control
- Optional camera for software integration
- HK0.01-HK1 (loads in kg, HV2 option also available)
- Optional motorized z-axis controller inside tester
- USB data output
- Power: [110/220VAC, 50/60 Hz]
- Accommodates Samples: 125mm Height, 130mm depth indenter to frame

MicroMet® 6000 Series Hardness Testers

Product	Part-Number	Load	Turret Capacity	Indent. Incl.	Optics Incl.	XY Stage	Automation
MicroMet® 6010	1600-1-6010	0.01-1kg	3 (1I, 2O)	Vickers	10,50 (R)	Analog	Not Possible
MicroMet® 6020	1600-1-6020	0.01-1kg	3 (1I, 2O)	Vickers	10,50 (R)	Analog	Possible
MicroMet® 6020	1600-1-6021	0.01-1kg	3 (1I, 2O)	Knoop	10,50 (R)	Analog	Possible
MicroMet® 6030	1600-1-6030	0.01-1kg	4 (1I, 3O)	Vickers	5,10,50 (R)	Digital	Possible
MicroMet® 6030*	1600-1-6031	0.01-1kg	4 (1I, 3O)	Knoop	5,10,50 (R)	Digital	Possible
MicroMet® 6030*	1600-1-6032	0.01-1kg	4 (1I, 3O)	Vickers	5,10,50 (R)	None	Possible
MicroMet® 6040*	1600-1-6040	0.01-1kg	6 (2I, 4O)	V & K	5,10,50 (L)	Digital	Possible
MicroMet® 6040*	1600-1-6041	0.01-1kg	6 (2I, 4O)	V & K	5,10,50 (L)	None	Possible

* Packages do not have a manual stage

1600-1-6010 **MicroMet® 6010** consists of 1 indenter position, 10x and 50x objectives, auto-turret and LCD touch-screen, eyepiece, Vickers indenter, standardized test-block and analog stage. This unit does not support automation accessories.

1600-1-6020 **MicroMet® 6020** consists of 1 indenter position, 10x and 50x objectives, auto-turret and LCD touch-screen, eyepiece, Vickers indenter, standardized test-block and analog stage. This unit supports automation accessories.

1600-1-6021 **MicroMet® 6020 (K)** consists of 1 indenter position, 10x and 50x objectives, auto-turret and LCD touch-screen, eyepiece, Knoop indenter, standardized test-block and analog stage. This unit supports automation accessories.

1600-1-6030 **MicroMet® 6030** consists of 1 indenter position, 5x, 10x and 50x objectives, auto-turret and LCD touch-screen, eyepiece, Vickers indenter, standardized test-block and digital stage. This unit supports automation accessories.

1600-1-6031 **MicroMet® 6030 (K)** consists of 1 indenter position, 5x, 10 and 50x objectives, auto-turret, and LCD touch-screen, eyepiece, Knoop indenter, standardized test-block and digital stage. This unit supports automation accessories.

1600-1-6032 **MicroMet® 6030 (NS)** consists of 1 indenter position, 5x, 10x and 50x objectives, auto-turret and LCD touch-screen. Accessories included are eyepiece, Vickers indenter, standardized test-block. Manual stage is not included with this unit. This unit supports automation accessories.

1600-1-6040 **MicroMet® 6040** consists of 2 indenter positions, 5x, 10, and 50x LWD objectives, auto-turret and LCD touch-screen. Accessories included are eyepiece, Vickers and Knoop indenters, standardized test-block and digital stage. This unit supports automation accessories.

1600-1-6041 **MicroMet® 6040 (NS)** consists of 2 indenter positions, 5x, 10x and 50x LWD objectives, auto-turret and LCD touch-screen. Accessories included are eyepiece, Vickers and Knoop indenters and standardized test-block. Manual stage is not included with this unit. This unit supports automation accessories.

Accessories

Indenters for 6000 Series Testers:

- 1600-1-0001 Vickers indenter 136°, includes ASTM & ISO certificate (Vickers A)
- 1600-1-0002 Knoop indenter 172°, includes ASTM & ISO certificate (Knoop A)
- 1600-1-0003 Vickers 136°, includes DKD certificate according to ISO standard (HV0.2-HV5) (Vickers B)
- 1600-1-0004 Vickers 136°, includes DKD certificate according to ISO standard (HV0.01-HV0.2) (Vickers C)
- 1600-1-0005 Knoop 172°, includes DKD certificate according to ISO standard (Knoop B)

Manual Stages:

- 1600-1-0006 XY-stage with analog metric micrometers
- 1600-1-0007 XY-stage with digital micrometers

Objectives - Individual:

- 1600-1-0008 5x Long Working Distance objective
- 1600-1-0009 10x Long Working Distance objective
- 1600-1-0010 20x Long Working Distance objective
- 1600-1-0011 40x Long Working Distance objective
- 1600-1-0012 50x Long Working Distance objective
- 1600-1-0013 100x Long Working Distance objective

Replacement Bulbs

- 0718-0116 12V/50W bulb for MicroMet® 5100 Series
- 1600-1350 MicroMet® I Bulb, Indicator Lights
- 1600-1351 MicroMet® I Bulb, Stage Illuminator
- 1600-1353 6V/10W bulb for MicroMet® I, Microscope Illumination
- 1600-2352 6V/18W bulb for MicroMet® II, I, 3, 4 & 2001
- 1600-2353 4.5V/17W Fiber Optic Illuminator for MicroMet® 2003
- 1600-2354 4.5V/17W Alpha for MicroMet® 2000
- 1600-2355 12V/18W bulb for MicroMet® 2100 Series
- 1700-1051 100V/5W Stage Illuminator Bulb for Rockwell Test

MicroMet® 6000 Accessories:

- 1600-1-0017 Extended weight option for 2kg load for 6000 series hardness tester
- 1600-1-0029 Digital eyepiece 10x for MicroMet® 6000 Series

Indenters for Legacy Testers:

- 1600-3200 Vickers for MicroMet® 5100 Series Testers
- 1600-3201 Knoop for MicroMet® 5100 Series Testers
- 1600-3202 Light-load Vickers for MicroMet® 5114 & 5124
- 1600-3203 Light-load Knoop for MicroMet® 5114 & 5124
- 1600-1159 Vickers for IndentaMet 1104, 1105 & 1106
- 1600-1160 Knoop for IndentaMet 1104, 1105 & 1106

OMNIMET® MHT AUTOMATION PACKAGES FOR HARDNESS TESTERS



OmniMet® MHT Fully Automated Microindentation Hardness Systems

- Automated microindentation system solutions available with different levels of automation
 - MHT-F for fully automated testing
 - MHT-S for semi-automated testing (*requires manual focusing*)
 - MHT-M for manual stage testing
- MicroMet® 6020, 6030 and 6040 are compatible with OmniMet® MHT-F, MHT-S and MHT-M
- Systems include all hardware and software required for automating a MicroMet® 6000 Series Tester. Software only includes software, license and security devices only

Automation System Kits

Part Number	Configuration
88-1-0000	Consists of the OmniMet® MHT-F fully automated software, workstation (monitor not included), camera adapter, camera, cables, power distribution, motorized XY stage and Z-Axis.
88-1-0002	Consists of the OmniMet® MHT-S semi-automated software, workstation (monitor not included), camera adapter, camera, cables, power distribution and motorized XY stage.
88-1-0004	Consists of the OmniMet MHT-M software, workstation, stage micrometer, camera adapter, camera, cables.

