

15 - Materials science specimen preparation

Low speed diamond saw



Low speed diamond saws offer convenient, precision cutting for a wide variety of materials in the laboratory, including mineralogical sections, embedded tissue, teeth, bone, semiconductors and other embedded devices. Low speed saws cause minimal damage and deformation of the sample and are particularly suited to fragile or soft materials.

The saw is fitted with a 100 mm diameter wheel as standard, and wheel rotation speed can be varied from 50 to 400 rpm. An end point device with associated indicator can be set to terminate the cutting process at a pre-defined depth. A wide range of specimen holders is available to suit different specimen shapes. Diamond wafering blades are suitable for cutting most hard materials. Wafering blades are also available that can be used for cutting softer ferrous alloys, and silicon carbide wheels for non-ferrous alloys.

- B8420** Diamond saw
- B8421** Metal bonded diamond wheel, 100 mm dia
- B8423** Rubber bonded silicon carbide wheel, 100 mm dia

Further details available on request.

Diamond wafering blades



A range of wafering blades specifically developed to provide precise and accurate sectioning of metallographic samples. These blades use specially formulated grit sized diamond particles to give accurate cuts without the inconvenience and debris found with conventional thicker abrasive cut-off wheels.

The wafering blades have diamond particles bonded in a resin or metal matrix along the outer circumference of the blade. The blades are less than 1 mm thick and are ideal for sectioning small specimens. The blades are available in various diameters and diamond concentrations to suit your sample needs.

Standard quality for general use

- B8370** Wafering blade 60 x 0.20 x 12.7 mm, metal bonded
- B8371** Wafering blade 75 x 0.20 x 12.7 mm, metal bonded
- B8372** Wafering blade 100 x 0.35 x 12.7 mm, metal bonded
- B8373** Wafering blade 125 x 0.40 x 12.7 mm, metal bonded
- B8374** Wafering blade 150 x 0.60 x 12.7 mm, metal bonded

Standard quality for hard metals, tungsten carbide, glass and ceramics

- B8375** Wafering blade 100 x 0.60 x 12.7 mm, resin bonded
- B8376** Wafering blade 125 x 0.80 x 12.7 mm, resin bonded
- B8377** Wafering blade 150 x 0.80 x 12.7 mm, resin bonded
- B8378** Wafering blade 200 x 0.80 x 12.7 mm, resin bonded

High quality for aggressive general sectioning of ferrous and non-ferrous materials

- B8379** Wafering blade 127 x 0.40 x 12.7 mm, metal bonded
- B8380** Wafering blade 178 x 0.60 x 12.7 mm, metal bonded
- B8381** Wafering blade 203 x 0.90 x 12.7 mm, metal bonded

Vertical diamond wire saw

This vertical precision diamond wire saw can cut virtually any type of material, using its unique diamond impregnated wire. However, it is primarily used for cutting and slicing fragile materials including intermetallic crystal structures, semiconductor substrates with multiple layers, delicate electronic components and items which would be damaged using other methods of cutting.

The standard diamond wire supplied with the instrument is 0.3 mm diameter, impregnated with diamond grains of either 40 μm or 60 μm particle size. The wire is continuously cooled and cleaned during operation using a mixture of water and cutting fluid housed in the stainless steel trough provided. A range of different specimen holders is available to clamp samples securely during the cutting process. The saw is supplied complete with an adjustable specimen table with mechanical clamping and 30 metres of diamond wire (including 10 metres in the feed drum). The wire saw rewinder is recommended for loading wire on to the drum.

B8460	Vertical diamond wire saw
B8461	Perspex storage box
B8462	Wire saw rewinder
B8463	3 axis goniometer specimen stage
B8464	2 axis goniometer specimen stage
B8465	1 axis goniometer specimen stage
B8466	Micrometer stage, 25 mm travel
B8467	90° divider, including 75 mm holder
B8468	Cutting fluid. 500 ml
B8471	Diamond wire, 0.30 mm dia, 30 m length
B8469	Diamond wire, 0.22 mm dia, 30 m length
B8470	Diamond wire, 0.13 mm dia, 30 m length



Choice of other grit sizes available. Further details available on request.

Labcut 250 abrasive cutting machine

The Labcut 250 is a medium duty, bench top abrasive wheel cutting machine ideal for sectioning ferrous and non-ferrous materials prior to metallographic specimen preparation. The cutting head can be fitted with abrasive wheels up to 250 mm diameter, aluminium oxide for ferrous and silicon carbide for non-ferrous metals.

The powerful 3 phase 2.2 kW motor operates at a speed of 4000 rpm. Two quick lock vices with 65 mm capacity are included for clamping the sample. The safety interlocked guard is easily raised to give access to the work table and the flexible rubber sides allow long lengths of bar to be sectioned.

B8510	Labcut 250 abrasive cutting machine
B8511	Aluminium oxide wheels, 250 mm dia. Pack of 10
B8512	Silicon carbide wheels, 250 mm dia. Pack of 10



Simplimet® 2 mounting press



The Simplimet 2 is a hydraulically operated press for the hot mounting of metallurgical and mineralogical specimens. The manually operated hydraulic ram provides positive compression without the need for air, and various mounting units are available to accommodate a broad range of mould sizes. Duplex moulds are available to allow the production of two samples at the same time. The moulds are heated by a 350 W thermostatically controlled slip-on heater and after reaching the curing temperature can be cooled by a finned slip-on cooler.

- B8840** Simplimet 2 mounting press
- B8841** Moulding unit, 25 mm dia
- B8842** Moulding unit, 30 mm dia
- B8845** Moulding unit, 1" dia
- B8843** Moulding unit, 1¼" dia
- B8844** Moulding unit, 1½" dia

MiniMet® 1000

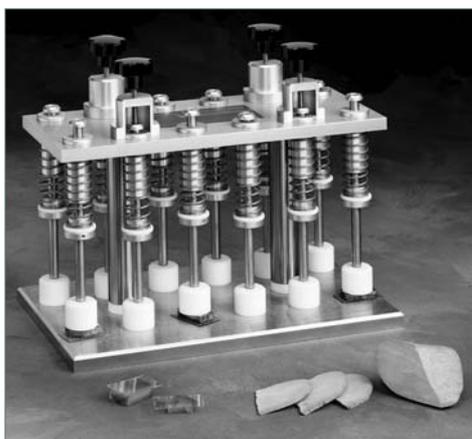


The MiniMet 1000 is a semi-automatic grinder and polisher for the preparation of a wide variety of materials. The system is easy to use, allowing control of polishing time, speed and pressure. The space saving design uses a geometric motion that combines the advantages of hand lapping and mechanical polishing. This random action eliminates polishing induced artefacts. It comes with three polishing bowls, three glass discs and samples of grinding and polishing media. A range of platens, sample holders and other consumables is available.

