

ALLIED

HIGH TECH PRODUCTS, INC.

Product Catalog



**Quality Products for
Metallographic Sample
Preparation & Analysis**

WELCOME TO ALLIED HIGH TECH PRODUCTS, INC.



CEO's Message

Welcome to the **Allied High Tech Products catalog** and to a world of technology, equipment and consumables for metallurgical sample preparation and analysis.

For over **36 years**, Allied has been meeting the needs of companies in the materials science, materials manufacturing, aerospace, military, microelectronics, photonics, fiber optics, and research & development industries. We aggressively pursue the advancement of methods and procedures related to each of these industries, and therefore promote close working relationships with hundreds of the world's leading research universities, laboratories and institutions.

The Allied commitment is simple and complete: We provide our customers the finest and most advanced equipment and consumables for surface and sample preparation, expert technical assistance and unequalled service, before and after purchase.

Every day. Worldwide.

Our measure of success has always been, and always will be, your complete satisfaction with Allied's products and services. As you browse our catalog, I invite you to see for yourself the variety of ways Allied can support your pursuit of success. We look forward to helping you get there. Thank you for choosing Allied.

Sincerely,

A handwritten signature in black ink that reads "Clayton A. Smith".

Clayton A. Smith, CEO

ALLIED
HIGH TECH PRODUCTS, INC.

Advancing Technology in Sample Preparation

5 REASONS TO CHOOSE ALLIED

Visit us: www.alliedhightech.com

1 Exceptional quality products and great values

Each Allied product is researched, designed, produced and/or selected by our team of product application specialists, engineers, laboratory technicians and technical experts. We simply don't sell anything we wouldn't be proud to use ourselves.

2 Items in stock, ready for immediate shipment

With the largest inventory of its kind, Allied supports customers with prompt, next-day shipment, using the finest transportation sources available, including UPS and FedEx.

3 Service that's always prompt, friendly and personal

You won't find voicemail at Allied unless you are really looking for it. Our renowned service is always personal, friendly and helpful.

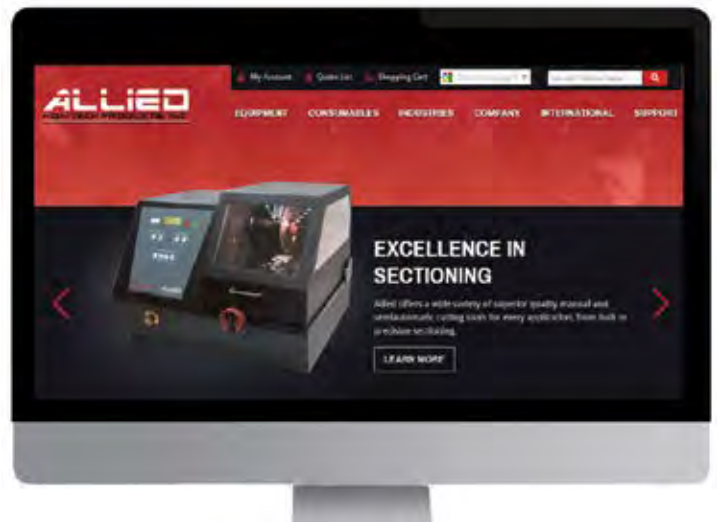
4 Ordering the way you like

With so many convenient ways to order, making your equipment and consumables purchases has never been easier.

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5 Convenient payment options

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Website Features

- Easy-to-create online accounts
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- Equipment Videos
- Support page with detailed Product Instruction sheets
- Downloadable Safety Data sheets
- "Welcome to Allied" video on the home page, with insider tour of Allied's culture and facility
- "Vertical Integration" video on the home page, detailing Allied's manufacturing process and product development philosophy
- A robust shopping module for purchase of consumables and equipment accessories
- Detailed "Industry Database" featuring micrographs and innovative Allied equipment related to each industry
- Comprehensive "Application Report" database with the latest sample preparation techniques for a wide variety of materials



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View Product Videos



Review Order History



Product Search Functionality



Intuitive Navigation



Shop for Consumables & Accessories



Customer Support

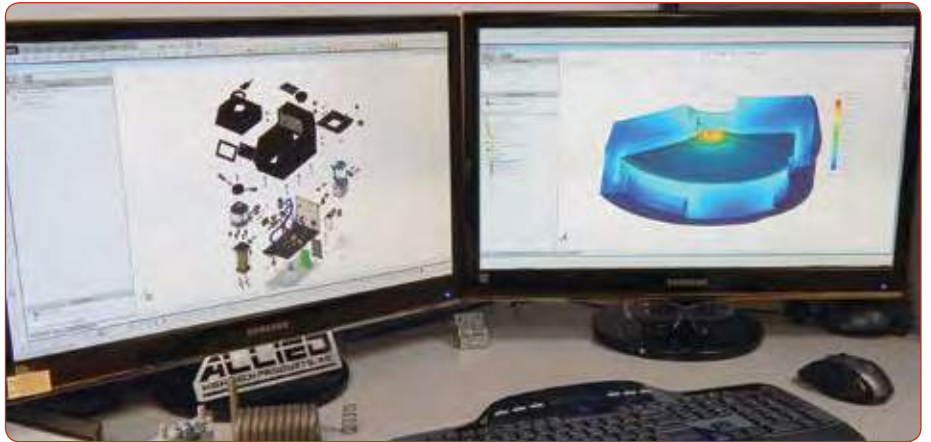
Customer Service

Allied's personnel are committed to "the ultimate service experience" starting with our friendly and helpful customer service personnel. Our goal is your complete satisfaction!



Engineering

Using the latest 3D CAD design software, a team of dedicated mechanical, electrical and design engineers assures that Allied's equipment is designed and built for maximum performance and dependability.



Machining Center

In-house precision machining capability allows critical parts processing, rapid prototyping and custom manufacturing.



Manufacturing

Allied designs and manufactures a complete range of state-of-the-art equipment at its 15,000 ft² California headquarters.





Applications Laboratory

Allied materials engineers and lab technicians provide product demonstrations and training, develop specialized sample procedures for customers worldwide and evaluate new products prior to introduction.



Technical Workshops

In scheduled programs, Allied offers technical expertise and training on the latest processes, equipment and consumables.



Warehouse

Allied's warehouse team receives, inspects and repackages products daily, ensuring that consistent, high quality standards are met. With the largest inventory of its kind, Allied's next-day order processing supports the immediate needs of customers worldwide.



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NEW!

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PowerCut 10x™ Cut-Off Saw

NEW!

The new **PowerCut 10x™** is a powerful, reliable, benchtop cut-off saw designed for low- to high-volume applications. It accommodates blades up to 10" (254 mm) in diameter, allowing a wide variety of sample shapes and sizes up to 3.75" (95 mm) thick to be sectioned. A side port allows cutting of longer samples such as bar stock.

Recirculation system, accessories and consumables are sold separately.



Dual T-slot tables accommodate two quick-slide vises to provide maximum sample support for burr-free cutting.




Dual T-slot tables provide a versatile platform for various fixturing options to secure irregular-shaped samples (#5-4050 Vertical Adjusting Clamps shown).



The #5-4230 Cabinet/Stand is useful for blade, tool and coolant tank storage.

