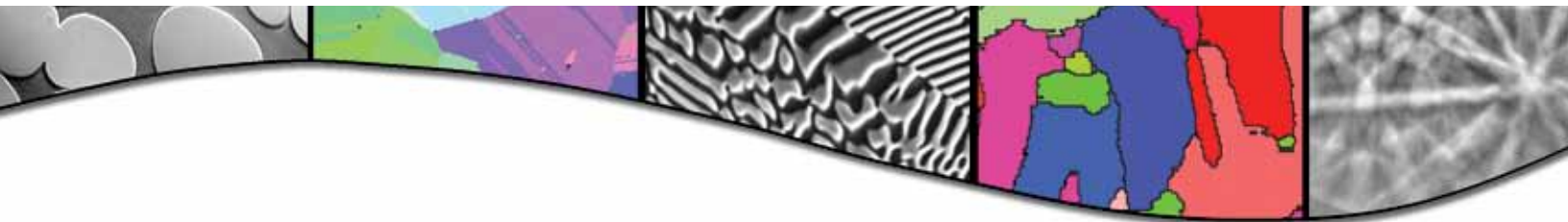


Quality at Work
Electron Microscopy Buyer's Guide



BUEHLER

Excellent Results. Easily Repeatable.™

Precision Diamond Wafering Saws

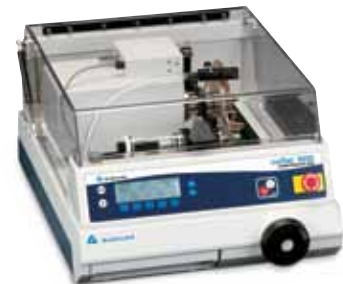


IsoMet® 1000 Precision Saw

IsoMet® 1000 Precision Saw offers increased speed, load capability and blade size which enables a wide variety of specimen samples to be sectioned quickly with low surface deformation. Designed with a 1/6 Hp (140 W) motor, 7" (178mm) blade capacity, variable speed from 100 to 975 rpm, and inch/mm digital micrometer adjustable to .001" or 100µm. The sealed membrane control panel features seven tactile feedback buttons and two triple-digit LED displays to indicate sample positioning and speed. Built-in coolant tray includes dressing chuck with manual feed. Blade deactivates at end of cut. Optional table saw attachment increases versatility by allowing manual feeding of samples. CE marked.

11-2180 IsoMet® 1000 Precision Saw, 85-264 VAC, 50/60 Hz, 1 phase

IsoMet® 4000 Linear Precision Saw is an easy-to-use linear saw designed to automatically adjust the feed rate to provide consistent, quality cuts. Features a 1.25 Hp (950W) motor, 8" (203mm) blade, variable speed from 200 to 5,000 rpm, inch/mm selectable digital micrometer. The included manual 1µm sample positioning system allows for precise sectioning of delicate specimens. User selectable feed rates and the SMARTCUT system automatically adjust to give fast, precision cuts every time. The front control panel consists of a LCD (Liquid Crystal Display) with backlighting and an emergency stop. The hand-held coolant hose allows for easy cleaning. The automatic blade dressing system keeps blade abrasives exposed and ready to cut. CE marked.



IsoMet® 4000 Linear Precision Saw

11-2680 IsoMet® 4000 Precision Saw with Accessories, 85-264 VAC, 50/60 Hz, 1 phase

Wafering Blades

Available Blade Sizes (Diameter/Thickness)

5" (127mm)/ 0.015" (0.4mm)	5" (127mm)/ 0.020" (0.5mm)	5" (127mm)/ 0.030" (0.76mm)	7" (178mm)/ 0.020" (0.5mm)	7" (178mm)/ 0.025" (0.6mm)	8" (203mm)/ 0.035" (0.9mm)
1000, 4000	1000, 4000	1000, 4000	1000, 4000	1000, 4000	4000

IsoMet® Diamond Wafering Blades

30HC Polymers, Rubber, Soft Gummy Materials†: 11-4239, 5 x 0.030" (127 x 0.76mm); 11-4242*^{SO}, 8 x 0.035" (203 x 0.9mm)

20HC Aggressive Sectioning of Metals: 11-4215, 5 x 0.020" (127 x 0.5mm); 11-4237, 7 x 0.025" (178 x 0.6mm);

11-4238, 8 x 0.035" (203 x 0.9mm)