Dimensions: 180 x 400 x 200 mm

- B8855** MiniMet 1000

PetroBond®



A thin section bonding tool to bond up to 12 lapped specimens to glass slides prior to sectioning. The spring loaded mechanism applies continuous pressure to up to 12 samples during curing, ensuring accurate control of the thickness of the bonding media between specimen and slide. The tool can be mounted on a hot plate to speed the curing times of some mounting media.

Dimensions: 305 x 225 x 305 mm

- B8856** PetroBond

Please ask for details.

Specimen levelling press

When viewing flat polished surfaces with an optical microscope, it is desirable that the image stays in focus as the specimen is traversed on the microscope stage. To achieve this, the polished surface must be made parallel to the glass slide. The specimen levelling press is used to fix standard metallographic mounts or irregular shaped polished samples onto glass slides using Plasticine or mounting wax.

- B8233** Specimen levelling press

Compression mounting compounds

A range of thermosetting compression mounting compounds for hot compression mounting. EpoMet® G is a high hardness, hot mounting epoxy with good edge retention and low shrinkage. EpoMet F is similar to EpoMet G, with very low shrinkage and a finer grain size. ProbeMet® is a fine-grained hot mounting epoxy resin containing copper. The extra fine particles fill small voids and cavities. It has near zero electrical resistance and is ideal for conductive SEM, EDS, WDS, and microprobe analysis. ProbeMet has superior edge retention and good hardness. 1.84 kg per pack.



Cat. no.	Product	Colour	Temp (°C)	Pressure (bar)	
B8784	EpoMet G	Black	150	290	<i>Harmful</i>
B8784F	EpoMet F	Black	150	290	<i>Harmful</i>
B8785	ProbeMet	Bronze	150	290	<i>Harmful</i>

Moulding compounds

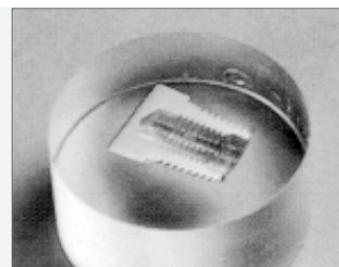
During hot compression mounting a sample is embedded under temperature and pressure. Hot embedding resins are available in two forms: thermosetting (phenolic) polymers which fuse under simultaneous pressure and heating to form a hard sample with low shrinkage, and thermoplastic polymers (acrylic or epoxy) which melt

when heated and polymerise when cooled. Unlike thermosetting polymers, thermoplastic curing is reversible and the mount can be melted again at any time. Fillers are also incorporated to improve hardness, shrinkage and conductivity.

Moulding powders

A range of moulding powders is available that was developed specifically for use in hot mounting processes. Bakelite conducting grade moulding powder (**B8181**) is particularly useful for electron microscopy, with sufficient electrical conductivity to provide a good earth leakage from the specimen.

- B8180** Bakelite moulding powder, black. 2.5 kg
- B8181** Bakelite conducting moulding powder, black. 2.5 kg
- B8182** Acrylic moulding powder, transparent. 2.5 kg



TransOptic™

TransOptic is a fast acting, transparent thermoplastic acrylic mounting material. It allows low mounting pressures to be used during pre-heating and mounting cycles, and is ideal for encapsulating fragile samples. TransOptic is suitable for general metallography where edge information is not critical and where transparency of the mount is desirable. It contains no filler and is relatively soft when cured.

- B8787** TransOptic. 2.3 kg

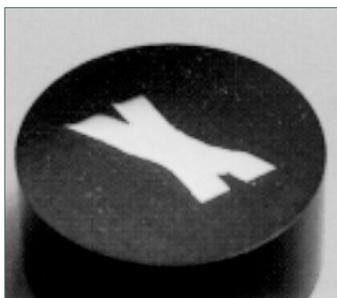
KonductoMet®

KonductoMet is a conductive thermosetting phenolic compression mounting resin with low electrical resistance. The conductivity is provided by the carbon filler. It cures at approximately 150 °C (300 °F). It is black in colour and suitable for use in SEM, EDS and WDS applications.

- B8788** KonductoMet. 450 g *Harmful*

Acrylic resins

Demotec 70



Demotec 70 is a conductive two component resin based on methyl methacrylate and electrically conductive carbon. It has been specially developed for SEM, EDS, microprobe and FIB applications and for electrochemical polishing of samples. It is a two component, black, cold embedding material with graphite added to provide conductivity.

- B8830** Demotec 70 powder. 1 kg *Irritant*
- B8831** Demotec 70 liquid. 1 litre *Highly flammable, irritant*

Further details are available on request.

SamplKwick®



SamplKwick is a semi-transparent, high viscosity rapid curing acrylic cold mounting compound. It cures in 5 to 8 minutes with a maximum curing temperature of 80 °C. This resin has a fresh scent formulation which eliminates sharp odour. It is compatible with all types of moulds and Ring Forms™. SamplKwick offers good penetration into holes and recesses and has excellent edge retention when used for embedding printed circuit boards and other similar materials. When cured this acrylic resin has moderate hardness and shrinkage.

- B8786** SamplKwick kit. 450 g powder and 360 ml hardener *Irritant*
- B8786P** SamplKwick powder. 450 g *Irritant*
- B8786H** SamplKwick hardener. 360 ml *Irritant*

VariDur™ 10

VariDur 10 is a high hardness, high viscosity, semi-transparent, acrylic cold mounting compound with superior abrasion resistance and edge retention. It has a typical cure time of less than 10 minutes and a maximum curing temperature of 100 °C. It is suitable for use with any type of mould and ideal for routine applications.