Automation Software Kits

Part Number	Configuration
88-1-0001	Includes OmniMet® MHT-F software, license and security device only.
88-1-0003	Includes OmniMet® MHT-S software, license and security device only.
88-1-0005	Includes OmniMet® MHT-M software, license and security device only.

For MicroMet® 6000 Series Testers

OmniMet® MHT-M requires 1600-1-0030

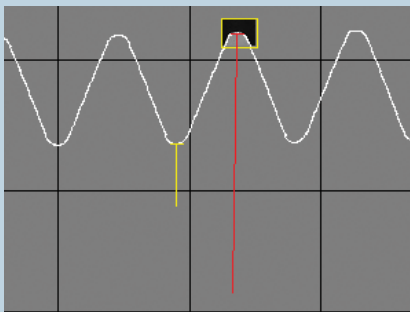
OmniMet® MHT-S requires 1600-1-0030, 1600-1-0032 and 1600-1-0033

OmniMet® MHT-F requires 1600-1-0030, 1600-1-0032, 1600-1-0033, 1600-1-0034

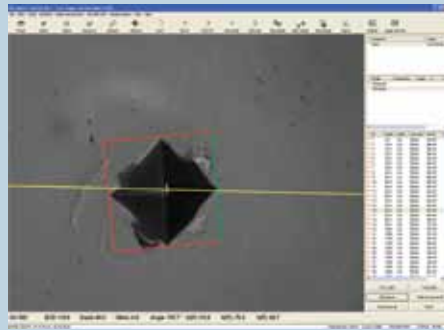
A complete automated testing solution consists of a MicroMet® 6000 Series Tester, Automation Kit, and any additional Hardness Testing accessories required.



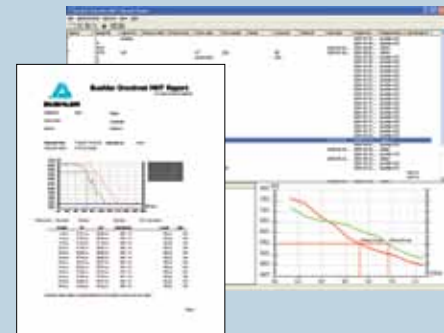
Image of a gear mechanism as viewed through the hardness tester. Tracing algorithms in OmniMet® MHT allow the operator to trace a line around the surface of the specimen to enable precise positioning of measurement locations or test profiles.



Once the outline of a specimen is traced it can be viewed in the Stage Overview window. This offers precision control of stage positioning to increase efficiency and productivity when identifying suitable measurement locations. The yellow and red lines in the window represent locations where multi-indent hardness profiles will be measured.



OmniMet® MHT's indent measurement algorithms detect indents and automatically measure the Vickers or Knoop hardness of the specimen. Additionally, conversions into Rockwell B or C scales is also supported. Measurement of a Vickers indent is depicted above.



OmniMet® MHT has an integrated database that archives all measurements. Data may be retrieved at any time, reviewed, or sent to automatically generated reports as shown above. Report templates are completely customizable by the operator to suit the measurements being undertaken.

Automation Accessories

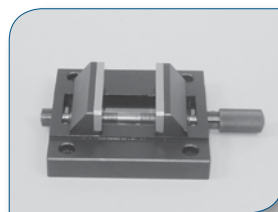
- 1600-1-0030 Camera Adapter
- 1600-1-0031 Automation RS232-DB9 Female Cable
- 1600-1-0032 Automation Power Distribution Kit
- 1600-1-0033 Motorized XY Stage Kit - 100 x 100mm travel
- 1600-1-0034 Z-axis Installation Kit

- 86-1-0006 Digital Camers, UI 1545LE-M-HQIR, 1.3MP
- 86-1-0007 Workstation with MS Windows® 7 and Office 2010
(Does not include monitor. See pg 59 for options.)

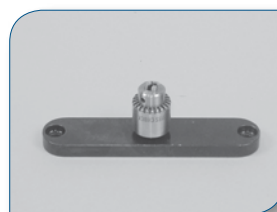
Vises for MicroMet® 6000 Series Hardness Testers



1600-2251 Clamping device for thin specimens



1600-2253 Universal Vise, 2in [50mm]



1600-2257 Clamping Device for fine vertical specimens



1600-2396 Self Leveling Vise



1600-1-0020 Universal Clamping & Leveling Device



1600-1-0021 Vertical Clamp for Microhardness Test



1600-1-0022 Wire Testing Fixture for Microhardness Test



1600-1-0023 Holding & Polishing Vise, Microhardness Test

Vises for MicroMet® 6000 Series Hardness Testers (cont'd)



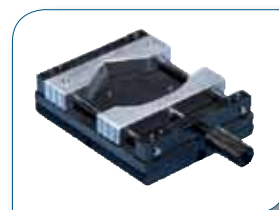
1600-1-0024 Thin metal Clamp, Microhardness Test



1600-1-0025 "V" Testing Cradle, Microhardness Test



1600-1-0026 Special "V" Testing Cradle, Microhardness Test,



1600-1-0027 Turntable Vise, Microhardness Test



1600-1-0028 Rotary Table, Microhardness Test

Additional Vises:

- 1600-2410 Standard Self Leveling Vise with 1in, 1.25in, 1.5in and 2in rings
- 1600-2411 Metric Self Leveling Vise with 25mm, 30mm, 40mm and 50mm rings
- 1600-1-0018 Precision vice for specimens up to 3.93 x 3.93in [100 x 100mm]
- 1600-1-0019 Axel chuck

ROCKWELL & MACRO VICKERS HARDNESS TESTERS



Rockwell, Macro Vickers, & Semi-Macro Vickers

A range of Wilson Hardness Rockwell, Macro Vickers, & Semi-Macro Vickers hardness testers are offered by Buehler. Please contact your local Buehler representative for further information

A Wilson Rockwell 574 deadweight tester is shown in the image to the left

Rockwell Penetrators & Test Balls:

1700-1020WC	0.0625in WC Penetrator with WC Ball
1700-1021WC	0.125in WC Penetrator with WC Ball
1700-1022WC	0.25in WC Penetrator with WC Ball
1700-1023WC	0.5in WC Penetrator with WC Ball
1700-1024WC	0.75in WC Penetrator with WC Ball

1700-1020	0.0625in Steel Ball Penetrator with 50 Steel Balls
1700-1021	0.125in Steel Ball Penetrator with 8 Steel Balls
1700-1022	0.25in Steel Ball Penetrator with 4 Steel Balls
1700-1023	0.5in Steel Ball Penetrator with 4 Steel Balls
1700-1024	0.75in Steel Ball Penetrator with 4 Steel Balls

Hardness Tester Accessories for Legacy Rockwell Hardness Testers (MacroMet 5100 Series):

1800-1005 Rockwell Superficial Diamond Indenter for N Scale on MacroMet 5100 Series	1700-1044 Anvil, Round Table, 7.9in [200mm] diameter
1800-1007 Rockwell Diamond Indenter for A Scale on MacroMet 5100 Series	1700-1046 Anvil, Diamond Spot
1800-1009 Rockwell Diamond Indenter for C Scale on MacroMet 5100 Series	1700-1047 Anvil, 0.19in [5mm] Taper Spot
1800-1010 Rockwell Diamond Indenter for C, D, A, and N Scales on MacroMet 5100 Series	1700-1048 Anvil, V, 3.5in [90mm] diameter
1800-1015 Rockwell Diamond Indenter for C, D, and A Scales on MacroMet 5100 Series	1700-1091 Anvil, Extension Rest
1700-1043 Anvil, Small V-Shape, 0.39in [10mm] diameter	1700-1094 Jack Rest for 1800-5101RA and 1800-5101TA Testers
	1700-1095 Jominy Test Fixture
	1600-6502 Dot matrix printer for letter size plain paper or 10inroll paper
	1600-6503 Kit for connection of 5100 series digital hardness tester to a PC for data download

Macro & Semi-Macro Indenters for Legacy 5100 Series Hardness Testers:

1900-3200 Vickers Indenter for 5100 Series Marco & Semi-Macro

1900-3201 Knoop Indenter for 5100 Series Marco & Semi-Macro

STANDARDIZED TEST BLOCKS FOR HARDNESS TESTING

High quality standardized test blocks from Buehler are calibrated in compliance with ASTM E384 or ASTM E18 where appropriate. Rockwell C standardized test blocks are directly NIST traceable. All calibrations and certifications are performed in an ISO/IEC 17025 compliant facility. For specific standardized test blocks not listed below, please contact your local Buehler representative.

Vickers Microindentation							
100HV0.1 1610-0100	200HV0.1 1610-0200	300HV0.5 1610-0300	400HV0.5 1610-0400	500HV0.5 1610-0500	600HV0.5 1610-0600	700HV0.5 1610-0700	800HV0.5 1610-0800
Knoop Microindentation							
100HK0.1 1611-0100	200HK0.1 1611-0200	300HK0.5 1611-0300	400HK0.5 1611-0400	500HK0.5 1611-0500	600HK0.5 1611-0600	700HK0.5 1611-0700	800HK0.5 1611-0800
Vickers/Knoop Dual Microindentation							
100HK/HV0.1 1612-0100	200HK/HV0.1 1612-0200	300HK/HV0.5 1612-0300	400HK/HV0.5 1612-0400	500HK/HV0.5 1612-0500	600HK/HV0.5 1612-0600	700HK/HV0.5 1612-0700	800HK/HV0.5 1612-0800
Vickers Macro and Semi-macro [□]							
100HV 1910-0100	200HV 1910-0200	300HV 1910-0300	400HV 1910-0400	500HV 1910-0500	600HV 1910-0600		
Rockwell C							
63HRC 1710-0101NST	60HRC 1710-0100NST	55HRC 1710-0102NST	50HRC 1710-0103NST	45HRC 1710-0105NST	35HRC 1710-0106NST	30HRC 1710-0107NST	25HRC 1710-0108NST
Rockwell B •						Rockwell F	
95HRBW 1710-0109	85HRBW 1710-0110	70HRBW 1710-0111	60HRBW 1710-0112	50HRBW 1710-0113	40HRBW 1710-0114	60HRF 1710-0137	80HRF 1710-0140
Rockwell A				Superficial Rockwell 15-N			
85HRA 1710-0115	83HRA 1710-0116	73HRA 1710-0117	60HRA 1710-0118	93HR15N 1710-0119	91HR15N 1710-0120	83HR15N 1710-0121	71HR15N 1710-0122
Superficial Rockwell 15-T •					Superficial Rockwell 30-N		
91HR15TW 1710-0126	88HR15TW 1710-0127	84HR15TW 1710-0129	80HR15TW 1710-0130	73HR15TW 1710-0132	83HR30N 1710-0123	80HR30N 1710-0124	45HR30N 1710-0125
Superficial Rockwell 30-T •							
79HR30TW 1710-0133	73HR30TW 1710-0134	65HR30TW 1710-0136	60HR30TW 1710-0137	50HR30TW 1710-0138	43HR30TW 1710-0139		

□ Specify load force for certification

• Certified using a Tungsten Carbide ball indenter

PETROGRAPHY



Petrography At A Glance:	
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PETROGRAPHY

Petrographic microscopy has played an essential role in geological and mineralogical research ever since the invention of the optical microscope. Since its invention, SEM, EDS, microprobe and x-ray diffraction microanalysis investigations have quickly flourished and are being used to identify minerals and quantify a wide variety of their characteristics. These instruments, now routinely used on minerals, clinkers and refractory brick produce high quality polished specimens.

Buehler offers a complete solution for preparing ores and minerals either as a thin section, a bulk mount or as a powder such as mineral tailings. Each preparation method is dependent on the type of material, examination method and starts with proper sample sectioning and mounting.