15HC Metal Matrix Composite, PCBs, Bone, Ti, TSC: 11-4245, 5 x 0.15" (127 x 0.4mm); 11-4247 7 x 0.025" (178 x 0.6mm);

11-4248, 8 x 0.035" (203 x 0.9mm)

20LC Hard Tough Materials, Structural Ceramics, Minerals: 11-4225, 5 x 0.020" (127 x 0.5mm); 11-4227; 7 x 0.025" (178 x 0.6mm); 11-4228, 8 x 0.035" (203 x 0.9mm)

15LC Hard Brittle Materials, Glass, Al₂O₃, Zr₂O₃, Concrete: 11-4255, 5 x 0.015" (127 x 0.4mm); 11-4277; 7 x 0.025" (178 x 0.6mm); 11-4279, 8 x 0.035" (203 x 0.9mm)

10LC Medium to Soft Ceramics, Glass Fiber Reinforced Comp.: 11-4285, 5 x 0.15" (127 x 0.4mm); 11-4287, 7 x 0.020" (178 x 0.5mm); 11-4288*^{SO}, 8 x 0.035" (203 x 0.9mm)

IsoCut® Wafering Blades

CBN - High Concentration: 11-5267, 7 x 0.025" (178 x 0.6mm); 11-5268, 8 x 0.035" (203 x 0.9mm)

† - Series 30 Blades do not come with dressing stick as they do not require dressing

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

Tabletop Grinder-Polishers

EcoMet® 250 Grinder-Polisher and AutoMet® 250 Power Head



EcoMet® 250 Grinder-Polisher with AutoMet® 250 Power Head

EcoMet® 250 Grinder-Polisher

The EcoMet® 250 Grinder-Polisher accepts either an 8" (203mm) or 10" (254mm) diameter platen. Features variable platen speed from 10 to 500 rpm, 1 hp (750 Watt) continuous-duty motor, unique "D" style bowl design, retractable water hose, durable cast aluminum construction, platen cooling, and stain and chip resistant finish. The control tower includes a membrane keypad control panel with tactile feedback buttons, audible clicking, bright LED's, large emergency stop button and easy-to-read icons. CE marked

AutoMet® 250 Power Head

The AutoMet® Power Head upgrades the EcoMet® 250 Grinder-Polisher from manual operation into semi-automatic operation, increasing productivity and specimen consistency.

The AutoMet® 250 Power Head is designed for Single or Central Force applications. Six Single Force fingers prepare one to six samples at the same time. Use Central Force for multiple sample preparation. Features variable speed from 30-60 rpm, complimentary or contra rotation, LED lighting illuminates the working area, simple specimen holder quick-clamping chuck design, two-button start, head locking handle and head location stop lever.

49-7250 EcoMet® 250 Grinder-Polisher base with AutoMet® 250 Power Head, Membrane keypad control

49-7251 EcoMet® 250 Grinder-Polisher base with AutoMet® 250 Power Head, Touch-screen control

Accessories

40-4061, 8" (203mm) Aluminum Platen

40-0500, 10" (254mm) Aluminum Platen

60-2483, Barrel Specimen Holder, 1¼" (32mm) x 6

60-2411, Specimen Loading Plate for 8" (203mm) and 10" (254mm) Specimen Holders

60-9000, Drive adaptor for central force holders (Required)



60-9010 Petro Histologic Single Force Specimen Holder which holds 60-9050 PetroThin® Section Glass Slide Holders. Slide Size: 28mm x 48mm, for AutoMet® 250.

MiniMet® 1000 Grinder-Polisher



MiniMet® Grinder-Polisher

MiniMet® 1000 is designed for low-volume laboratories preparing single specimens. Ideal for TEM and Thin section samples. This semi-automatic grinder-polisher prepares a wide variety of materials using three self contained preparation bowls and easy-to-use touch panel controls. Its space saving design employs a proprietary geometric action that combines the advantages of hand-lapping as well as mechanical polishing. The Electro-mechanical Accessory can be used for electron backscatter diffraction (EBSD) sample preparation. This motion provides a random polishing action, eliminating any induced polishing artifacts. Comes complete with 3 polishing bowls, 3 glass discs, a selection of consumables and operating instructions. CE marked.