- B8789** VariDur 10 kit. 1 kg powder and 500 ml hardener *Irritant*
- B8789P** VariDur 10 powder, semi transparent. 1 kg *Irritant*
- B8789H** VariDur hardener. 500 ml *Irritant*

Epoxy resins

EpoThin® low viscosity epoxy



A free flowing, low viscosity, low shrinkage epoxy resin that is ideal for use with porous and heat sensitive samples. It produces a clear, bubble free mount, offering an unobstructed view of embedded samples. It has a typical cure time of nine hours at 27 °C and is excellent for vacuum impregnation.

- B8187** EpoThin resin. 950 ml *Harmful*
- B8188** EpoThin hardener. 470 ml *Corrosive*

EpoKwick® fast curing epoxy

EpoKwick is a transparent, quick setting epoxy resin that cures in 90 minutes. It is a medium viscosity resin and produces hard mounts with good edge retention characteristics. It is supplied as a kit to include both resin and hardener.

- B8197** EpoKwick resin kit. 950 ml *Irritant*
B8198 EpoKwick resin kit. 3.8 litres *Irritant*



EpoxiCure™

EpoxiCure is a two part, general purpose epoxy resin suitable for heat sensitive specimens due to its low curing temperature (28 °C/82 °F). It cures in approximately 6 to 8 hours. It is a transparent resin, has low shrinkage, excellent adhesion properties and produces mounts that are hard. EpoxiCure has good flow characteristics, is solvent resistant and can also be used for vacuum impregnation techniques.

- B8782R** EpoxiCure resin. 950 ml *Harmful*
B8782H EpoxiCure hardener. 240 ml *Corrosive*



EpoColor™ cold mounting compound

EpoColor is a red pigmented epoxy cold mounting compound which offers excellent colour contrast between mount and specimen. It is helpful for studying edges and, when using dark field or cross polar illumination, is suitable for highlighting cracks and pores which are otherwise difficult to distinguish from the base material. EpoColor is recommended for vacuum impregnation, has low shrinkage, a curing time of 1 to 2 hours and a cure temperature of 79 °C (175 °F).

- B8783R** EpoColor resin. 950 ml *Irritant*
B8783H EpoColor hardener. 240 ml *Corrosive*



EpoFix

A low viscosity epoxy cold mounting system curing at room temperature in about 12 hours, with no shrinkage, especially suited for vacuum impregnation.

- B8790R** EpoFix resin. 1 litre
B8790H EpoFix hardener. 130 ml *Corrosive*

Scan-Dia embedding system



The Scan-Dia system offers a complete range of cold setting, metallographic embedding agents and accessories. Scandiplast is a cold hardening, polyester casting resin which cures in 30 to 60 minutes. It has low shrinkage and good adhesion properties, and is transparent with a green tint. Scandiplast hardener can be substituted by Aequidir hardness equaliser to produce mounts of different hardness, and this is available in three grades to match the hardness of the materials being mounted. Scandiplast is recommended for use with porous samples. The low viscosity epoxy resin cures at a slow rate, typically 2 to 24 hours, and produces a transparent mount with a light yellow colour.

When a long pot life and a low exotherm are required, the Scandiplast hardener can be partially substituted by Varioplex. Scandiquick is a rapid setting, acrylic resin with good adhesion characteristics. It hardens in just 6 minutes, and produces a transparent mount with an orange tint. Scandiform moulds are recommended for use with all the resins, and are available in a range of re-usable sizes and shapes. A vacuum embedding set is available for mounting porous samples with Scandiplast resin. An embedding set is also available for mixing resins, consisting of a silicone work mat, 50 graduated paper cups, 20 glass stirring rods and 200 paper labelling discs.



- B8800** Scandiplast embedding compound. 1 kg
- B8801** Scandiplast hardener. 35 ml
- B8808** Aequidir hardness equaliser, soft. 100 g
- B8809** Aequidir hardness equaliser, medium. 100 g
- B8810** Aequidir hardness equaliser, hard. 100 g
- B8802** Scandiplast '82 A resin. 1 kg
- B8803** Scandiplast '82 B hardener. 400 g
- B8805** Varioplex. 200 g
- B8815** Scandiquick resin. 1 kg
- B8816** Scandiquick liquid. 750 ml
- B8804** Scan-Dia embedding set
- B8820** Scandiform moulds, 25 mm dia. Pack of 5
- B8821** Scandiform moulds, 32 mm dia. Pack of 5
- B8822** Scandiform moulds, 38 mm dia. Pack of 5
- B8823** Scandiform moulds, 50 mm dia. Pack of 5
- B8824** Scandiform moulds, 25 x 57 x 20mm. Pack of 5
- B8811** Scan-Dia vacuum impregnation set
- B8812** Scan-Dia curing oven, 220 V, 50 Hz
- B8814** Scan-Dia plastic clips. Pack of 100
- B8825** Paper mixing cups. Pack of 50



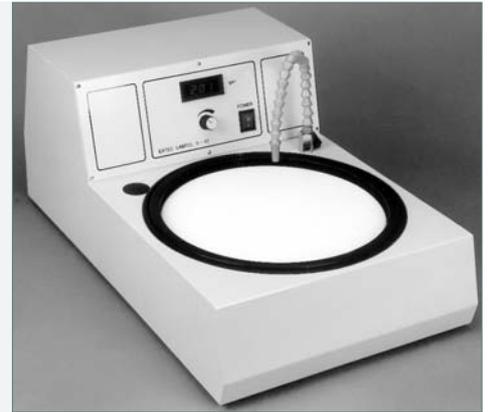
Further details available on request.

Rotary polisher/grinders

A range of single or twin wheel polishing and grinding machines for metallographic specimen preparation is available. Each unit can be used for specimen grinding with silicon carbide discs, or for final polishing with diamond impregnated cloths. The single wheel unit can be supplied with 203, 250 or 305 mm (8, 10 or 12") interchangeable platens, and the twin wheel model is available with two 203 mm (8") platens only. Each platen has edge clips for clamping the paper discs or cloths, and is provided with its own surround which fits into the main casing. Both models will operate at any speed between 50 and 500 rpm, and come with a digital speed display. The twin wheel polisher grinder incorporates individual platen speed control for both wheels. Water inlet and drain connections are located on the rear, and fine control swivel taps allow water to be directed onto the desired part of the platen when used as a grinder.