Features:

- ❖ 10" (254 mm) diameter blade capacity
- ❖ Accepts blades with either 1.25" or 32 mm arbor hole
- ❖ Powerful 3.5 HP (2600 W) stainless-steel waterproof motor, 3,450 RPM
- ❖ Cutting capacity: up to 3.75" (95 mm) bar stock
- ❖ 5" (127 mm) distance between blade and motor, allowing longer/larger parts to be sectioned
- ❖ Two (2) T-slot tables (4" W x 7.75" D [102 x 197 mm]) provide 4 T-slots to support front-to-back and side-to-side vise/clamp positioning
- ❖ Large shatterproof viewing window
- ❖ LED illuminated interior
- ❖ Corrosion and impact resistant cover
- ❖ Sturdy cast aluminum base
- ❖ Side port for cutting long samples
- ❖ Electronic brake to stop blade at end of operation
- ❖ Safety switch to stop blade when cover is lifted
- ❖ Emergency shut-off switch
- ❖ Dimensions: 24" W x 26" D x 17" H (610 x 660 x 432 mm)
- ❖ Weight: 168 lb. (76 kg)
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

Item Description

Item	Description
5-4200	PowerCut 10x™ , 230 V, 3-Phase
5-4200-415	PowerCut 10x™ , 415 V, 3-Phase
5-4200-480	PowerCut 10x™ , 480 V, 3-Phase


Accessories

5-4005	Quick-Slide SS Vise: 3.45" Opening x 2" W x 1.95" H (87 x 51 x 49 mm)
5-4006	Sample Support Platform (for #5-4005 Vise)
5-4050	Vertical Adjusting Clamp, 2.25" (57 mm) Capacity
5-4205	Recirculating Coolant System, 7 gal. (26.5 L) Capacity (for #5-4200 Saw)
5-4205-415	Recirculating Coolant System, 7 gal. (26.5 L) Capacity (for #5-4200-415 Saw)
5-4205-480	Recirculating Coolant System, 7 gal. (26.5 L) Capacity (for #5-4200-480 Saw)
5-4230	Cabinet/Stand: 26" W x 31" D x 37" H (660 x 787 x 940 mm)

TechCut 5™ Precision High Speed Saw



Features:

- ❖ Automatic Y-Axis sample advancement with soft-start, programmable from 0.05" to 3" (1.25-76 mm) per minute
- ❖ Manual Y-Axis sample advancement using hand wheel
- ❖ Cutting capacity: up to 2.5" (63 mm) bar stock
- ❖ Accepts 3-8" (76-203 mm) blades with either 0.5" (12.7 mm) or 1.25" (32 mm) arbor hole
- ❖ Variable speed: 500-5,000 RPM (100 RPM increments)
- ❖ Adjustable cut depth with high speed auto retraction
- ❖ Selectable sample force (low, medium, high) to optimize feed rate automatically
- ❖ Sample rotation for difficult, round or thick samples (with optional #5-5745 Rotational Cutting Attachment)
- ❖ 1.25 HP (950 W) high torque DC motor
- ❖ Touchpad switches to control all functions
- ❖ LED illuminated interior
- ❖ Intuitive control panel with backlit 4-line LCD display (imperial or metric units)
- ❖ Protective metal cover with viewing windows and safety auto shut-off sensor
- ❖ Recirculating coolant system - either internal 1.25 gal. (4.7 L) or external 7 gal. (26.5 L) capacity reservoir
- ❖ Dimensions: 24" W x 25" D x 19" H (610 x 635 x 483 mm)
- ❖ Weight: 142 lb. (65 kg)
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



#5-5330 T-Slot Table provides a versatile platform for fixtures. Shown here with #5-4050 Vertical Adjusting Clamps.

Universal Accessories

5-5525	Quick-Slide SS Vise, 2" (51 mm) Capacity
5-5745	Rotational Cutting Attachment with Holders

T-Slot Table

5-5330	T-Slot Table (7.75" W x 8.25" D (195 x 210 mm)
5-5350	Clamp Set for up to 0.25" Thick Samples (Pk/4)
5-4050	Vertical Adjusting Clamp, 2.25" (57 mm) Capacity

The **TechCut 5™** precision high speed saw is a versatile, programmable machine designed to cut a wide variety and size of materials. It automatically sections materials at high speeds, increasing sample throughput. The microprocessor-based system controls sample feed rate, distance and force, and automatically adjusts feed rate as the cutting condition changes due to varying thickness and/or material differences in the sample. When sectioning is complete, the table automatically retracts the sample to the home position and stops blade rotation and coolant. The unique fixturing system allows for easy changes between the T-Slot Table and the X-Axis Tables. Both tables offer a variety of convenient, table-specific fixture options.

Tables, accessories and consumables are sold separately.

Item Description

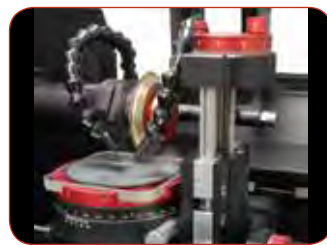
5-5700-ER	TechCut 5™ with External Reservoir, 100-240 V
5-5700-IR	TechCut 5™ with Internal Reservoir, 100-240 V



#5-5320 X-Axis Table with #5-5745 Rotational Cutting Attachment



#5-5520 Cam-Lock Fixture Adapter with #15-1045 Multipurpose Fixture



#5-5730 Z-Axis Stage with #5-5540 Dicing Rotation Stage



#5-5525 Quick-slide stainless steel vise with removable delrin jaw inserts

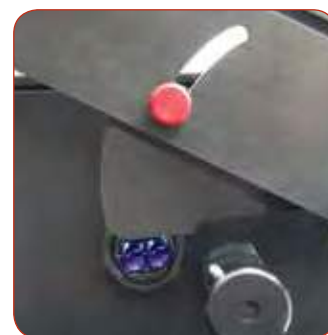
Indexing Tables & Accessories

5-5320	X-Axis Table, 25 µm Resolution
5-5325	X-Axis Table, 5 µm Resolution
5-5520	Cam-Lock Fixture Adapter
15-1045	Multipurpose Fixture, 2" (51 mm) for #5-5520
5-5510	Multiposition Vise, 3" (76 mm) Capacity
5-5730	Z-Axis Stage, 5 µm Resolution
5-5540	Dicing Rotation Stage, 360° w/ 0.1° Resolution
5-5555	Saddle Clamp Set (Pk/2)
5-5560	Teardrop Holder for 25 mm - 2" mounts
5-5070	Fixture Rotation Stage, 360° w/ 2° Resolution

TechCut 4™ Precision Low Speed Saw



Spring-retractable dressing stick attachment allows dressing while sectioning.




Optical shut-off sensor with adjustable stop

The **TechCut 4™** is a precision low speed saw excellent for cutting smaller, delicate samples that cannot tolerate increased heat caused by high speed sectioning.

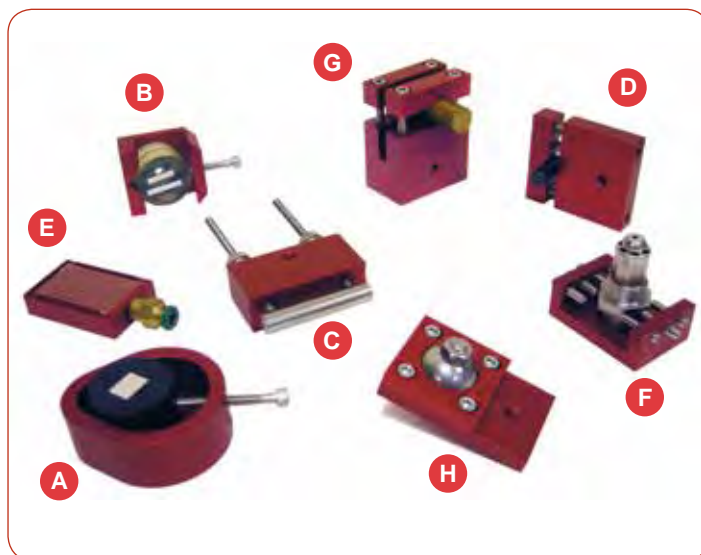
The pivoting cutting arm has adjustable weights to apply or counterbalance downward force to the sample during sectioning. Cutting fluid is drawn from the reservoir by the blade to cool the sample. With a 3" to 6" blade range, samples up to 2" thick can be sectioned.

Accessories and consumables are sold separately.

Features:

- ❖ Gravity-fed cutting system
- ❖ 3-6" (75-150 mm) diameter blade range, 0.5" (12.7 mm) arbor hole
- ❖ Variable speed with LED display: 10-500 RPM (10 RPM increments)
- ❖ Cutting capacity: 2" (51 mm) thickness
- ❖ Micrometer sample indexing, 0.002 mm resolution, 0-25 mm range
- ❖ Spring-retractable dressing stick attachment for dressing while sectioning
- ❖ Optical shut-off sensor with adjustable stop to control depth of cut
- ❖ Precision machined aluminum and stainless steel construction that maximizes corrosion resistance and durability
- ❖ 0.06 HP (45 W) motor with durable reduction gearbox for constant high-torque output
- ❖ Sliding weights that provide variable sample loading: 0-300 grams
- ❖ Touchpad switches to control all functions
- ❖ Removable splash shield
- ❖ Removable coolant reservoir
- ❖ Removable catch screens that prevent sectioned pieces from falling into reservoir
- ❖ Dims: 13" W x 15" D x 13" H (330 x 381 x 330 mm)
- ❖ Weight: 36 lb. (16 kg)
- ❖ **CE** compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

Item	Description
5-5200	TechCut 4™ , 100-240 V



Accessories

5-5005	Teardrop Fixture for 25 mm - 1.5" mounts	A
5-5010	V-Block Fixture, 1" (25 mm) Capacity	B
5-5015	Bone Fixture	C
5-5020	Single Saddle Clamp	D
5-5025	Vacuum Fixture, for 27 x 46 mm Glass Slide	E
5-5030	Multipurpose Fixture	F
5-5035	Dual Saddle Clamp	G
5-5040	Swivel Attachment (to adapt other fixtures for angle cutting)	H
5-5045	2.5" (63 mm) Flange Set	

TrimSaw 2™



Multipurpose Fixture



Adjustable Rip Fence

The **TrimSaw 2™** is excellent for rapid sectioning of printed circuit boards, ceramic substrates, electronic packages, excess mounting material and other nonmetals.