69-1100 MiniMet® 1000, 80-264 VAC, 50/60 Hz, 1 phase

Accessories

69-1111, Caged Specimen Holder for 1" (25mm) or 1¼" Mounted Specimens

69-1112, Caged Specimen Holder for 1½" (38mm) Mounts

69-1500, 4" (100mm) Polishing Bowls, 1 each Black, White, Blue

69-1502, Storage Caddie for MiniMet® Bowls (set of 3)

69-1510, Replacement Glass Discs (set of 3)

69-1550, MiniMet® Alignment Fixture, with 3 Drill Bits

69-1552, Set of Three Drill Bits (Replacement)

69-1561, Glass Specimen Supports

69-1562, 0.496" (13mm) Glass Circular Slides (50 Pieces)

69-1566, MiniMet® 1000 Precision Thinning Attachment (for TEM Samples)

69-1567, 2.145" (55mm) Glass Disc (5 Pieces)

69-1570, MiniMet® Electro-mechanical Attachment

69-1575, Electro-mechanical Accessories (also for EBSD Samples)

69-1580, MiniMet® Thin Section Attachment; includes 3 bowls, glass and section holder (Also for TEM Samples)

69-1581, 4¾" (121mm) Thin Section Bowls, 1 each Black, White, Blue

69-1582, 4" (100mm) Thin Section Glass Platens (Replacement)

69-1583, MiniMet® Thin Section Slide Holder (26 x 48mm) (for thin sections)

69-1590, MiniMet® Wafer Polishing Attachment

Tabletop Grinder-Polishers and Etcher

VibroMet® 2 Vibratory Polisher



VibroMet® 2 Vibratory Polisher

The **VibroMet® 2 Vibratory Polisher** is designed to prepare high quality polished surfaces on a wide variety of materials and applications, including EBSD polishing preparation applications. The horizontal motion produces a very effective polishing action with superior quality results and exceptional flatness. The unique vibratory action produces less deformation, flatter surfaces and reduces edge rounding. A 12" (305mm) polishing bowl and transparent molded cover are standard on this unit. CE marked.

67-1635-160 VibroMet® 2 Vibratory Polisher, 115 VAC, 60 Hz, 1 phase
67-1635-250 VibroMet® 2 Vibratory Polisher, 220 VAC, 50 Hz, 1 phase

Accessories

67-1527, 1¼" (32mm) VibroMet® 1 and 2 Specimen Holders (set of 3)
67-1529, VibroMet® 1 and 2 Specimen Weights (set of 9)
40-6370-064, 0.06µm MasterMet® Colloidal Silica Suspension (Metals), 64 oz. (1.9ℓ)

40-6377-064, 0.05µm MasterPrep® Alumina Polishing Suspension (Minerals), 64 oz. (1.9ℓ)
40-7222, 12" (305mm) MicroCloth® Polishing Cloth, PSA backed (qty. 10)

ElectroMet® 4 Polisher/Etcher

70-1830* **ElectroMet® 4 Polisher-Etcher** offers electrolytic specimen preparation through an efficient method of polishing and etching solid solution alloys. Also suitable for electron backscatter diffraction (EBSD) sample preparation. Load Test Control allows the operator to simulate actual voltage under load via LED readouts prior to specimen introduction. Includes power supply, polishing cell and etching cell. CE marked.



ElectroMet® 4 Polisher/Etcher

Accessories

70-1831*, ElectroMet® 4 Power Source
70-1832, ElectroMet® 4 Polishing Cell
70-1735, Electrolyte Tank for 70-1830 and 70-1832

70-2015, Masks (set of 5)
70-2100, Cathodes, Stainless Steel
70-2105, Cathodes, Copper
70-3100, Etching Cell

* Specific Voltage & Frequency Required -115: 115 VAC, 60 Hz, 1 phase -220: 220 VAC, 50 Hz, 1 phase

Compression Mounting Equipment

SimpliMet® 1000 Automatic Mounting Press



SimpliMet® 1000 Automatic Mounting Press

SimpliMet® 1000 Mounting Press is a cost effective system with electro-hydraulic operation. Liquid Crystal Display (LCD), user friendly touch panel and last settings retained programmability add convenience to this press. User selects pressure, temperature, heating time, mount size, language and units of measure for their application. Mold assemblies are available in a variety of sizes and are sold separately. CE marked.