A full complement of grinding discs, polishing cloths and diamond compounds are available for use with these instruments. Please ask for details.

- B8499** Single wheel polisher/grinder, 203 mm (8") variable speed, 50 - 500 rpm
- B8505** Twin wheel polisher/grinder, 203 mm (8") variable speed, 50 - 500 rpm
- B8506** Platen 203 mm (8") with clips



Ecomet® 3000 polisher/grinder

The Ecomet® 3000 is a variable speed grinder/polisher with a low profile, 203 mm (8") aluminium platen and a universal mount. Platen speed is variable from 10 to 500 rpm in 10 rpm increments. A pop-up water dispensing arm can be positioned over the platen and the flow control valve regulates the amount of water dispensed on to the platen. The specially moulded bowl and drain help to flush out particles, promote easy drainage and minimize the build up of grinding and polishing residue. A removable splash ring keeps water contained. The sealed membrane control panel and low voltage controls ensure operator safety at all times.

Dimensions: 240 x 330 x 680 mm. Weight: 35.5 kg

- B8850** Ecomet® 3000 polisher/grinder
- B8851** Aluminium platen, 203 mm dia
- B8852** Glass platen, 203 mm dia



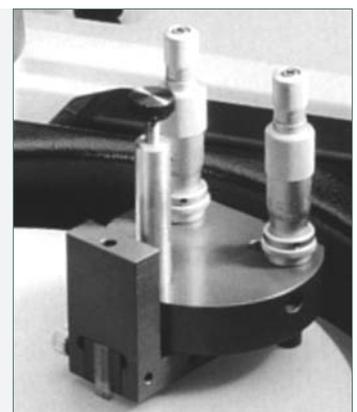
The addition of an Automet power head converts the Ecomet polisher/grinder into a semi-automatic sample preparation system; please ask for details.

Tripod polisher kit

The tripod polisher is designed to wedge polish samples accurately to electron transparency for TEM examination. Wedge polishing can eliminate the need for milling by mechanically thinning the area of interest to 100 nm or less. The polisher can be used to thin a wide range of materials including ceramics, composites, semiconductors and metals.

The kit comprises a polisher body with two micrometers, wedge mount assemblies and inserts, SEM cross-sectioning paddles, adhesive and mounting wax.

- B8860** Tripod polisher kit



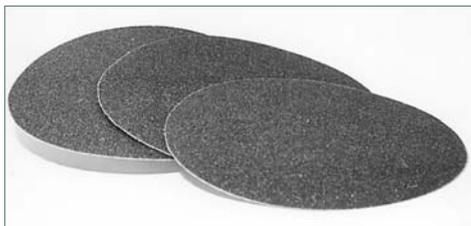
Wet grinding paper

Silicon carbide paper is ideal for use with rotary pre-grinding machines. Supplied in 80 mm wide rolls, 20 metres in length.

Available in four grit sizes (P240, P400, P600 and P1000).

B8340	Silicon carbide paper, P240
B8341	Silicon carbide paper, P400
B8342	Silicon carbide paper, P600
B8343	Silicon carbide paper, P1000

Silicon carbide pre-grinding paper discs



Waterproof silicon carbide papers are often preferred for pre-grinding operations because of their rapid cutting properties and close grain size. They are available with a plain backing in a range of grit sizes down to P4000 (5 µm particle size). The discs are 203 mm (8") in diameter.

Supplied in packs of 25.

B8210	Silicon carbide discs, P60, 269 µm
B8209	Silicon carbide discs, P80, 201 µm
B8211	Silicon carbide discs, P120, 127 µm
B8212	Silicon carbide discs, P240, 58 µm
B8213	Silicon carbide discs, P320, 46 µm
B8214	Silicon carbide discs, P400, 35 µm
B8215	Silicon carbide discs, P600, 26 µm
B8216	Silicon carbide discs, P800, 22 µm
B8217	Silicon carbide discs, P1200, 15 µm
B8218	Silicon carbide discs, P2500, 10 µm
B8219	Silicon carbide discs, P4000, 5 µm

Self adhesive silicon carbide paper discs



Suitable for most makes of rotary grinders/polishers, these waterproof, self adhesive silicon carbide discs (PSA backed) are available in a range of grit sizes from P60 (269 µm) to P2500 (10 µm). Standard discs are 203 mm (8") in diameter, but other sizes are available.

Supplied in packs of 25.

B8540	Self adhesive silicon carbide discs, P60, 269 µm
B8541	Self adhesive silicon carbide discs, P80, 201 µm
B8542	Self adhesive silicon carbide discs, P120, 127 µm
B8543	Self adhesive silicon carbide discs, P180, 78 µm
B8544	Self adhesive silicon carbide discs, P240, 58 µm
B8545	Self adhesive silicon carbide discs, P320, 46 µm
B8546	Self adhesive silicon carbide discs, P400, 35 µm
B8547	Self adhesive silicon carbide discs, P600, 26 µm
B8548	Self adhesive silicon carbide discs, P800, 22 µm
B8549	Self adhesive silicon carbide discs, P1200, 15 µm
B8539	Self adhesive silicon carbide discs, P2500, 10 µm

Abrasive strips

A range of abrasive strips and sheets with resin-bonded polishing powder on a polyester backing. Waterproof bonding ensures that polishing particles remain fixed to the backing, avoiding unwanted scratches on the surface being prepared. Available with aluminium oxide, silicon carbide and diamond powders. Aluminium oxide and silicon carbide strips supplied in packs of 10, or as single sheets.

Diamond is supplied as a single strip or sheet.