Cutting fluid is drawn from the reservoir by the rotating blade and applied to the sample. Using a 6" (150 mm) blade, samples up to 1.6" (41 mm) thick can be sectioned. Optional fixtures slide in the table slot for more precise cutting requirements or when handheld cutting cannot be tolerated.


Diamond Band Saw



The **Diamond Band Saw** is a versatile sectioning machine excellent for coarse or nonlinear cutting of materials such as printed circuit boards, electronic packages, substrates, polymers and other nonmetals.

Cutting fluid is drawn from the reservoir by the blade and applied to the sample. Durable plastic injection molded construction prevents corrosion.

Features:

- ❖ 0.25 HP (190 W) motor, variable speed: 500-3,000 RPM (100 RPM increments)
- ❖ 4-6" (100-150 mm) diameter blade range, 0.5" (12.7 mm) arbor hole
- ❖ Precision machined aluminum and SS construction for maximum durability
- ❖ Plexiglass cover (removable) for safety and splash protection
- ❖ Large cutting platform: 6.75" W x 12.5" D (171 x 318 mm) accommodates oversized samples
- ❖ Adjustable table rip fence for guided sectioning
- ❖ Slotted table to accept fixtures for linear cutting
- ❖ Coolant reservoir, 1 gal. (3.8 L) capacity
- ❖ Dims: 18" W x 20" D x 11" H (457 x 508 x 279 mm)
- ❖ Weight: 35 lb. (15.9 kg)
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

Accessories and consumables are sold separately.

Item	Description
5-3000	TrimSaw 2™ , 100-240 V

Accessories

5-3005	Miter Guide, Fixed 90°
5-3010	Multipurpose Fixture

Features:

- ❖ Blade speed: 60 feet per second
- ❖ Coolant reservoir, 1 gal. (3.8 L) capacity
- ❖ Durable plastic injection body that prevents corrosion
- ❖ Large cutting platform: 12" W x 11" D (305 x 280 mm) for cutting oversized samples
- ❖ Tight-radius sectioning for sample extraction from large pieces
- ❖ Single-knob blade tension adjustment
- ❖ Blade clearance: 5.5" from left, 2.5" high
- ❖ Dims: 11" W x 15" D x 18" H (279 x 381 x 457 mm)
- ❖ Weight: 20 lb. (9 kg)
- ❖ Six (6) month warranty

Item	Description
70-1500	Diamond Band Saw , 115 V
70-1500-230	Diamond Band Saw , 230 V

Accessories

70-1505	Diamond Plated Blade (0.02" / 0.5 mm thick) with PTFE Replacement Guides (Pk/2)
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Wafering Blades

Wafering blades are available in **Bonded**, **Plated** or **Solid Core** configurations with diamond, cubic boron nitride (CBN), aluminum oxide (Al₂O₃) or silicon carbide (SiC) mineral. They are recommended for precision sectioning or when kerf (cut width) loss needs to be minimized. (Dimensions listed are **diameter x thickness x arbor hole**.)

Bonded Blades

Bonded blades are composed of an inner metal core and an outer rim. The rim consists of either metal or resin mixed with abrasive, cured under high temperature and pressure to bond the matrix together. Metal bonding offers long life and durability, while resin bonding creates less heat, provides better surface finish and is well suited for cutting hard, delicate or brittle materials.

Diamond, Metal Bond

High Concentration

Recommended for general laboratory sectioning, excluding ferrous alloys, at either low (<1,000 RPM) or high (>1,000 RPM) speeds.

Item	Dimensions
60-20065	3" x .006" x .5" (76 x .15 x 12.7 mm)
60-20070	4" x .012" x .5" (102 x .31 x 12.7 mm)
60-20075	5" x .015" x .5" (127 x .38 x 12.7 mm)
60-20080	6" x .020" x .5" (152 x .51 x 12.7 mm)
60-20081	7" x .025" x .5" (178 x .64 x 12.7 mm)
60-20084	8" x .030" x .5" (203 x .76 x 12.7 mm)



Metal Bonded Blades

Low Concentration

Recommended for sectioning very hard or brittle materials such as ceramics, silicon, glass and refractories where chipping and pullout need to be minimized. Most commonly used at lower (<1,000 RPM) speeds.

Item	Dimensions
60-20085	3" x .006" x .5" (76 x .15 x 12.7 mm)
60-20090	4" x .012" x .5" (102 x .31 x 12.7 mm)
60-20095	5" x .015" x .5" (127 x .38 x 12.7 mm)
60-20100	6" x .020" x .5" (152 x .51 x 12.7 mm)
60-20101	7" x .025" x .5" (178 x .64 x 12.7 mm)
60-20104	8" x .030" x .5" (203 x .76 x 12.7 mm)

Diamond, Resin Bond

Recommended for cutting hard, brittle or delicate materials including ceramics, carbides, composites and exotic metals where low heat generation or improved surface finishes are desired. Most commonly used at higher (>1,000 RPM) speeds.



Resin Bonded Blades

Item	Dimensions
60-20069	4" x .020" x .5" (102 x .51 x 12.7 mm)
60-20074	5" x .020" x .5" (127 x .51 x 12.7 mm)
60-20079	6" x .020" x .5" (152 x .51 x 12.7 mm)
60-20086	7" x .025" x .5" (178 x .64 x 12.7 mm)
60-20088	8" x .030" x .5" (203 x .76 x 12.7 mm)

CBN, Metal Bond

Recommended for sectioning hard steel, and iron, cobalt, nickel and lead based alloys. Most commonly used at lower (<1,000 RPM) speeds.



Metal Bonded Rim Section

Item	Dimensions
60-20071	4" x .012" x .5" (102 x .31 x 12.7 mm)
60-20076	5" x .015" x .5" (127 x .38 x 12.7 mm)
60-20082	6" x .020" x .5" (152 x .51 x 12.7 mm)
60-20083	7" x .025" x .5" (178 x .64 x 12.7 mm)
60-20087	8" x .030" x .5" (203 x .76 x 12.7 mm)

CBN, Resin Bond

Recommended for sectioning hard steel above HRC 60. Most commonly used at higher (>1,000 RPM) speeds.

Item	Dimensions
60-30005	5" x .020" x .5" (127 x .51 x 12.7 mm)
60-30010	6" x .020" x .5" (152 x .51 x 12.7 mm)
60-30015	7" x .025" x .5" (178 x .64 x 12.7 mm)
60-30020	8" x .030" x .5" (203 x .76 x 12.7 mm)

Plated Blades

Plated blades consist of a metal core with diamonds nickel plated to the rim. These blades provide aggressive sectioning on samples containing resins and soft materials including PCBs, fiber composites and plastics.

Diamond, Segmented Rim

Recommended for sectioning resin or plastic composites, and other materials where metals are not predominant. The diamond segments draw coolant into the cut and remove swarf effectively. Used at either low (<1,000 RPM) or high (>1,000 RPM) speeds.



Diamond Plated, Segmented Rim Section

Item	Dimensions
65-10010	4" x .020" x .5" (102 x .51 x 12.7 mm)
65-10025	6" x .020" x .5" (152 x .51 x 12.7 mm)
65-10030	6" x .040" x .5" (152 x 1 x 12.7 mm)

Diamond, Continuous Rim

For general sectioning of a variety of nonmetals. Used at either low (<1,000 RPM) or high (>1,000 RPM) speeds.