◀ Lapro® Slab Saw, 24in [610mm]

- Screw drive system pushes rock vise to cut specimens automatically
- Three preset feed rates control forward motion of rock vise.
- Large rock vise holds up to 17in [431mm] specimen

Available in the following 1 phase voltage & frequency:

10-10004-160 [115VAC, 60Hz]

10-10004-250 [220-240VAC, 50Hz]

Consumables for Lapro® Slab Saw

Segmented Rim Diamond Blade

11-10015 – 18 x 0.064 x 1in [457 x 2 x 25mm]

11-10016 – 24 x 0.1 x 1in [610 x 3 x 25mm]



Powerfeed Trim Saw, 10in [254mm] ▶

- Powerfeed mode features a clutch activated feed system that pushes the rock vise to cut specimens automatically
- Adjustable rock vise easily tilts 90° for manual mode
- Large cutting table provides ample room to position specimen

Available in the following 1 phase voltage/frequency:

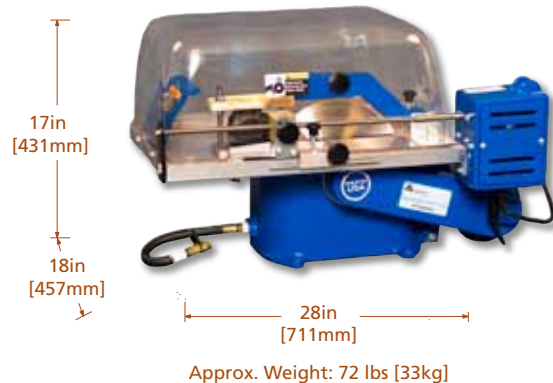
10-10003-160 [115VAC, 60Hz]

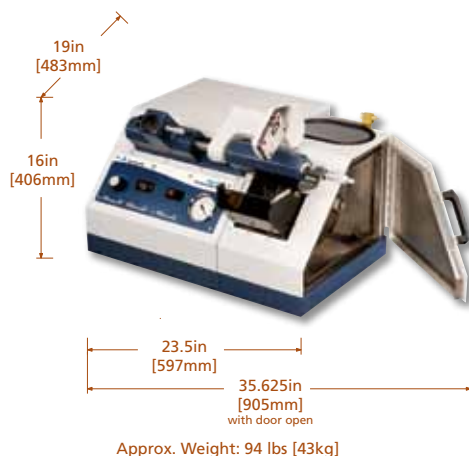
10-10003-250 [220VAC, 50Hz]

Consumables for Powerfeed Trim Saw

11-10051 Continuous Rim Diamond Blade, 10 x 0.4 x 0.625in [254 x 10 x 16mm]

40-4510 Dressing Stick, 0.5 x 0.5 x 4in [13 x 13 x 102mm]





◀ PetroThin™ Thin Sectioning System

- Resections and grinds material within $\pm 5 \mu\text{m}$
- Single spindle design ensures parallelism of sample edges by eliminating the need to remove glass slide between steps

Available in the following 1 phase voltage & frequency:

38-1450-160 [115VAC, 60Hz]

38-1450-250 [220VAC, 50Hz]

Consumables for PetroThin™

11-4278 Continuous Rim Diamond Blade, 8 x 0.045 x 1in [203 x 1 x 25mm]

11-4280 Continuous Rim Cubic Boron Nitride Blade, 8 x 0.055 x 1in [203 x 1 x 25mm] (recommended for cutting ferrous metals)

40-4508 Diamond Cup Grinding Wheel, 8 x 0.25 x 1in [203 x 6 x 25mm]

40-4512 Cubic Boron Nitride Cup Grinding Wheel, 8 x 0.055 x 1in [203 x 1 x 25mm] (recommended for grinding ferrous metals)

40-4516 Dressing Stick, 0.5 x 0.5 x 4in [13 x 13 x 102mm]

PetroBond™ Thin Section Bonding Fixture ▶

- Controls adhesive thickness by evenly distributing adhesive between specimen and glass slide during curing
- Holds up to 12 glass slides

38-1490 PetroBond™ Thin Section Bonding Fixture



◀ PetroVue™ Thin Section Viewer

- Polarized light allows monitoring of thickness & uniformness of the specimen

Available in the following 1 phase voltage & frequency:

30-8050-115 [115VAC, 60Hz]

30-8050-250 [220VAC, 50/60Hz]

Petrographic Accessories



Petrographic glass slide hand-held holder for 27 x 46mm glass slides

30-8005



Histologic Precision Grinding Fixture

(may be used for a variety of applications)

60-8100



60-9010 Petro Histologic Single Force Specimen Holder for 60-9050 PetroThin™ Section Glass Slide Holders *(for AutoMet® 250, does not include drive adapter)*



60-9060 Petro Histologic Single Force Specimen Holder for 60-9051 & 60-9052 PetroThin™ Section Glass Slide Holders *(for AutoMet® 300, does not include drive adapter)*



PetroThin™ Section Glass Slide Holders

60-9050 – 28 x 48mm slides *(for use with 60-9010)*

60-9051 – 28 x 48mm slides *(for use with 60-9060)*

60-9052 – 28 x 76mm slides *(for use with 60-9060)*



Glass Slide Chuck

11-1188 27 x 46mm



Target Holders

- For precise material removal to specified depths
- Includes one ceramic and one steel stop ring *(see page 30 for a complete listing)*



Specimen Holder for Target Holders

(for use with AutoMet® 300 Power Head)

60-9049

Glass Slides

40-8000-001 Glass Slides, 1.06 x 1.81in [27 x 46mm], 1 gross

40-8000-010 Glass Slides, 1.06 x 1.81in [27 x 46mm], 10 gross

40-8002-010 Glass Slides, Micro, 3 x 1in [76 x 25mm], 10 gross

40-8008-010 Glass Slide Cover, 0.94 x 1.54in [24 x 39mm], 10 gross

40-8011-100 Glass Slides, 1in [25mm] diameter, 100 slides

40-8011-000 Glass Slides, 1in [25mm] diameter, 1000 slides

PetroCut® Vise Table & Rock Clamp Kit:



10-10106-000 PetroCut® Vise Table and Rock Clamp Kit (includes PetroCut® Vise Table, and two Rock Clamps, suitable for incorporation in AbrasiMet® 250)

10-10106-001 Rock Clamp Kit (includes two Rock Clamps and posts suitable for mounting samples on PetroCut® Vise Table)

Adding a PetroCut® Vise Table to an AbrasiMet® 250 converts the general purpose cutter into a highly competent Petrographic or Geological cutting tool.

ELECTRONICS



Electronics At A Glance:	
PC-Met® & PWB Met™ Family.....	71
MPC 2000 System	73

ELECTRONICS

The term “microelectronic materials” encompasses an extremely wide range of materials. This is due to the fact that most electronic devices are composites, containing any number of individual components. The preparation method is often focused on the specific materials at the interface of interest. Controlled removal is essential and can be provided with a variety of handheld or automated fixtures.

Buehler offers a range of tools for delidding packages, controlled cross sectioning of integrated circuits, and high volume preparation of printed wiring boards.