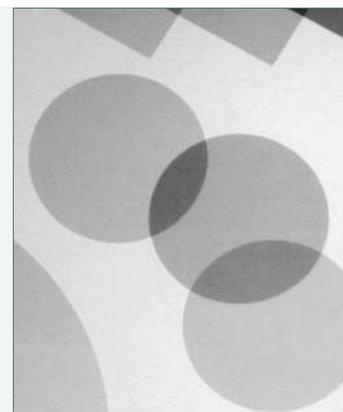
Type	Strips 35 mm wide	Strips 70 mm wide	Sheet 215 x 279 mm
Aluminium oxide, 60 µm	B8640	B8670	B8700
Aluminium oxide, 30 µm	B8642	B8672	B8702
Aluminium oxide, 12 µm	B8643	B8673	B8703
Aluminium oxide, 9 µm	B8644	B8674	B8704
Aluminium oxide, 3 µm	B8645	B8675	B8705
Aluminium oxide, 1 µm	B8646	B8676	B8706
Aluminium oxide, 0.3 µm	B8647	B8677	B8707
Silicon carbide, 30 µm	B8652	B8681	B8712
Silicon carbide, 15 µm	B8653	B8682	B8713
Silicon carbide, 9 µm	B8654	B8683	B8714
Silicon carbide, 5 µm	B8655	B8684	B8715
Diamond, 30 µm	B8660	B8690	B8720
Diamond, 15 µm	B8661	B8691	B8721
Diamond, 9 µm	B8662	B8692	B8722
Diamond, 6 µm	B8663	B8693	B8723
Diamond, 3 µm	B8664	B8694	B8724
Diamond, 1 µm	B8665	B8695	B8725
Diamond, 0.5 µm	B8666	B8696	B8726

Ultraprep™ diamond lapping films

Ultraprep lapping films offer an alternative to diamond impregnated cloths where uniform material removal and surface flatness are essential. They are ideal for use with microelectronic devices, ceramics and optical fibres, and are recommended for use with the tripod polisher. For the best results, the films should be used with glass or cast iron platens. Standard films are 203 mm in diameter, other diameters and self adhesive films also available on request. Supplied in packs of 5.

A mixed pack is available comprising one sheet each of 15, 9, 6, 3 and 1 µm films.

B8740	Ultraprep diamond lapping films, 30 µm
B8741	Ultraprep diamond lapping films, 15 µm
B8742	Ultraprep diamond lapping films, 9 µm
B8743	Ultraprep diamond lapping films, 6 µm
B8744	Ultraprep diamond lapping films, 3 µm
B8745	Ultraprep diamond lapping films, 1 µm
B8746	Ultraprep diamond lapping films, 0.5 µm
B8747	Ultraprep diamond lapping films, 0.1 µm
B8748	Ultraprep diamond lapping films, mixed pack



Polishing cloths and discs



A range of polishing cloths and discs suitable for use with rotary polishers. Close weave, single-sided napless nylon cloths are recommended for general use. A nylon cloth is recommended for polishing medium to hard materials during intermediate and fine steps. Composite, non-woven resin bonded fibre cloths may be used for pre-polishing with abrasives of 3 μm and coarser. Napped cloths with a very short dense pile offer excellent results for fine diamond polishing applications, using grades of 3 μm and finer. Selvyt cloth is ideal for polishing very soft materials with alumina and magnesia.

Supplied in packs of 10.

- B8220A** Nylon cloths, adhesive backed, 250 mm (10") dia
- B8221** Composite discs, adhesive backed, 203 mm (8") dia
- B8222** Napped cloths, adhesive backed, 203 mm (8") dia
- B8223** Selvyt cloths, 250 mm (10") dia

Diamond polishing paste



Various grades of diamond polishing paste are available. They are supplied in convenient tubes for dispensing onto polishing cloths or laps, and may also be used for cleaning delicate internal parts of microscopes. Standard compounds have a water/oil based carrier. Water based or oil based versions are also available for applications where the use of oil or water may not be appropriate.

Supplied in 5 ml tubes.

- G3400** Kemet diamond compound, $\frac{1}{4}$ μm
- G3401** Kemet diamond compound, 1 μm
- G3402** Kemet diamond compound, 3 μm
- G3403** Kemet diamond compound, 6 μm
- G3404** Kemet diamond compound, 14 μm

For the water based versions, please add suffix W to the catalogue reference.

For the oil based versions, please add suffix O to the catalogue reference.



Both oil based (OS type) and water based (W type) lubricants are available for use with Kemet polishing pastes. They are supplied in convenient trigger spray bottles.

- G3411** Fluid lubricant, type OS, trigger spray. 450 ml
- G3412** Fluid lubricant, type W, trigger spray. 450 ml

Liquid diamond polishing compound

An oil/water based liquid emulsion polishing compound which can be used with a refillable aerosol dispenser. Water based or oil based versions are also available for applications where the use of oil or water may not be appropriate. Available in eight different grades, with diamond particle sizes ranging from ¼ to 45 µm. The use of aerosol polishing compounds offers the advantage of an even and economical distribution of material across the polishing cloth. A lubricating fluid is also available.

G3860	Refillable aerosol dispenser for polishing compound
G3861	Refillable aerosol dispenser for lubricant
G3862	Diamond compound, ¼ µm. 400 g
G3863	Diamond compound, 1 µm. 400 g
G3864	Diamond compound, 3 µm. 400 g
G3865	Diamond compound, 6 µm. 400 g
G3866	Diamond compound, 8 µm. 400 g
G3867	Diamond compound, 14 µm. 400 g
G3868	Diamond compound, 25 µm. 400 g
G3869	Diamond compound, 45 µm. 400 g
G3870	Lubricating fluid. 2.5 litres



For the water based versions, please add suffix W to the catalogue reference.

For the oil based versions, please add suffix O to the catalogue reference.

Polishing materials

MiroMet® is a suspension of 1 µm cerium oxide particles, intended for final polishing of glass and very soft materials with a low melting point, including leads, solders, aluminium, copper, plastics and soft ores.

B8780	MiroMet cerium oxide suspension. 180 ml
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MetPolish® suspended chromium oxide polishing abrasives are recommended for polishing carbon and stainless steels, and for the preparation of samples for spectrographic analysis without aluminium oxide contamination.

B8781-1	MetPolish No. 1 chromium oxide suspension, 1 µm particles. 180 ml
B8781-2	MetPolish No. 2 chromium oxide suspension, ½ µm particles. 180 ml

Polishing aluminas

Four types of polishing alumina are available, graded according to their principal particle size; coarse (5 µm), medium (1 µm), fine (0.3 µm) and extra fine (0.05 µm). Alumina suspensions are suitable for use after diamond grinding or as a final polish (0.05 µm).