Item	Dimensions
75-10005	4" x .012" x .5" (102 x .31 x 12.7 mm)
75-10010	4" x .020" x .5" (102 x .51 x 12.7 mm)
75-10020	5" x .020" x .5" (127 x .51 x 12.7 mm)
75-10035	6" x .040" x .5" (152 x 1 x 12.7 mm)
75-10045	8" x .025" x .5" (203 x .64 x 12.7 mm)

Cutting Fluids



Cutting fluid enhances blade performance, extends blade life and minimizes material deformation by reducing heat during cutting. Use Deli-Cut low speed cutting fluid for gravity-fed saws at full strength. Use Maxi-Cut or Lubri-Cut for speeds above 1,000 RPM (diluted 2-5% with water). Lubri-Cut has low oil content and is easier to clean.



Item	Description
80-10130	Lubri-Cut, 128 oz. (3.8 L)
80-10135	Lubri-Cut, 32 oz. (950 mL)
80-10140	Maxi-Cut, 128 oz. (3.8 L)
80-10145	Maxi-Cut, 32 oz. (950 mL)
60-20110	Deli-Cut, 32 oz. (950 mL)

Solid Core Blades



Solid core cut-off blades consist of abrasive mineral mixed with resin to form a continuous matrix through the entire blade. Aluminum oxide is recommended for cutting ferrous metals and super alloys, while silicon carbide is best used for cutting non-ferrous metals and alloys. These produce minimal odor, cut cool and are suited for higher-speed sectioning on non-gravity-fed saws. Two arbor sizes are offered.

Resin Bond, 0.5" (12.7 mm) Arbor Hole (Pk/10)

Al_2O_3	Dimensions
Ferrous Alloys < HV 450	
80-11505	7" x .030" (175 x .76 mm)
80-11510	8" x .035" (200 x .8 mm)
Ferrous Alloys HV 450 - 800	
80-11705	7" x .030" (175 x .76 mm)
80-11710	8" x .035" (200 x .8 mm)
SiC	
Non-Ferrous Alloys < HV 450	
80-11605	7" x .030" (175 x .76 mm)
80-11610	8" x .035" (200 x .8 mm)
Non-Ferrous Alloys HV 450 - 800	
80-11805	7" x .030" (175 x .76 mm)
80-11810	8" x .035" (200 x .8 mm)

Resin Bond, 1.25" (32 mm) Arbor Hole (Pk/10)

Al_2O_3	Dimensions	SiC
80-11300	6" x .024" (150 x .61 mm)	80-11400
80-11305	7" x .030" (175 x .76 mm)	80-11405
80-11310	8" x .030" (200 x .76 mm)	80-11410

Dressing Stick, Silicon Carbide

Used to clean the rim and expose new abrasive on all wafering blades.



Item	Dimensions
60-20105	6" x .5" x .5" (152 x 12.7 x 12.7 mm)

Cut-Off Blades

Cut-off blades are specially engineered for metallurgical sectioning. Aluminum oxide (Al_2O_3), silicon carbide (SiC), diamond and cubic boron nitride (CBN) abrasives are offered in various bond types for sectioning a wide variety of materials. Choosing the right blade for the right material is crucial in reducing thermal and structural deformation. Protective metal arbor inserts are molded into resin and rubber/resin blades. **Blade arbor holes fit both 32 mm and 1.25" spindle arbors.** All blades are precision ground to slightly less than the stated diameter to universally fit all makes and models of cutting machines. Blotters are supplied to shield vibration from the metal flanges and help protect the blade from breaking during use.

Bond Information:

Resin Bond blades cut cooler with less friction and do not emit a burned rubber odor as with rubber bond blades.

Rubber Bond blades are thinner and ideal for production environments where durability and longer life are desired.

Rubber/Resin Bond blades offer both durability and cooler cutting characteristics.

Metal Bond diamond blades provide longer blade life and more durability than resin bond blades, for less critical surface finish requirements.

9" (225 mm)	Material	Abrasive	Bond	Thickness Inch (mm)	Unit	Item
	Tool Steels (HRC 60+)	Al_2O_3	Rubber/Resin	.062" (1.6)	Pk/10	80-50000
			Resin	.062" (1.6)		80-50001
	Hardened Steels, Super Alloys (HRC 45-60)		Rubber	.062" (1.6)		80-50010
				.040" (1.0)		80-50015
	Carbon Steels, Medium Hard Steels (HRC 30-45)		Resin	.060" (1.5)		80-50022
			Rubber	.062" (1.6)		80-50025
	Delicate Cutting of Steels		Rubber	.040" (1.0)		80-50030
			Rubber	.032" (0.8)		80-50035
	Soft/Annealed Steels		Resin	.080" (2.0)		80-50040
Tough Non-Ferrous, Titanium Alloys			Resin	.055" (1.4)		80-50045
	Rubber	.062" (1.6)	80-50055			
		.040" (1.0)	80-50060			
Soft Non-Ferrous/Al/Cu Alloys	Rubber/Resin	.062" (1.6)	80-50065			

10" (250 mm)	Material	Abrasive	Bond	Thickness Inch (mm)	Unit	Item
	Tool Steels (HRC 60+)	Al_2O_3	Rubber/Resin	.062" (1.6)	Pk/10	80-40000
			Resin	.060" (1.5)		80-40001
	Hardened Steels, Super Alloys (HRC 45-60)		Rubber	.062" (1.6)		80-40010
				.040" (1.0)		80-40015
	Carbon Steels, Medium Hard Steels (HRC 30-45)		Resin	.040" (1.0)		80-40021
				.060" (1.5)		80-40022
	Delicate Cutting of Steels		Rubber	.062" (1.6)		80-40025
				.040" (1.0)		80-40030
	Soft/Annealed Steels		Rubber	.032" (0.8)		80-40035
			Resin	.080" (2.0)		80-40040
	Tough Non-Ferrous, Titanium Alloys		Resin	.055" (1.4)		80-40045
				.040" (1.0)		80-40054
			Rubber	.062" (1.6)		80-40055
	.040" (1.0)			80-40060		
Soft Non-Ferrous/Al/Cu Alloys	Rubber/Resin		.062" (1.6)	80-40065		
Ceramics/Composites	Diamond	Metal	.050" (1.3)	Each	60-40070	
Carbides/Fragile Nonmetals		Resin	.050" (1.3)		60-40075	
Hardened Steels (HRC 60+)	CBN	Resin	.050" (1.3)		60-40080	



12" (300 mm)	Material	Abrasive	Bond	Thickness Inch (mm)	Unit	Item
	Tool Steels (HRC 60+)	Al ₂ O ₃	Rubber/Resin	.090" (2.3)	Pk/10	80-30000
			Resin	.070" (1.8)		80-30001
	Hardened Steels, Super Alloys (HRC 45-60)		Resin	.070" (1.8)		80-30008
			Rubber	.062" (1.6)		80-30010
	Carbon Steels, Medium Hard Steels (HRC 30-45)			.040" (1.0)		80-30015
			Resin	.070" (1.8)		80-30023
			Rubber	.062" (1.6)		80-30025
				.040" (1.0)		80-30030
	Soft/Annealed Steels		Resin	.080" (2.0)		80-30035
Tough Non-Ferrous, Titanium Alloys	SiC		Resin	.065" (1.7)		80-30045
			.060" (1.5)	80-30052		
		Rubber	.062" (1.6)	80-30050		
			.040" (1.0)	80-30055		
Soft Non-Ferrous/Al/Cu Alloys	Rubber/Resin	.090" (2.3)	80-30060			
Ceramics/Composites	Diamond	Metal	.062" (1.6)	60-30065		
Carbides/Fragile Nonmetals		Resin	.062" (1.6)	60-30070		
Hardened Steels (HRC 60+)	CBN	Resin	.062" (1.6)	60-30075		

14" (350 mm)	Material	Abrasive	Bond	Thickness Inch (mm)	Unit	Item
	Tool Steels (HRC 60+)	Al ₂ O ₃	Resin	.090" (2.3)	Pk/10	80-10001
	Hardened Steels, Super Alloys (HRC 45-60)		Resin	.090" (2.3)		80-10002
			Rubber	.062" (1.6)		80-10010
	Carbon Steels, Medium Hard Steels (HRC 30-45)		Resin	.080" (2.0)		80-10015
			Resin	.090" (2.3)		80-10022
	Soft/Annealed Steels		Resin	.080" (2.0)		80-10025
	Tough Non-Ferrous, Titanium Alloys		Rubber	.062" (1.6)		80-10030
			Resin	.075" (1.9)		80-10045
	Soft Non-Ferrous/Al/Cu Alloys		Rubber/Resin	.090" (2.3)		80-10035
Ceramics/Composites	Diamond		Metal	.062" (1.6)		60-10040
Carbides/Fragile Nonmetals		Resin	.062" (1.6)	60-10045		
Hardened Steels (HRC 60+)	CBN	Resin	.062" (1.6)	60-10046		

TechPress 3™ Mounting Press

NEW!