PC-Met® Precision High Volume Printed Wiring Board Accessory

- High volume printed wiring board preparation system
- Prepares up to 36 coupons simultaneously
- Prepares reproducible cross-sections of through-holes down to 0.08in [200µm]
- For use with EcoMet® 300 and AutoMet® 250 Power Head

60-5090 Includes indexing pins, carbide and diamond stops, coupon loader, dial indicator, gauge blocks and wooden case

Accessories for PC-Met®

- 60-5053 Coupon Pins 0.0625in [27mm] long (qty 1000)
60-5091 Set of 3 Tungsten Carbide Stops, Short and Fine
(*brass holders not included*)
60-5092 Set of 3 Diamond Stops, Long and Course
(*brass holders not included*)
60-5095 PC-Met® Precision Holder with Tungsten Carbide and Diamond Stops
60-5064 PC Upper Mold Plate Assembly
60-5065 PC Lower Mold Plate Assembly

- 60-5067 Cup, Extended Upper Mold Plate, 0.8in (qty 6)
60-5069 Alignment Hole Drill Fixture for 0.75in [19mm] and 1in [25mm] wide coupons (*fits PC-Met® 60-5090 and PC-Met® JR*)
60-9000 Central Force Drive Adapter
20-8205-010 ^{SO} Angle Polishing Inserts, 1.25in Diameter

SO - Special Order. Items may have long lead times and minimum orders.

PWB Met™ Small Hole Accessory ▶

- High volume printed wiring board preparation system
- Prepares up to 18 coupons simultaneously
- Prepares reproducible cross-sections of through-holes down to 0.04in [100µm]
- For use with EcoMet® 300 and AutoMet® 250 Power Head

60-5175 Includes indexing pins, polycrystalline diamond stops, coupon loader, dial indicator calibration gauge, silicon mold release spray, gauge blocks, sample extractor and wooden case

Accessories for PWB Met™

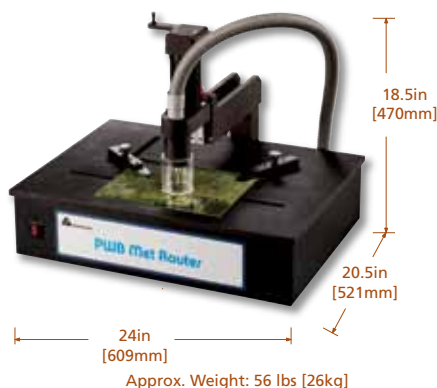
- 60-5093 Polycrystalline Diamond Long Stop (*assembly*)
60-5094 Polycrystalline Diamond Short Stop (*assembly*)
60-5097 PWB Met™ Sample Holder with stops (*3 slots*)
60-5185 PWB Met™ Sample Extractor (*Polished Samples*)
60-5186 PWB Met™ Short Pin Loader 0.375in [10mm] long
60-5084 PWB Met™ Pins 0.375in [10mm] long (qty 3000)

- 60-5098 PWB Met™ Sample Holder with blanks
60-9000 Central Force Drive Adapter



Accessories for PC-Met® & PWB Met™

- 60-5061 Cup, Upper Mold Plate (6 pieces)
- 60-5062 Pad, Lower Mold Plate (6 pieces)
- 60-5091 Set of 3 Tungsten Carbide Stops, Short and Fine (brass holders not included)
- 60-9000 Central Force Drive Adapter for AutoMet® 250/300



◀ PWB Met™ Router

- Cuts standard coupons from printed wiring boards
- Self-contained vacuum system automatically collects cutting debris
- Produces coupons 0.740 x 0.490in [18.8 x 12.5mm]

Available in the following 1 phase voltage & frequency:

- 60-5180-115 [115VAC, 60Hz]
- 60-5180-220 [220-240VAC, 50Hz]

Accessories for PWB Met™ Router

- 60-5181 Carbide Router Bits, 0.125in [3mm] (qty 3)
- 60-5182 Coupons with 0.004-0.006in [100-150µm] diameter through-holes (qty 10)
- 60-5183 Vacuum Bag Refills (qty 5)

PWB Met™ Digital Alignment Drill with Monitor ▶

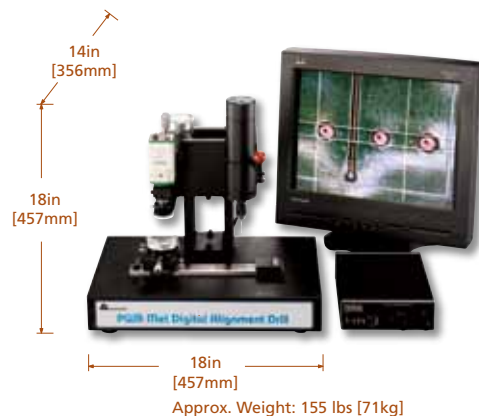
- Positions and drills alignment holes in coupons
- Includes camera with 10x magnification and 0.25in [6.3mm] field of view

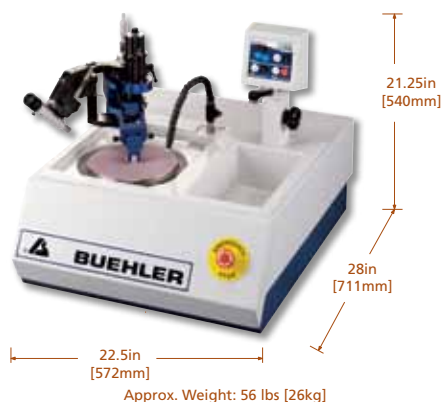
Available in the following 1 phase voltage & frequency:

- 60-5215 [85-264VAC, 50/60Hz]
- 60-5216 [85-264VAC, 50/60Hz] (without color monitor)

Accessories for PWB Met™ Digital Alignment Drill

- 85-0142 22in LCD Flat Screen XGA Monitor
- 60-5218 PWB Met™ Carbide Drill Bit, 0.093in [2mm] diameter (qty 3)
- 60-5219 PWB Met™ Carbide Scribe
- 60-5220 Coupon Carrier, 0.03in depth
- 60-5221 Coupon Carrier, 0.28in depth





◀ MPC™ 2000 Micro-Precise Integrated Cross-Sectioning System

- Precision grinder-polisher for microelectronic specimens
- Cross-section to within 1µm of target feature

Available in the following 1 phase voltage & frequency:

49-3100 [85-264VAC, 50/60Hz]

Accessories for MPC™ 2000

- 40-4064 Precision Lapped Stainless Steel Platen, 8in [203mm]
- 60-5152 Tilt Alignment Microscope Assembly, 200x
- 60-5153 Remote Digital Display

MicroPrecise Tri-point Polisher Kit ▶

- Enables accurate cross-sectioning and delayering during manual preparation
- Mounting bracket is easily removed for examination