All are supplied as a thick suspension in a 180 ml polythene bottle.

B8224	Alumina suspension, coarse
B8225	Alumina suspension, medium
B8226	Alumina suspension, fine
B8227	Alumina suspension, extra fine



Cubic boron nitride



A cubic boron nitride paste suitable for use with an ultrasonic disc cutter or as a lapping and finishing compound. It is available in both oil soluble and water soluble forms. The pastes are made from 40 µm particles accurately graded for both size and shape.

Other particle sizes are available on request.

Supplied in a 20 g syringe.

- G3417** Cubic boron nitride, oil based *Irritant*
- G3416** Cubic boron nitride, water based *Irritant*

Abrasive powders



A range of silicon carbide and alumina abrasives for fine lapping or grinding of samples on surfaces such as cast iron, tin, lead or cloth covered wheels. The powders are easily dispersed in distilled water which allows the consistency to be varied from a thin liquid to a thick paste by changing the powder-to-water ratio.

- B8750** Silicon carbide powder, P120. 2.3 kg *Irritant*
- B8751** Silicon carbide powder, P240. 2.3 kg *Irritant*
- B8752** Silicon carbide powder, P320. 2.3 kg *Irritant*
- B8753** Silicon carbide powder, P800. 2.3 kg *Irritant*
- B8754** Silicon carbide powder, P1200. 2.3 kg *Irritant*
- B8755** Silicon carbide powder, P2500. 2.3 kg *Irritant*



- B8760** Alumina powder, P240. 2.3 kg
- B8761** Alumina powder, P800. 2.3 kg
- B8762** Alumina powder, P1200. 2.3 kg

- B8763** Alumina powder, 25.0 µm. 2.3 kg
- B8764** Alumina powder, 22.5 µm. 2.3 kg
- B8765** Alumina powder, 20.0 µm. 2.3 kg
- B8766** Alumina powder, 17.5 µm. 2.3 kg
- B8767** Alumina powder, 14.5 µm. 2.3 kg
- B8768** Alumina powder, 12.5 µm. 2.3 kg
- B8769** Alumina powder, 9.5 µm. 2.3 kg
- B8770** Alumina powder, 5.0 µm. 2.3 kg
- B8771** Alumina powder, 3.0 µm. 2.3 kg

Cleaning solution



Kemet CO-42 is a cleaning and degreasing fluid with many of the performance characteristics of 1,1,1-trichloroethane but without the ozone depleting properties. The controlled wetting and evaporation properties of CO-42 make it extremely versatile, and allow rapid drying without staining surfaces. It is extremely efficient for cleaning metals, ceramics, glass, most plastics and other materials. CO-42 cuts rapidly through contamination such as lapping and polishing residue, grease, oils and general surface contamination.

- G3407** Kemet CO-42 cleaning solution. 400 ml trigger spray
- G3408** Kemet CO-42 cleaning solution. 5 litres

Crystalbond™ adhesives

Crystalbond adhesives allow temporary bonding of delicate crystals, metallurgical samples, glass components and ceramic substrates for dicing, slicing, drilling, grinding and polishing. They adhere readily to metals, glass and ceramics, and after machining can be washed away using suitable solvents.

Crystalbond 509 provides excellent adhesion, and offers reduced clogging of diamond tools compared with waxes. It is transparent in thin cross-sections, and available in two standard colours: amber and clear. It is soluble in acetone or 509-S stripper, an odourless, non-flammable, biodegradable polar solvent.

Crystalbond 555 and 555-HMP are low melting point adhesives for moderate stress machining processes, dry plasma etching silicon wafers, de-panelling copper plated Teflon® boards, and dicing ceramic green tape. Transparent in thin cross-sections, and soluble in hot water.

Crystalbond 590 is a high strength, resilient adhesive, ideal for use with miniature and tall parts. Soluble in isopropyl alcohol or 590-S stripper.

Wafer-Mount™ 559 is a semi-rigid, solvent resistant plastic film with a pressure sensitive soluble adhesive layer.

Wafer-Mount 562 is a thermoplastic film adhesive used for temporary bonding of delicate crystals, metallurgical specimens, glass components and ceramic substrates for dicing, slicing, drilling and polishing. It is especially suited to making TEM cross-sections. It can be easily washed away using various solvents such as 1,1,1-trichloroethylene or specially formulated Wafer-Mount 562-S stripper.

Crystalbond 590-S stripper is an environmentally safe, water-dispersible, powder concentrate prepared primarily for use with Crystalbond 590 and other mounting waxes. It can also be used for the removal of silicones, greases, oils, soils, finishing compounds and other contaminants. It is non-reactive with metals and non-flammable.

Crystalbond 509-S and Wafer-Mount 562-S strippers are high performance, environmentally safe chemical cleaning agents developed specifically for the removal of Crystalbond 509, Wafer-Mount 562, polymer coatings and inorganic particulates.



Cat. no.	Product ID	Flow point °C/°F	Viscosity CPS	Colour	Solvent
B7297	509	121/250	6000	Clear	509-S
B7312	509	121/250	6000	Amber	509-S
B7298	555	54/120	500	White	509-S
B7313	555-HMP	66/150	500	White	509-S
B7314	590	150/302	9000	Brown	590-S
B7316	559	-	-	Clear	Acetone
B7317	562	93/200	-	White	562-S / 1,1,1-Trichloroethylene

B7297	Crystalbond 509. 50 g	B7316	Wafer-Mount 559, 10" x 10" sheet. Pack of 2
B7312	Crystalbond 509-1. 90 g	B7317	Wafer-Mount 562, 8" x 10" sheet. Pack of 10
B7298	Crystalbond 555. 150 g	B7322	Crystalbond stripper 509-S. 950 ml
B7313	Crystalbond 555 HMP. 68 g	B7323	Crystalbond stripper 590-S. 454 g
B7314	Crystalbond 590. 227 g	B7324	Crystalbond stripper 562-S. 450 g

Epoxy Bond 110™



Epoxy Bond 110 is a hard fast curing epoxy adhesive commonly used to bond glass coverslips to small or delicate samples, adhere multiple samples for TEM cross-sections, pre-coat samples prior to encapsulation and for other mounting applications. The two part epoxy cures bubble-free in five minutes at 150 °C (302 °F). Epoxy Bond 110 turns red on curing allowing curing by colour instead of time. Once cured, it is chemically resistant to etchants and will not outgas under vacuum.