The **TechPress 3™** Electro-Hydraulic Automatic Mounting Press is used to encapsulate samples for metallographic preparation.



The microprocessor-based system allows the operator to use either manual input or a preloaded database of 80 adjustable programs, which include parameters for mold size, single mount or duplexing, mounting resin, curing time and temperature, pressure and cooling time.

The intuitive interface features a 7" color LCD touchscreen to control all functions and offers 10 selectable languages.

Mold assemblies that range from 25 mm to 2" can be easily changed and include a duplexing spacer, allowing up to two mounts per cycle to be produced at one time.

Mold assemblies, recirculating coolant system, consumables and accessories are sold separately.

Item	Description
5-1000	TechPress 3™, 100-240 V

Mold/Heater Assemblies

Item	Description
5-1005	1" Mold with Duplex Spacer
5-1010	1.25" Mold with Duplex Spacer
5-1015	1.5" Mold with Duplex Spacer
5-1020	2" Mold with Duplex Spacer
5-1025	25 mm Mold with Duplex Spacer
5-1030	30 mm Mold with Duplex Spacer
5-1035	40 mm Mold with Duplex Spacer
5-1040	50 mm Mold with Duplex Spacer

Recirculating Coolant System

Environmentally Friendly



Item	Description
5-1550	Recirculating Coolant System, 115 V
5-1550-230	Recirculating Coolant System, 230 V

Features:

- ❖ Preparation of up to 2 mounts in 5 minutes
- ❖ Selectable languages (English, Italian, French, Spanish, Portuguese, German, Russian, Chinese, Japanese and Korean)
- ❖ 7" color LCD touchscreen to control all functions
- ❖ Intuitive interface optimized for productivity and function
- ❖ Safety interlock to require closure of bayonet cap before cycle start
- ❖ Selectable units: psi/BAR, °C/°F
- ❖ Mold assemblies that can be easily changed from 25 mm through 2" and include a duplexing spacer, allowing up to two mounts per cycle
- ❖ One-touch or momentary-touch ram extension and retraction
- ❖ Seamless integration with recommended #5-1550 Recirculating Coolant System for standalone and/or "green" operation
- ❖ Enclosure resistant to impact, corrosion and heat
- ❖ Non-conductive bayonet handles that remain cool during operation
- ❖ Bayonet holding tray that protects the die from damage between cycles
- ❖ Compact, narrow footprint
- ❖ Password protectable parameters
- ❖ Heating power: 1500 W
- ❖ Molding pressure: up to 5500 PSI (379 Bar)
- ❖ Curing temperature: 0-200°C (32-392°F)
- ❖ Curing time: 0-100 minutes
- ❖ Cooling time: 0-100 minutes
- ❖ Dims: 11.5" W x 22" D x 19" H (292 x 559 x 483 mm)
- ❖ Weight: 85 lb. (38.5 kg)
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA



Compression Mounting

Compression mounting is an economical method of encapsulating samples that can withstand the pressure and heat of the mounting process. A variety of mounting powders and preforms are available. All powders include a measuring scoop.



Phenolic

Black, green and red phenolic powders are used for routine applications, when color coding for material identification, or as backfill for more expensive powders.

Item	Description
135-10005	Black, 5 lb. (2.3 kg)
135-10007	Black, 25 lb. (11.5 kg)
135-10005-B	Black, 250 lb. (113 kg)
135-10010	Green, 5 lb. (2.3 kg)
135-10012	Green, 25 lb. (11.5 kg)
135-10010-B	Green, 250 lb. (113 kg)
135-10015	Red, 5 lb. (2.3 kg)
135-10017	Red, 25 lb. (11.5 kg)
135-10015-B	Red, 250 lb. (113 kg)

Phenolic Preforms

Phenolic preforms require no measuring, are cleaner than loose powder and are easy to use.



Item	Description
135-20005	Black, for 1.25" or 30 mm Mold (Pk/500)
135-30005	Black, for 1.5" or 40 mm Mold (Pk/500)
135-40005	Black, for 2" or 50 mm Mold (Pk/100)
135-20010	Green, for 1.25" (30 mm) Mold (Pk/500)
135-30010	Green, for 1.5" or 40 mm Mold (Pk/500)
135-20015	Red, for 1.25" (30 mm) Mold (Pk/500)
135-30015	Red, for 1.5" or 40 mm Mold (Pk/500)

Transparent Thermoplastic

This is a clear mounting powder that allows easy sample observation.



Item	Unit
165-10005	5 lb. (2.3 kg)
165-10025	25 lb. (11.5 kg)

Black Glass-Filled Epoxy

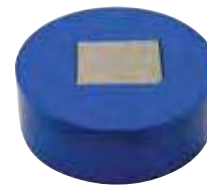
This very hard epoxy mounting powder with glass fiber filler provides excellent chemical resistance, specimen adhesion and edge retention. Mold release is recommended (see page 20).



Item	Unit
150-10105	5 lb. (2.3 kg)
150-10110	25 lb. (11.5 kg)

Blue Diallyl Phthalate

This mounting powder is filled with glass or mineral and provides excellent edge retention and chemical resistance.



Item	Description
160-10005	Glass-Filled, 5 lb. (2.3 kg)
160-10010	Mineral-Filled, 5 lb. (2.3 kg)

Conductive

These mounting powders are used to make conductive samples for scanning electron microscopy and electrolytic polishing. The copper-based powder provides very good edge retention and should be used for analyzing samples where copper is not a primary constituent. The graphite-based powder offers a higher hardness and is recommended for specimens without carbon as a component.



Item	Description
155-10010	Copper-Based, 1 lb. (0.45 kg)
155-20010	Graphite-Based, 1 lb. (0.45 kg)
155-20015	Graphite-Based, 5 lb. (2.3 kg)

Cold Mounting

Cold mounting is recommended when encapsulating samples that cannot withstand the heat and pressure of compression mounting, when better flow and penetration of the mounting resin is needed, or when a large quantity of samples must be encapsulated at once.

Acrylics: Typically used for their rapid cure times, or when large volume sample throughput is needed.

Epoxies: Typically used for excellent flow and penetration, or when better adhesion, chemical resistance, less shrinkage and clarity are required.

QuickCure Acrylic

QuickCure offers excellent clarity, flow, bonding and grinding characteristics for a wide variety of materials.



QuickCure

Features:

- ❖ Cure time: 15-20 minutes
- ❖ 82 Shore D hardness
- ❖ Peak curing temperature: 60 °C/140 °F
- ❖ Mixed 2:1 (Powder:Liquid) by volume
- ❖ Pressure chamber recommended

Item	Description
170-10000	QuickCure Kit
Includes: 5 lb. powder, two (2) 32 oz. liquid, 50 mixing cups, 50 stir sticks and measuring scoop	
170-10020	2 lb. Powder (0.9 kg)
170-10005	5 lb. Powder (2.3 kg)
170-10035	25 lb. Powder (11.5 kg)
170-10025	32 oz. Liquid (950 mL)
170-10026	2.5 gal. Liquid (9.5 L)

Pressure Chamber

The use of pressure with acrylics and epoxies prevents the formation of small bubbles (outgassing) caused by elevated exothermic temperatures during hardening. This also produces clearer mounts with better edge retention, improved adhesion and reduced shrinkage. Maximum rating: 35 psi (2.4 bar)

Item	Description
175-10005	Pressure Chamber

Dims: 4.75" (120 mm) Diameter x 3.75" (95 mm) Depth



QuickSet Acrylic

QuickSet is used to encapsulate a wide variety of specimens, especially printed circuit boards and other electronic components.