- 60-5301 Includes 2 stainless steel micrometers (ratcheting) and rotating feet



Accessories for MPC 2000 & MicroPrecise Tri-point Polisher Kit

- | | |
|--|--|
| 40-8150 Crystalbond Mounting Wax, 7 x 0.875in [178 x 22mm] stick | 60-5312 Class Inserts for Wedge Polishing (qty 2) |
| 40-8151 TEM Epoxy, 2oz [59mℓ] kit | 60-5313 SEM Cross-Sectioning Paddle, 0.125in [3mm] Arbor |
| 60-5103 Precision 8in [203mm] Plain Glass Wheel | 60-5314 Polymer Inserts for Wedge Polishing (2 per package) |
| 60-5104 Precision 8in [203mm] Frosted Glass Wheel | 60-5315 Flat Specimen Holder for planar polishing, 0.5 x 0.5in [13 x 13mm] |
| 60-5116 Precision 12in [305mm] Plain Glass Wheel | |
| 60-5117 Precision 12in [305mm] Frosted Glass Wheel | 60-6075 Abrasive Film Roller, 4in [100mm] |
| 60-5307 Precision Stainless Steel Locking Micrometer | |
| 60-5311 Polymer Micrometer Feet (qty 2) | |

LAB SOLUTIONS

Selecting the most appropriate combination of equipment for a lab can be a challenge. There are many considerations: throughput, sample size, future growth, variety of parts, and more. Examples of equipment to suit particular lab needs are presented below. These typical set-ups are a good starting point when configuring a lab. There are always exceptions, unique applications and special considerations and for additional information or a consultation, your local Buehler representative can provide assistance.

Low Volume, Small Size Parts

Suitable for labs preparing up to about 5 specimens per day from small scale parts that are up to about 1.5in [38mm] in diameter.

Sectioning



IsoMet® Low Speed Saw

Mounting



Castable Mounting or SimpliMet® 1000

Grinding & Polishing



MiniMet® or MetaServ® 250

Imaging & Measurement



ViewMet™ Inverted Microscope

Low Volume, Medium Size Parts

This combination of equipment will serve labs preparing up to about 10 specimens per day from parts that are up to about 3in [76mm] in diameter.

Sectioning



AbrasiMet® 250

Mounting



Castable Mounting or SimpliMet® 1000

Grinding & Polishing



MetaServ® 250

Imaging & Measurement



Nikon Eclipse MA100 Inverted Microscope with OmniMet® Capture Basic Software

Medium Volume, Small/Medium Size Parts

When preparing up to about 20 specimens per day from parts up to 6in [152mm] in diameter, this combination of equipment will provide good efficiency and performance.

Sectioning



AbrasiMatic® 300

Mounting



Castable Mounting or SimpliMet® 1000

Grinding & Polishing



EcoMet®/AutoMet® 250 with Burst Dispensing System

Imaging & Measurement



Nikon Eclipse MA100 or MA200 Inverted Microscopes with OmniMet® Capture Advanced

Medium Volume, Medium/Large Size Parts

When preparing up to 40 specimens per day from parts up to 6in [152mm] in diameter, this combination of equipment will provide good efficiency and performance.

Sectioning



AbrasiMatic® 300 or
Delta® Family

Mounting



Castable
Mounting or
SimpliMet® 3000

Grinding & Polishing



EcoMet®/AutoMet® 300 with
Burst Dispensing System

Imaging & Measurement



Nikon Eclipse MA200
Inverted Microscope &
MicroMet® 6000 Series
Hardness Tester with
OmniMet® Capture
Advanced

High Volume, Any Size Parts

For labs preparing up to 60 or more specimens per day from any size part, this set up will provide efficient throughput.

Sectioning



AbrasiMatic® 300 or
Delta® Family

Mounting



Castable
Mounting or
SimpliMet® 3000

Grinding & Polishing



EcoMet®/AutoMet® 300 Pro
with Burst Dispensing System

Imaging & Measurement



Nikon Eclipse MA200
Inverted Microscope &
MicroMet® 6000 Series
Hardness Tester with
OmniMet® Capture
Enterprise






Did You Know?

The 80-10001 Cabinet Table will hold one or more of the following pieces of Buehler equipment:

- Abrasive Cutters & Precision Saws: SamplMet® 2, AbrasiMatic® 300, AbrasiMet® 250, IsoMet® series precision saws
- Mounting Equipment: SimpliMet® series mounting systems, Cast N' Vac, Cast N'Vac 1000
- Grinder-Polishers: HandiMet® 2, SurfMet® I, EcoMet®/AutoMet® 250/300, MetaServ® 250 Single & Twin, MiniMet® 1000, VibroMet® 2, ElectroMet® 4, UltraMet® ultrasonic cleaners, Apex® Storage Cabinets, Dessicator Cabinet
- Petrographic Equipment: Powerfeed Trim Saw, PetroThin™
- Electronic Equipment: PWB Met™ Router, PWB Met™ Digital Alignment Drill with Monitor, MPC 2000 System
- Imaging & Measurement: Any microscopes, OmniMet® Image Analysis or MicroMet® 6000 Series hardness testers

SUMMET® BUNDLES

SumMet® bundles offer a convenient way to select or test specimen preparation methods. They are equally useful whether faced with a new material or simply to test a Buehler SumMet method on a well understood system. These bundles consist of all supplies required to prepare about 100 specimens. These bundles provide supplies to prepare materials using preparation methods as detailed in Buehlers SumMet guide which is available at the e-club on www.buehler.com.

Recommended Use	Consists of:	8in [203mm]	10in [254mm]	12in [305mm]
Fe & Ni 	CarbiMet® 2 (320/P400) Abrasive Discs, UltraPad™, TriDent™ and MicoCloth® Polishing Cloths, 9µm and 3µm MetaDi® Supreme Diamond Suspension, MasterPrep® Final Polishing Suspension	42-10017	42-10018	42-10019
Al & Cu 	CarbiMet® 2 (320/P400) Abrasive Discs, UltraPad™, Trident™, TexMet® C and MasterTex® Polishing Cloths, 9µm, 3µm, 1µm MetaDi® Ultra Diamond Paste, MetaDi® Fluid and MasterMet® Final Polishing Suspension	42-10020	42-10021	42-10022
Ti 	CarbiMet® 2 (240/P280) Abrasive Discs, UltraPol™ and ChemoMet® Polishing Cloths, 9µm MetaDi® Supreme Diamond Suspension, and MasterMet® Final Polishing Suspension	42-10023	42-10024	42-10025
Electronic Device & Polymer 	CarbiMet® 2 (240/P280) and (600/P1200) Abrasive Discs, TexMet® C and MicroCloth® Polishing Cloths, 3µm MetaDi® Ultra Diamond Paste, MetaDi® Fluid and MasterPrep® Final Polishing Suspension	42-10026	42-10027	42-10028
Ceramic & Refractory 	Apex® DGD Red Disc, UltraPol™, TexMet® C and ChemoMet® Polishing Cloths, 9µm and 3µm MetaDi® Diamond Supreme and MasterMet® Final Polishing Suspension	42-10029	42-10030	42-10031

SHELF LIFE FOR BUEHLER'S CONSUMABLE PRODUCTS

Shelf life is defined as the length of time listed products are considered best suitable for performance. This does not mean that a product will not perform beyond this time period, nor does it mean that the product will be usable continuously for this time frame. The shelf life is independent of Buehler's warranty* period as defined below. The shelf life depends on proper storage - i.e. Abrasive Cut-Off Wheels must be stored lying flat and in a dry location. Stored standing up or in a humid area breaks down the wheel composition.