20-1415 SimpliMet® 1000 Automatic Mounting Press, 84-264 VAC, 50/60 Hz, 1 phase

Accessories

20-2402, Mold Assembly with Duplex Spacer, 1¼" ID

Compression Mounting Compounds

Conductive Thermosetting Mounting Powders

Material	Color	Filler	Quantity	Catalog Number
ProbeMet®	Bronze	Copper	4 lbs. (1.84kg)	20-3385-064
KonductoMet®	Black	Carbon	1 lb. (0.45kg)	20-3375-016

Thermoplastic Mounting Powders

TransOptic™	Clear	None	5 lbs. (2.3kg)	20-3400-080
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Castable Mounting & Accessories



SamplKlip® Support Clip

Castable Mounting Accessories

20-4000-100, SamplKlip®, Stainless Steel (qty. 100)
20-4100-100, SamplKlip® I, Plastic (qty. 100)



SamplKups® Reusable Mounting Cups

Castable Mounting Molds

20-8180, 1¼" (32mm) SamplKups® Reusable Mounting Cups (qty. 12)



EpoHeat® Epoxy Hardener and EpoHeat® Epoxy Resin

Epoxy Systems Mix Ratios provided as Resin:Hardener by Weight

Type	Quantity	Resin	Hardener
EpoxCure® Mix Ratio: 5:1	1 qt. (0.95ℓ)	20-8130-032	
	1 gal. (3.8ℓ)	20-8130-128	
	½ pt. (0.24ℓ)		20-8132-008‡
EpoHeat®* Mix Ratio: 4:1	1 qt. (0.95ℓ)		20-8132-032‡
	1 qt. (0.95ℓ)	20-8120-032	
	1 pt. (0.47ℓ)		20-8122-016‡

* Requires oven cure at 150°F (65°C)

‡ Restricted article, requires special packaging



Conductive Filler for castable mounts

Conductive Filler for use with Castable Systems (except EpoHeat®)

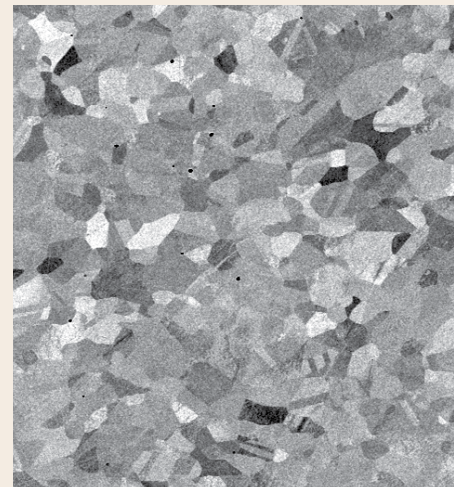
Description	Quantity	Catalog Number
Conductive Filler (<i>Nickel based</i>)	2 lbs. (0.9kg)	20-8500
Compression Mounting ProbeMet® (<i>Copper based</i>)	4 lbs. (1.84kg)	20-3385-064

Influence of Preparation on Image Quality

Backscatter electron images of as-polished 2205 duplex stainless steel shows the improvement in image quality by using Buehler's preparation methods



High Quality Preparation



Average Quality Preparation

Consumables Starter Kits

The SumMet™ Bundles for SEM/EBSD specimen preparation contain enough supplies to prepare up to 600 mounts, assuming there are six mounts per holder.

Material	Consists of:	8" (203mm)	10" (254mm)	12" (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® and MasterTex® Polishing Cloths, 9µm, 3µm, 1µm MetaDi® Supreme 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® and MicroCloth® Polishing Cloths, 3µm MetaDi® Supreme Diamond Paste, MetaDi® Fluid and MasterPrep® Final Polishing Suspension	42-10026	42-10027	42-10028
Ceramic & Refractory	Apex® DGD Red Disc, UltraPol™, TexMet® and ChemoMet® Polishing Cloths, 9µm and 3µm MetaDi® Diamond Supreme and MasterMet® Final Polishing Suspension	42-10029	42-10030	42-10031



Bundle for Ferrous and Nickel material



Bundle for aluminum and Copper material



Bundle for Titanium material



Bundle for Ceramic and Refractory material

Education Programs

Buehler Education Courses METALLOGRAPHIC TECHNIQUES Course Code: ED-10078

This 3-day course is designed for those without formal training in specimen preparation, as well as for the experienced metallographer. The principles and practices of metallography are taught include sectioning, mounting, grinding and polishing. The student will learn to apply contemporary procedures to become more effective in preparing various types of specimens. Students are encouraged to bring their own specimens.



Worldwide Headquarters: Telephone: (847) 295-6500 • Fax: (847) 295-7979 • Web: www.buehler.com

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