QuickSet

Features:

- ❖ Cure time: 6-8 minutes
- ❖ 84 Shore D hardness
- ❖ Excellent hole penetration on PCBs
- ❖ Peak curing temperature: 60 °C/140 °F
- ❖ Mixed 2:1 (Powder:Liquid) by volume

Item	Description
185-10000	QuickSet Kit
Includes: 5 lb. powder, 64 oz. liquid, 50 mixing cups, 50 stir sticks and measuring scoop	
185-10020	2 lb. Powder (0.9 kg)
185-10005	5 lb. Powder (2.3 kg)
185-10030	25 lb. Powder (11.5 kg)
185-10040	100 lb. Powder (45 kg)
185-10025	32 oz. Liquid (950 mL)
185-10010	64 oz. Liquid (1.9 L)
185-10035	2.5 gal. Liquid (9.5 L)
185-10036	5 gal. Liquid (19 L)





EpoxyMount



EpoxySet

EpoxyMount

This fast-curing epoxy hardens in 2 hours at room temperature while still maintaining quality characteristics such as good adhesion, hardness and minimal shrinkage.

Features:

- ❖ Cure time: 2 hours at room temperature for 1.25" diameter x 1" thick mounts (Heat [38 °C/100 °F] accelerates cure time to 45 min.)
- ❖ 87 Shore D hardness
- ❖ Peak curing temperature: 66 °C/150 °F
- ❖ Mixed 10:3 (Resin:Hardener) by weight

Item	Description
145-10005	EpoxyMount Kit
Includes: 120 oz. resin, 40 oz. hardener, 50 mixing cups, 50 stir sticks and dispensing pump	
145-10010	120 oz. Resin (3.4 kg)
145-10025	48 oz. Resin (1.4 kg)
145-10015	40 oz. Hardener (1.1 kg)
145-10030	16 oz. Hardener (450 g)

EpoxySet

With very low viscosity, EpoxySet offers excellent flow and penetration. It is extremely hard, crystal clear and exhibits firm adhesion with virtually no shrinkage. Low curing temperature is ideal for heat sensitive samples.

Features:

- ❖ Cure time: 8 hours at room temperature for 1.25" diameter x 1" thick mounts (Heat [38 °C/100 °F] accelerates cure time to 45 min.)
- ❖ 89 Shore D hardness
- ❖ Excellent adhesion, with virtually no shrinkage
- ❖ Low viscosity, allowing penetration into small crevices/holes
- ❖ Peak curing temperature: 54 °C/130 °F
- ❖ Mixed 100:12 (Resin:Hardener) by weight

Item	Description
145-20000	EpoxySet Kit
Includes: 128 oz. resin, 16 oz. hardener, 50 mixing cups, 50 stir sticks and dispensing pump	
145-20005	128 oz. Resin (3.6 kg)
145-20015	51 oz. Resin (1.5 kg)
145-20010	16 oz. Hardener (450 g)
145-20020	7 oz. Hardener (200 g)

VacuPrep™ Impregnation System

The **VacuPrep™** removes trapped air from uncured epoxy, filling open pores and cavities in samples to provide maximum bonding and support. This maintains sample integrity during abrasive preparation, reducing the chance of cracking or delamination.



Features:

- ❖ Through-port for optional epoxy fill under vacuum
- ❖ Cup holder for mixed epoxy
- ❖ Clear top to allow sample viewing during process
- ❖ Pull of up to 28 inHg vacuum
- ❖ Large 10" diameter x 4.5" (254 x 114 mm) deep chamber; capacity of up to (30) 1¼" (32 mm) cups
- ❖ Stainless steel components that resist corrosive gases
- ❖ Quiet, pump-free operation
- ❖ 80 psi (5.5 bar) compressed air operation
- ❖ Dims: 13" W x 18" D x 6" H (330 x 457 x 152 mm)
- ❖ Weight: 21 lb. (9.5 kg)
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA

Item	Description
175-30000	VacuPrep™

PCB Indexing Pins

PCB pins are used to align through-holes when encapsulating multiple printed circuit board samples in one mount.

Item	Description
132-10000	1" Length x 0.094" Diameter (Pk/1,000)
132-10005	41 mm Length x 2 mm Diameter (Pk/500)
132-10030	43 mm Length x 2 mm Diameter (Pk/500)
132-10040	50 mm Length x 2 mm Diameter (Pk/500)
132-10045	50 mm Length x 0.094" Diameter (Pk/500)



PCB Indexing Pins

Glass Cover Slips & Slides

Adhere cover slips to delicate or small samples to support and protect the surface when preparing unencapsulated cross-sections. Use slides for preparing petrographic thin sections or when using vacuum fixtures.

Item	Description
72-20000	Cover Slip, 18 mm Square (Pk/160)
72-PS2746	Glass Slide, 27 x 46 mm (Pk/144)

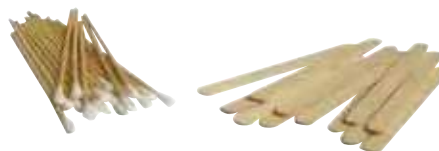


Glass Cover Slips & Slides

Stir Sticks & Applicators

Use stir sticks for mixing epoxy or acrylic components, and applicators for cleaning and applying etchant to samples.

Item	Description
210-10000	Wood Stir Sticks (Pk/1,000)
210-30000	Cotton Tipped Applicators, 6" (Pk/1,000)



Stir Sticks & Applicators

Epoxy Dissolver

The dissolver is a blend of solvents that removes cured epoxy from a specimen when heated.

Item	Unit
145-50210	16 oz. (480 mL)

Epoxy Dissolver



Mixing Accessories

For mixing epoxies or acrylics, the chemical-resistant plastic cup is graduated for volumetric measurement. The scale weighs epoxy components with precision.

Item	Description
199-10000	Graduated Mixing Cup - 6 oz. (180 mL) Capacity (Pk/100)
145-90000	Electronic Scale - 400 g Capacity, 0.01 g Resolution



Graduated Mixing Cup

Electronic Scale



Mold Release

Release sprays, powder and liquid prevent hot or cold mounting materials from adhering to the mold.

Item	Description
200-10005	16 oz. (480 mL) Spray (Hot)
200-10006	12 oz. (340 gm) PTFE Spray (Hot or Cold)
200-10010	16 oz. (480 mL) Spray (Cold)
200-10015	8 oz. (240 mL) PTFE Liquid (Hot or Cold)
200-10100	2 oz. (60 mL) Powder (Hot)



Mold Release

Sample Holding Clips

A variety of clips hold thin samples on edge for encapsulation. Use metal for compression mounting and plastic for cold mounting. Clips with stand-offs isolate the sample, eliminating gaps or air bubbles at the clip/sample interface.

Item	Description	Unit
205-10000	Stainless Steel Coil	(Pk/100)
205-10005	Plastic Coil	(Pk/100)
205-10050	Plastic Coil	(Pk/1,000)
205-10200	Clear with Stand-Offs	(Pk/100)
205-10205	Multicolor with Stand-Offs	(Pk/100)

Sample Holding Stands (Pk/100)

These stands hold thin samples on edge for encapsulation.

Item	Description
205-10300	Four (4) 1 mm wide positions
205-10305	Four (4) 2 mm wide positions
205-10310	Three (3) 3 mm wide positions

2-Part Mounting Cups

Reusable cup has a separable bottom allowing easy mount removal after curing.

Item	Diameter	Unit
197-10000	1"	(Pk/12)
197-10005	1.25"	(Pk/12)
197-10010	1.5"	(Pk/12)
197-10025	25 mm	(Pk/10)
197-10030	30 mm	(Pk/10)
197-10040	40 mm	(Pk/10)
197-10050	50 mm	(Pk/10)

Disposable Mounting Cups (Pk/50)

This economical choice for high-volume mounting requirements has tear-away pull tabs for easy mount removal.

Item	Diameter
198-10000	1.25" (32 mm)
198-10005	1.6" (41 mm)
198-10010	1.9" (48 mm)
198-10015	3.4" (86 mm)

Silicone Mold Cups

Durable, reusable silicone mold cups are for use with epoxy or acrylic mounting materials. **See sample holders on page 28-29 for matching size. Other sizes available.**

Item	Size
197-20005	2" (51 mm) Diameter
197-20011	1" x 2" (25 x 51 mm) Rectangle
197-20025	1.3" x 2.6" (33 x 66 mm) Rectangle
197-20030	1.9" x 1.9" (48 x 48 mm) Square
197-20050	2" x 3.6" (51 x 91 mm) Rectangle



* Note: For acrylics & slow-curing epoxies only



EpoxyBond 110



EpoxyBond 110,
4 oz. Kit

Kits Include: Mixing cups, spring clips (large and small) and mixing instructions.