B7315 Epoxy Bond 110. 15 ml kit *Irritant*

M-Bond™ 610 adhesive



M-Bond 610 is a non-conductive, two-component, solvent-thinned epoxy-phenolic adhesive for high performance applications. It is chemically resistant and provides a thin layer of glue which has good ion milling properties. It is an excellent adhesive for mounting samples for dimpling grinding and for bonding samples to produce high quality cross-sections for TEM or for FIB applications. It has also been found to be useful for bonding specimens to mounts for Vibratome sectioning. M-Bond has an extremely wide operating temperature range. The complete kit contains four 14 g bottles of resin, four 11 g bottles of curing agent, four brush caps for dispensing mixed adhesives, four disposable mixing funnels and a sheet of instructions.

The single mix kit comprises one bottle of resin (14 g), one bottle of curing agent (11 g), one brush cap for dispensing mixed adhesive and a disposable mixing funnel.

G3203 M-Bond 610. Single kit *Flammable, irritant*

G3207 M-Bond 610. Complete kit *Flammable, irritant*

Loctite® 460 sample bonding adhesive



Loctite 460 is a fast curing, low odour, low viscosity glue which can be used as an alternative to wax for mounting samples on glass for TEM/FIB thinning. Functional bond strength develops in a short time and is fully cured within 24 hours. Loctite 460 is soluble in acetone. This product also provides rapid bonding of a wide range of other materials, including metals, plastics and elastomers. It is particularly suited for bonding porous or absorbent materials such as wood, paper, leather and fabric.

G3204 Loctite 460 adhesive. 20 g *Irritant*

QuickStick™ temporary mounting wax

QuickStick is a temporary mounting wax, with a melting point of 135 °C, used to bond samples during processing. It is a crystal clear wax with high hardness and strength, which makes it ideal for diamond wheel cutting, wire saw cutting, abrasive slurry cutting, ultrasonic cutting, lapping and polishing etc. It is recommended for use with semiconductors, optical material, ceramics and metals with small contact area. It is soluble in acetone and methylene chloride, but resists most other common solvents.

B7259 QuickStick 135. Pack of 20

Lakeside® cement

Lakeside cement L 70 C is a thermoplastic bonding material for mounting thin sections on sample holders. Applied at 120 - 140 °C, it becomes solid on cooling, and is soluble in either alcohol or acetone.

G3887 Lakeside cement, 12 bars. Approx 250 g

Specimen mounting wax

Thermoplastic wax ideal for fixing ceramics, glasses and semiconductor materials to specimen mounts for grinding, dimpling or ion beam thinning. Two versions are available, one melting at 80 °C (hard wax) and the other at 52 °C (soft wax). The sample holder is heated to just above the wax melting point, and a small amount of wax is placed on the surface. The sample can then be positioned on the thin film of molten wax and allowed to cool. The thin film of solidified wax is transparent and readily soluble in chloroform or warm acetone, facilitating easy sample removal.

G3880 Transparent thermoplastic wax, 80 °C. 100 g

G3881 Transparent thermoplastic wax, 52 °C. 100 g



Plasticine®

L4366 Plasticine clay. 1 kg

Replication materials

Cellulose acetate sheets and tape provide a quick and convenient means of replicating surfaces, particularly from large objects which cannot be sectioned. They soften in acetone, allowing them to be applied to surfaces which have been pre-wetted with acetone, then the replica can be stripped when dry. For fine detail, positive replicas can be made by coating the surface with carbon and then dissolving away the acetate sheet with acetone. The carbon replicas can then be examined in the TEM. Alternatively, the replicated surface can be covered with a conductive coating and examined by SEM as a negative replica. Supplied in packs of 20 sheets, or as tape in a convenient dispenser.

- G255** Cellulose acetate, 35 µm, 150 x 100 mm
- G255A** Cellulose acetate, 50 µm, 150 x 100 mm
- G255B** Cellulose acetate, 75 µm, 100 x 150 mm
- G254A** Cellulose acetate, 115 µm, 150 x 100 mm
- G254B** Cellulose acetate, 180 µm, 150 x 100 mm
- G254F** Tri-acetate sheets, light blue, 125 µm, 125 x 125 mm
- G254G** Tri-acetate sheets, clear, 130 µm, 150 x 150 mm
- G3882** Replicating tape, 125 µm, 19 mm x 4.5 m
- G3883** Replicating tape, 125 µm, 38 mm x 4.5 m
- G3884A** Replicating tape, 50 µm, 38 mm x 1.1 m

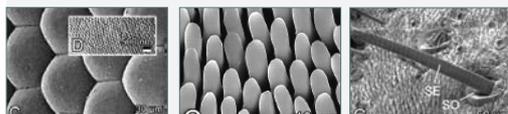


President SEM replication kit for high resolution SEM replicas



Two component silicone based moulding material with excellent low viscosity forming properties, for high definition of fine structures. Polymerises in 5 to 7 minutes, and moulds can be removed from samples directly after polymerisation to obtain a negative mould. Applications include replication of biological materials to achieve a stable surface and replication of processes like damage, wear or strain on large structures. Kit contains base (53 ml), catalyst (53 ml), six 30 ml mixing cups and six wooden stirring sticks.

G3888 President SEM resolution replication kit



Replicating compound

Two part silicone rubber elastomer formulated to make permanent replicas of objects with a 1 µm resolution. The two component cartridges are used with an applicator fitted with a fine nozzled disposable mixer tube. Two types are available; a rapid curing version with a one minute working time, and a slower curing version with a seven minute working time. Both are ideal for non-destructive testing and for field use. Replicas can be sputter coated for examination in the SEM. Temperature range from -10 °C to 180 °C.

G3556 Manual applicator

G3557 Static mixer tubes. Pack of 10

G3558 Replicating medium cartridge, fast curing (7 minute curing time). 50 ml

G3559 Replicating medium cartridge, slow curing (30 minute curing time). 50 ml

Lacomit varnish and remover



For those who wish to prepare thinned specimens by one of the window techniques, Lacomit peelable varnish is very valuable for blanking off portions of the specimen which are not to be polished. A solvent for the varnish is also available. It may also be used for thinning the varnish consistency if desired.