Product Number	Product Name	Shelf Life**
All	Abrasive Cut Off Wheels	2 years
All	Abrasive Paper with PSA	1 year
All	Abrasive Paper without PSA	2 years
All	Alumina Suspension	1 year
All	Aluminum Oxide Powder	2 years
All	Apex® Bimetallic Plate	1 year
All	Apex® CGD and DGD	1 year
All	Apex™ Hercules Grinding Disc	1 year
All	Apex® Magnetic Disc	1 year
60-3250	AutoMet® Lapping Oil	2 years
10-4330	Cool 2 Fluid	2 years
20-3340	Diallyl Phthalate	2 years
20-8192	EdgeMet Kit®	6 months
All	Epoxy Systems	1 year
All	EpoMet® F & G Molding Compound	1 year
All	FibrMet® Discs PSA	2 years
69-3080	FibrMet® Polishing Extender	18 months
11-1193	IsoCut® Cutting Fluid	1 year
All	MasterMet® 2	3 years
40-6370	MasterMet®	1 year
All	MasterPolish®	1 year
All	MasterPrep	2 years
20-8190	MetCoat™ Protective Lacquer Coating	1 year
All	MetGrip® Liners	1 year
All	MetaDi® Suspensions & Pastes	2 years
All	PhenoCure® Powder & PreMolds	2 years
All	Pigments for Castable Mounts	1 year
All	Polishing Cloths with PSA	1 year
All	ReVel Discs	1 year
20-3048	Powdered Mold Release	2 years
20-3385	ProbeMet®	1 year
20-8185	Release Agent	1 year
All	SamplKwick™ Powder & Liquid	1 year
All	Silicon Carbide Powder	2 years
20-3046	Silicone Mold Release	1 year
All	UltraPrep™ Diamond Lapping Film	1 year
75-6000	UltraMet® 2 Sonic Cleaning Solution	2 years
All	VariDur®, VariDur® 3000, VariKleer™ System	1 year
All	Wafering Blades	1 year

*Warranty depends on Quality Assurance/Lab evaluation on an individual basis
See Terms & Conditions for warranty information

**Shelf life starts when product is shipped

EDUCATION SCHEDULE

More thorough testing of increasingly complex materials, to include microstructural analysis, is being driven by industry and consumer requirements for improved product quality and reliability. Existing methods for specimen preparation can be insufficient to produce excellent results in higher throughput environments. The desire for speed, consistency and quality have created demand for improved preparation and analysis techniques. Besides offering solutions for this purpose, the training courses offered by Buehler enable individuals to obtain or improve the necessary preparation skills.

Buehler established the Institute for Microstructural Analysis in 1989, offering both general introductory courses and specialized courses focused on the needs of specific industries or applications. All courses include supervised, hands-on activities in the laboratory with classroom instruction to help students understand the principles. Courses are offered at the Buehler headquarters in Lake Bluff, IL, USA, Buehler GmbH in Düsseldorf, Germany, the University of Warwick and other affiliated institutions.

Institute for Microstructural Analysis Courses, Buehler (USA)

METALLOGRAPHIC TECHNIQUES (3 DAYS)

COURSE CODE: ED-10078

This three day course is designed for those without formal training in specimen preparation, as well as for the experienced metallographer who wants to be updated on the latest techniques. The principles and practices of metallography are taught including the fundamentals of sectioning, mounting, grinding and polishing. Sessions on light optical microscopy, etching, hardness testing, microstructural interpretation and analysis are included. The student will learn to apply procedures to become more effective in preparing various types of specimens. Students are encouraged to bring their own specimens.

Location: Lake Bluff, IL
April 3-5
August 1-3
November 29 - December 1

PRACTICAL APPLICATIONS OF AUTOMATED IMAGE ANALYSIS (2 DAYS)

COURSE CODE: 86-2000-002

This is a two day course teaching the practical applications of image analysis. Imaging operations such as image clarifications, thresholding (B/W & color), binary image modifications and measurements will be discussed. The primary emphasis is image analysis

routine development. Analysis tasks such as the determination of grain size, coating thickness and many others will be illustrated using the OmniMet® Modular Digital Imaging System. An understanding of microstructural evaluation and specimen preparation is required. Students are encouraged to bring their own specimens for analysis.

Location: Lake Bluff, IL
March 20-21
September 25-26

FEES

2-day course: \$1,000

3-day course: \$1,500

4-day course: \$2,000

REGISTRATION INSTRUCTIONS

Most classes are limited to 8 participants. Registration is complete when payment is received.

CANCELLATION POLICY

- Two or more weeks prior to course - Full Refund
- One to two weeks prior to course - 50% refund
- Less than one week prior to course - No Refund

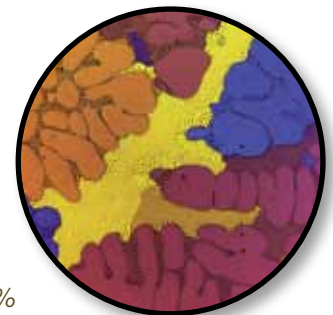
LODGING & TRANSPORTATION

Cost of transportation and lodging is not included in the registration fee. Lunch on all class days will be provided. Upon registration, detailed travel and recommended hotel information will be sent out for your convenience.

CONTACT:

For registration and additional course information regarding the Institute for Microstructural Analysis course program, please contact Jeanne Geiger at our Lake Bluff office: Telephone: (847) 295-4678, Fax: (847) 295-6798 or email: jeanne.geiger@buehler.com

Note: Classes offered at Lake Bluff are held at Buehler's headquarters in Illinois. Course locations are subject to change depending on the level of participation. Pricing is subject to change.



As-cast dendritic microstructure of Al - 3.5% Ni aluminum alloy electrolytically etched with Barker's reagent and viewed with polarized light and sensitive tint, original image at 200x.