Mounting Wax

Clear wax provides a quick and strong bond between samples and fixtures for cutting and/or polishing. It melts at 49 °C (120 °F) and is soluble in acetone.

Sheet wax provides uniform distribution of wax to improve registration accuracy of the sample to the fixture (i.e., dicing applications). It flows at 100 °C (212 °F) and is soluble in sheet wax dissolver.



Item	Description
71-10040	Mounting Wax, Clear, 50 g Stick
71-10400	Sheet Wax, 4" Diameter Disc (Pk/50)
71-10210	Sheet Wax Dissolver, 8 oz. (240 mL) Bottle

Mount Storage Cabinet

The cabinet provides storage for polished mounts to prevent corrosion and dust contamination. The 10 cloth-lined drawers absorb moisture and hold mount dividers for easy organization. The locking door provides a sealed environment. Rechargeable desiccant canister is included. *Dividers are sold separately.*

Item	Description
30-8000	Mount Storage Cabinet

Accessories

30-8005	Mount Divider, (144) 1" or 25 mm diameter
30-8010	Mount Divider, (100) 1.25" or 30 mm diameter
30-8015	Mount Divider, (61) 1.5" or 40 mm diameter
30-8020	Mount Divider, (36) 2" or 50 mm diameter

Specifications:

Dimensions: 19" W x 19" D x 19" H (483 x 483 x 483 mm)
Weight: 72 lb. (33 kg)

EpoxyBond 110 is a hard, fast-curing epoxy adhesive commonly used to bond glass cover slips to small or delicate samples (i.e., ICs), precoat samples prior to encapsulation, fill small holes/cavities and for other mounting applications. The two-part formula is mixed 10:1 and cures bubble-free in 5 minutes at 150 °C (302 °F). The curing temperature can also be reduced to prevent damage to heat sensitive samples. Once cured, it is chemically resistant to etchants and will not outgas under vacuum.

Item	Description
71-10000	EpoxyBond 110, 0.5 oz. (15 mL) Kit
71-10005	EpoxyBond 110, 4 oz. (120 mL) Kit

TEM/FIB Sample Adhesives

M-Bond 610 is excellent for adhering multiple samples for TEM dimpling and bonding of post-polished samples to grids for TEM and FIB observation. It is chemically resistant and provides a very thin glue line that ion mills evenly.

LocTite® 460™ is a thin, fast-curing glue used as an alternative to wax for adhering samples to Pyrex® for TEM/FIB thinning and other applications, and is soluble in acetone.



Item	Description
71-20000	M-Bond 610, 25 g Systems (Pk/4)
71-40045	LocTite® 460™ Liquid, 20 g Bottle



Shown with door removed for visual clarity

MetPrep 3™ Systems
(Pages 24-26)



MetPrep 4™ Systems
(Pages 24-26)



TwinPrep 5™
(Page 32)



DualPrep 3™ Systems
(Pages 24-26)



M-Prep™ Machines
(Page 32)



New! MultiPrep™ Systems
(Pages 30-31)



AD-5™ Fluid Dispenser
(Page 36)



Semiautomatic Grinding/Polishing Systems



MetPrep 3™/PH-3™ System with AD-5™ Fluid Dispenser



MetPrep 4™/PH-4™ System

The **MetPrep™** and **DualPrep™** grinding and polishing machines, with the **PH™** line of power heads, are powerful systems for semiautomatic operation, ideal for low to high volume sample preparation requirements. A wide variety of combinations provides ideal solutions that accommodate any lab, application or material.


Intuitive menu navigation with user-friendly touchpad interface and backlit LCD make them easy to use and program. The microprocessor based system allows up to 25 programmable steps, including parameters for platen speed, comp/ contra rotation (sample holder/platen), cycle time, fluid selection, sample force (LbF or N), sample rotation speed, water rinse and force reduction (on/off, %).

A “Procedure Development” mode allows in-process adjustments to platen speed, sample force and sample rotation speed to determine optimum parameters. Jog mode enables convenient variable speed platen rotation without activating the power head to allow initial charging of cloths or manual grinding/polishing.

Either standard or magnetic platens may be used with any plain/adhesive backed or magnetic system disc.

Standard/magnetic platens (see pages 34 & 35) and consumables are sold separately.

Grinder/Polisher Features:

- ❖ Programmable up to 25 grinding/polishing steps, including parameters for force mode, platen speed, comp/contra rotation (sample holder/platen), cycle time, fluid selection, sample force (LbF or N), sample rotation speed, water rinse and force reduction (on/off, %)
- ❖ Variable platen and jog speed in 10 RPM increments (see RPM specifications in chart on page 26)
- ❖ Variable cycle time: 0-120 minutes (15 second increments)
- ❖ Seamless integration with optional AD-5™ Fluid Dispenser for automatic operation
- ❖ Powerful motors with constant high torque output
- ❖ Electronic coolant control with adjustable flow control valve(s)
- ❖ Touchpad switches to control all functions
- ❖ Sturdy RIM, aluminum and stainless steel construction
- ❖ Overflow diversion to protect internal components
- ❖ Emergency shut-off switch
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



DualPrep 3™/PH-3™ System



Unique tilt-up feature allows easy access to platen and holder.




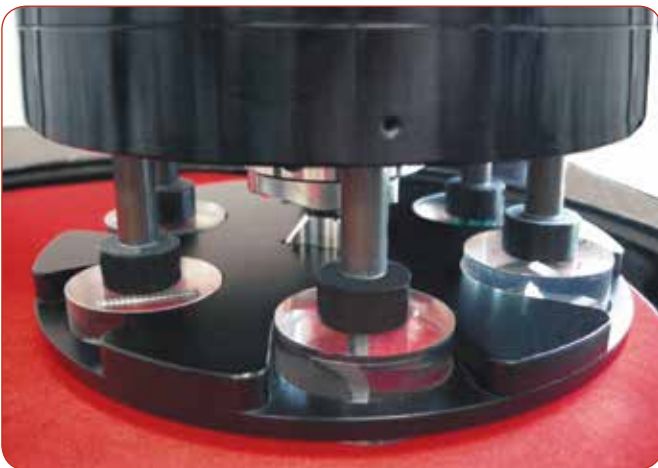
Intuitive menu navigation

The **PH-3™**, **PH-4™** and **PH-6™** power heads offer maximum versatility for low to high volume semi-automatic sample preparation, using either central or individual sample force modes. The pneumatic-electric system provides controlled sample force and allows up to 12 samples to be prepared simultaneously, depending on power head, mount diameter and holder size. The unique tilt-up design allows easy, unhindered access to the sample holder and platen, and eliminates the need to reposition the head during the preparation procedure.

Sample loading fixtures and holders are sold separately (see pages 28 & 29).

Power Head Features:

- ❖ Central force up to 12 samples, individual force up to 6 samples
- ❖ Soft-start/stop force control
- ❖ Unique tilt-up feature for easy access to platen and holder
- ❖ Safety sensor that stops operation if power head is tilted up
- ❖ Simple push-button attachment and removal of sample holders
- ❖ Quick-lock system to allow sample holder positioning across entire platen surface
- ❖ 0.25 HP (190 W) motor with durable reduction gearbox for constant high torque output
- ❖ Variable rotation speed: 0-150 RPM (10 RPM increments)
- ❖ Comp or contra rotation
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



PH-6™ individual force configuration: six (6) individual pistons apply force to each mount (1.5" mounts shown).



PH-3™ central force configuration: one (1) central piston applies force to up to six (6) mounts (1.25" mounts shown).