G371 Lacomit varnish. 500 ml *Highly flammable, harmful*

G372 Lacomit remover. 500 ml *Highly flammable, harmful*

EPO-TEK® H20E

EPO-TEK H20E is a two component, silver filled, epoxy system consisting of a silver resin paste and a silver resin hardener. The pure silver powder is dispersed in both the resin and the hardener. It mixes to a smooth thixotropic paste, characterised by outstanding high temperature properties and excellent solvent, chemical and moisture resistance. It has a long pot life and is fast curing at relatively low temperatures. It will withstand 200 °C for 1000 hours. It contains no solvents or thinners, so therefore it will not outgas. H20E is ideal for electronic applications.

G3040 EPO-TEK H20E epoxy. 28 g *Irritant*

EPO-TEK® EE129-4

EPO-TEK EE129-4 is a room temperature curing, silver filled epoxy designed for making a conductive connection in SEM sample mounts, circuit assembly, semiconductor and LCD applications.

G3041 EPO-TEK EE129-4 epoxy. 28 g *Irritant*

EPO-TEK® 353ND

EPO-TEK 353ND is a two component, high temperature epoxy originally designed for semiconductor, fibre optic and medical applications. It is especially suited for the bonding together of samples, in particular wafers, prior to ultrasonic disc cutting for the subsequent production of TEM cross-sections.

G3042 EPO-TEK 353ND epoxy. 4 g *Irritant*

Triangular tungsten carbide knives

With a consistent size and tip angle, these knives replace glass knives and razor blades in a variety of sectioning and block facing applications. The sharp edge lasts through thousands of sections, thus eliminating mid-procedure knife changes. These knives fit tightly in the glass knife holders of most microtomes and are easy to handle.

L4550 Triangular tungsten carbide knives. Pack of 3



Diamond knives

Diamond knives are available for ultrastructural and cryo-sectioning of materials. 45° angle knives are recommended for standard sectioning and for hard brittle materials such as ceramics, while 35° angle knives are suitable for soft industrial materials such as metals and polymers.

For further details on diamond knives, please refer to section 14.



Unidisc Mk2 disc punch

The Unidisc Mk2 produces discs from sample strips for electropolishing and subsequent TEM examination. The standard model produces 3 mm discs from sheet/foil samples with minimal distortion. Easy to fit hardened steel punches and dies are available to produce discs from 1 to 6 mm.

B8234 Disc punch



Grinding jig

This grinding jig enables accurate disc thickness reduction in TEM thin foil preparation. Available for both 2.3 and 3 mm discs. Please specify when ordering.

B8232 Grinding jig



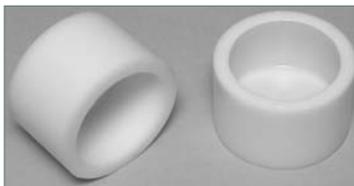
Fischione Instruments



Fischione specimen preparation equipment has been developed and expanded over a number of years and now offers the user a full range of complementary techniques for thinning material science specimens. Based on proven technology, the equipment is held in high esteem for its reliability and consistency in producing high quality specimens.

For further details on Fischione products, please refer to section 16.

Silicone rubber moulds



Reusable moulds for cold embedding, made from sturdy, flexible white or blue silicone which does not deform over time. Silicone moulds create a much smoother surface than rubber, ideal for identification of samples in clear resin. The formulation ensures easy removal without the use of release agents. All moulds are 1" high, with $\frac{3}{4}$ " internal depth.



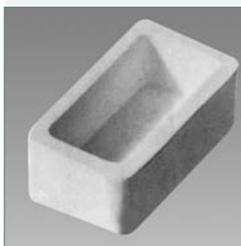
B8832 Round silicone rubber moulds, white, 1" dia. Pack of 10

B8832-125 Round silicone rubber moulds, white 1 $\frac{1}{4}$ " dia. Pack of 10

B8832-150 Round silicone rubber moulds, white, 1 $\frac{1}{2}$ " dia. Pack of 10

B8832-200 Round silicone rubber moulds, white, 2" dia. Pack of 10

B8835 Round silicone rubber moulds, blue, 1 $\frac{1}{4}$ " dia. Pack of 10



B8833 Rectangular silicone rubber moulds, white, 2 $\frac{1}{4}$ x 1". Pack of 5

B8834 Rectangular silicone rubber mould, white, 3 x 2"

Metal mounting clips



Metal clips ideal for holding thin samples during cross-sectioning. Can be used for hot and cold embedding.

B8837 Metal mounting clips. Pack of 100

Two part plastic moulds



B8836 Two part plastic mould, 1" dia. Pack of 12

B8836-125 Two part plastic mould, 1 $\frac{1}{4}$ " dia. Pack of 12

B8836-150 Two part plastic mould, 1 $\frac{1}{2}$ " dia. Pack of 12

Slides

Metal slides

Metal slides for the mounting of specimens for applications such as polishing/grinding and ultrasonic disc cutting.

L4363 Metal slides, 75 x 25 mm. Pack of 5

Glass slides

- L4367** Glass slides, 24 x 24 mm, 1 mm thick. Pack of 100
- L4364** Glass slides, 28 x 48 mm, 1 mm thick. Pack of 100
- L4365** Glass slides, 46 x 27 mm, 1.2 - 1.4 mm thick. Pack of 100
- L4222A** Glass slides, 76 x 39 mm, 1 - 1.2 mm thick. Pack of 50
- L4223A** Glass slides, 76 x 51 mm, 1 - 1.2 mm thick. Pack of 50

Other glass slides

For full range of slides and coverslips, please refer to section 6.

Storage cabinets

A heavy duty plastic storage cabinet with six shelves for easy to clean, sealed storage of consumables and accessories up to 250 mm in diameter.

B8359 Storage cabinet, 260 x 40 x 346 mm



A light grey PVC plastic storage cabinet with six shelves and Perspex door and removable inserts. Can accommodate consumables and accessories up to 300 mm in diameter.

B8360 Storage cabinet, 335 x 320 x 330 mm

B8360A Additional inserts for storage cabinet. Pack of 4