Buehler Failure Analysis of Electronics, CALCE (Center for Advanced Life Cycle Engineering - University of Maryland)

BUEHLER FAILURE ANALYSIS OF ELECTRONICS, CALCE (4 DAYS)

Failure analysis is an important tool in the effort to ensure the reliability of electronic products and systems throughout their product lifecycle. Significant improvements in the reliability of electronics can be achieved by retrieving products and examining them to determine the root cause of any failures and the extent of degradation which has occurred over time.

Lecture topics include:

- Failure mechanisms of electronic products
- Root cause analysis
- Physics of failure
- Failure analysis techniques
- Non-destructive analysis techniques
- Destructive analysis

The first half of the short course will present a methodology for identifying potential failure mechanisms in electronic components based on the failure history. Systematic approaches to root cause analysis will be provided. Failure analysis techniques geared towards specific failure mechanisms will be discussed, with importance placed on cross-sectioning techniques

and analysis.

Successful cross-sectioning is often complicated by the dissimilar properties of the component materials under investigation and their susceptibility to damage. Emphasis will be placed on how to deal with these differences through an understanding of the component materials to be prepared and the basic principles of low-damage sectioning, mounting and abrasive grinding and polishing.

The second half of this course provides guidance on how to choose preparation sequences depending on the materials, the configuration of the specimens and the ultimate purpose of the investigation.

This course is recommended for persons who wish to conduct failure analysis on electronic products such as packages, MEMs, capacitors, BGAs, connectors, PCBs, wafers, Si solar cells, solid state devices and components.

Location: CALCE - University of Maryland
April 17-20
September 18-21

Fees
4-day course: \$2,500

Consortium Members & Government Institutions: \$2,000

Each attendee is invited to submit one sample to CALCE at least three weeks before the start date. Several of the submitted samples will be prepared and analyzed in advance for use during the demonstration. Other samples will be used for hands-on training to illustrate specimen preparation procedures and analysis techniques. However, no guarantee can be offered that any specific sample will be used. All unused samples will be returned.

Contact:
For course registration information, please contact Bhanu Sood by phone at (301) 405-3498 or by email at bpsood@calce.umd.edu.

2012 Schedule At A Glance

COURSE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
INSTITUTE FOR MICROSTRUCTURAL ANALYSIS, BUEHLER (USA)												
Metallographic Techniques				Apr. 3-5				Aug. 1-3			Nov. 29 - Dec. 1	
Practical Applications of Automatic Image Analysis			Mar. 20-21						Sep. 25-26			
BUEHLER FAILURE ANALYSIS OF ELECTRONICS, CALCE (CENTER OF ADVANCED LIFE CYCLE ENGINEERING - UNIVERSITY OF MARYLAND)												
CALCE/Buehler Failure Analysis of Electronics				Apr. 17-20					Sep. 18-21			

Course schedules and locations are subject to change depending on level of participation. For an updated schedule and registration form, visit our website at www.buehler.com.

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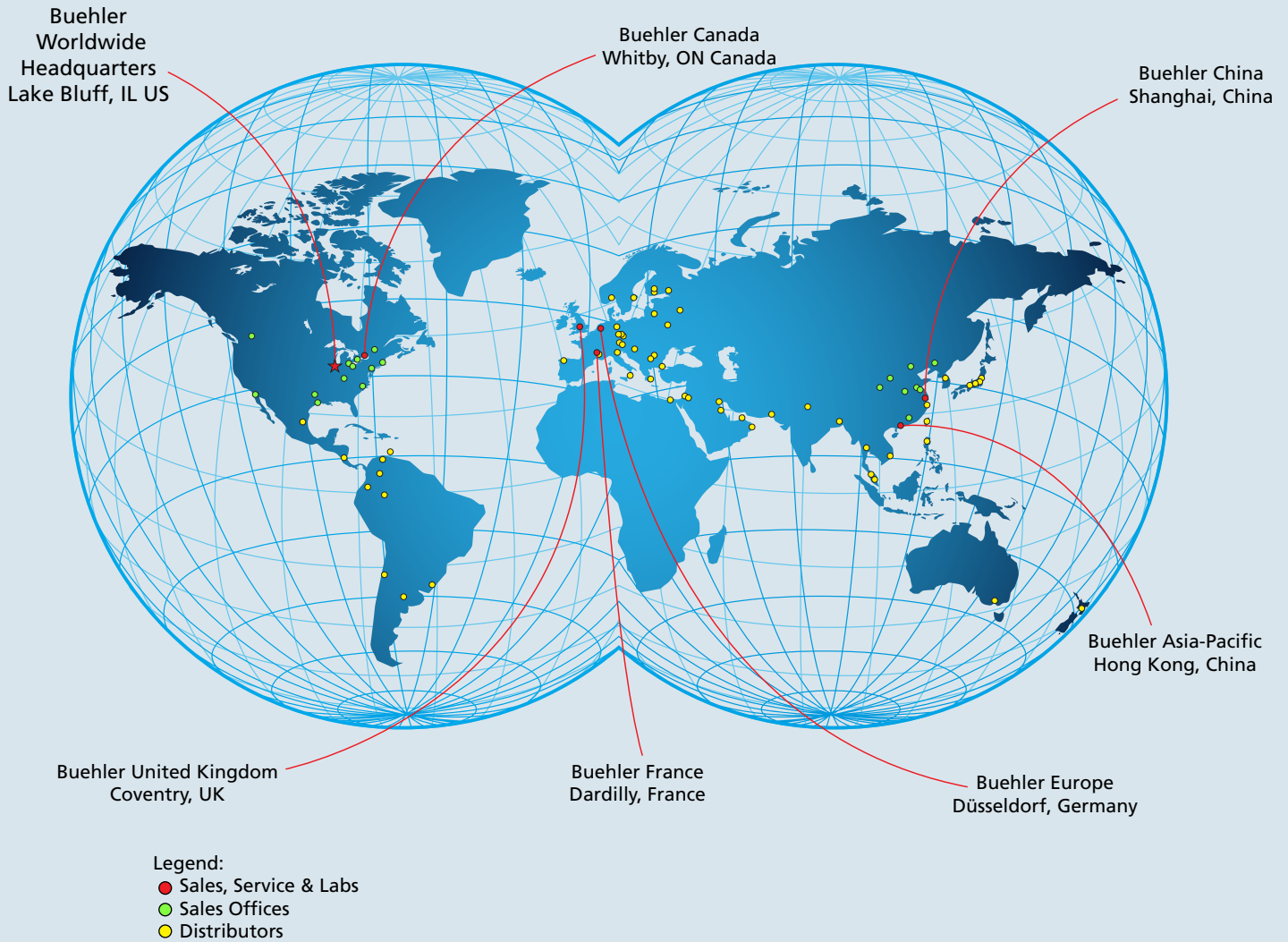


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