Grinder/Polisher Specifications

	MetPrep 3™	MetPrep 4™		DualPrep 3™
Voltage	100-240	115	230	100-240
Power (HP)	0.5	1.5	2	0.5
Power (W)	375	1100	1500	375
Platen/Jog RPM	40-600	50-400	40-600	40-600

Power Head Specifications

	PH-3™	PH-4™	PH-6™
RPM	0-150		
Power (HP)	0.25		
Power (W)	190		
Individual Force			
Number of Samples	1-3	1-4	1-6
Force (LbF)	0-16	up to 22	0-22
Force (N)	0-70	up to 96	0-96
Mount Size Capacity	2" (51 mm)	2" (51 mm)	2" (51 mm)
Central Force			
Number of Samples	3-6	3-12	3-12
Force (LbF)	5-50	up to 90	5-90
Force (N)	22-219	up to 394	22-394

MetPrep 3™ / PH™ Systems, 8" or 10" Platen

Item	Description
5-2600	MetPrep 3™ / PH-3™, 100-240 V
5-2700	MetPrep 3™ / PH-4™, 100-240 V

Dims: 15" W x 27" D x 23" H (381 x 686 x 584 mm)
Weight: 148 lb. (67 kg)

MetPrep 4™ / PH™ Systems, 10" or 12" Platen

Item	Description
5-6500	MetPrep 4™ / PH-4™, 115 V
5-6500-230	MetPrep 4™ / PH-4™, 230 V
5-6600	MetPrep 4™ / PH-6™, 115 V
5-6600-230	MetPrep 4™ / PH-6™, 230 V

Dims: 24" W x 28" D x 24" H (610 x 711 x 610 mm)
Weight: 225 lb. (102 kg)

DualPrep 3™ / PH™ Systems, 8" or 10" Platen

Item	Description
5-9500	DualPrep 3™ / PH-3™, 100-240 V
5-9600	DualPrep 3™ / PH-4™, 100-240 V

Dims: 31" W x 27" D x 23" H (780 x 686 x 584 mm)
Weight: 214 lb. (97 kg)

E-Prep 4™ Grinding & Polishing System

The **E-Prep 4™** grinding and polishing machine, with the **PH-4i™** power head, is a simple yet powerful system for semiautomatic operation, ideal for low to high volume sample preparation requirements. The user-friendly manual and touchpad interface makes it easy to adjust settings and operate. Basic controls allow quick changes to parameters such as sample force, cycle time, platen speed and sample speed.

Either standard or magnetic platens (8"/203 mm or 10"/254 mm) may be used with any plain/adhesive back or magnetic system disc.

Durable: Engineered and constructed using precision machined, hard-anodized aluminum and stainless steel components to provide maximum longevity.

Easy to Use: Straightforward controls and user-friendly functions allow quick, easy, repeatable operation.


Standard/magnetic platens and sample holders are sold separately.



E-Prep 4™ / PH-4i™ System (shown w/ 10" platen)

Item	Description
5-2400	E-Prep 4™ / PH-4i™ , 100-240 V
	Dims: 15" W x 26" D x 25" H (381 x 660 x 635 mm) Weight: 148 lb. (67 kg)

Grinder/Polisher Features:

- ❖ Manual and touchpad switches to control key functions
- ❖ Sturdy RIM, aluminum and stainless steel construction
- ❖ Powerful 0.5 HP (375 W) high torque DC motor
- ❖ Selectable platen speeds: 150, 300 and 600 RPM
- ❖ Variable cycle time: 30, 60 and 90 seconds; 2-9 minutes (1 minute increments)
- ❖ Quick-change platen design, anodized to resist wear and corrosion
- ❖ Molded one-piece corrosion and impact resistant enclosure with overflow diversion to protect internal components
- ❖ Adjustable, manual force control
- ❖ Electronic coolant control with adjustable flow control valve
- ❖ Retractable coolant nozzle that allows quick and easy sample/bowl cleaning
- ❖ Emergency shut-off switch
- ❖ **CE** compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



Intuitive, user-friendly interface with touchpad controls. The microprocessor based system allows platen speed, sample rotation speed, cycle time and water to be controlled.

Power Head Features:

- ❖ Pneumatic system to control sample force
- ❖ Individual force sample preparation of up to 4 mounts
- ❖ Pneumatically applied (manually adjustable) sample force: 0-12 lb. in 1 lb. increments (0-60 N in ~ 5 N increments)
- ❖ Holders available for standard mounts up to 2"/51 mm diameter
- ❖ 0.25 HP (190 W) motor with durable reduction gearbox that provides constant high-torque output
- ❖ Unique tilt-up power head for easy access to sample holder and platen
- ❖ Three (3) rotation speeds: 50, 100 and 150 RPM
- ❖ Quick-lock power head adjustment and easy sample holder positioning across entire platen surface
- ❖ Complementary rotation

Individual Force Holders

Individual force holders allow one or more samples to be prepared simultaneously. The advantage of individual preparation is that the system is balanced regardless of how many samples are prepared at once; samples can be added or extracted without affecting performance. It is also ideal for applications where small geometry and site-specific cross-section requirements make alignment of more than three (3) samples to a common plane extremely challenging.

Single Diameter Mount



Mount Diameter	PH-3™ (3 position)	PH-4™ / 4i™ (4 position)	PH-6™ (6 position)
1" / 25 mm	5-3835	5-3735	5-3935
30 mm	5-3840	5-3740	5-3940
1.25"	5-3845	5-3745	5-3945
1.5"	5-3850	5-3750	5-3950
40 mm	5-3855	5-3755	5-3955
50 mm	5-3860	5-3760	5-3960
2"	5-3865	5-3765	5-3965

Variable Diameter Mount

This individual force holder utilizes spacer rings for specific diameter mounts. Rings can be mixed/matched for maximum versatility. The three (3) position holder is used with the PH-3™ power head. The four (4) and six (6) position holders are used with the PH-4™ / PH-4i™ and PH-6™ power heads, respectively. **Rings are sold individually.**



	PH-3™ (3 position) 40 mm Max. Diameter	PH-4™ / 4i™ (4 position) 50 mm Max. Diameter	PH-6™ (6 position) 50 mm Max. Diameter
Holder	5-3800	5-3700	5-3900
1" / 25 mm Ring	5-3X35-40	5-3X35-50	5-3X35-50
30 mm Ring	5-3X40-40	5-3X40-50	5-3X40-50
1.25" Ring	5-3X45-40	5-3X45-50	5-3X45-50
1.5" Ring	5-3X50-40	5-3X50-50	5-3X50-50
40 mm Ring	-	5-3X55-50	5-3X55-50

Central Force Holders

Central force holders are suitable for high to medium volume sample preparation most commonly for quality control in production environments. The sample loading fixture (sold separately) is used to set the sample protrusion from the holder at an equal distance for grinding/polishing to the same plane. Uniform, symmetric arrangement around the central drive adapter is necessary.

Teardrop holders allow flexibility in the shape and size of the sample that can be held. A setscrew secures each sample.

Dual-cavity holders feature a single tightening point, which is useful for rapid insertion and removal of either one or two round or irregular shaped specimens per cavity.

Custom shapes and sizes are available upon request.

5.25" / 134 mm Diameter, for 8", 10" or 12" Platens

Item	Description
5-3301	Continuous Surface, for Wax or Tape, with Heating Stage
5-3330	(6) 25 mm - 1.25" Samples, Teardrop
5-3340	(5) 25 - 40 mm Samples, Teardrop
5-3345	(3) 25 - 40 mm Samples, Teardrop
5-3361	(6) 25 mm - 1.25" Samples, Dual-Cavity
5-3380	Sample Loading/Unloading Fixture, for 5-33XX Series

6.25" / 160 mm Diameter, for 10" or 12" Platens

Item	Description
5-3401	Continuous Surface, for Wax or Tape, with Heating Stage
5-3435	(6) 25 mm - 1.5" Samples, Teardrop
5-3440	(3) 25 mm - 2" Samples, Teardrop
5-3445	(9) 25 mm - 1.25" Samples, Teardrop
5-3460	(8) 25 mm - 1.25" Samples, Dual-Cavity
5-3461	(6) 30 - 40 mm Samples, Dual-Cavity
5-3466	(3) 1.25" x 2" (32 x 51 mm) Capacity, Clamp Style
5-3490	(5) 1.2" x 2.1" (30 x 53 mm) Rectangles
5-3491	(3) 1.6" x 2.7" (40 x 68 mm) Rectangles
5-3494	(3) 2" x 2" (51 x 51 mm) Squares
5-3480	Sample Loading/Unloading Fixture, for 5-34XX Series

8" / 200 mm Diameter, for 12" Platens

Item	Description
5-3601	Continuous Surface, for Wax or Tape, with Heating Stage
5-3605	(12) 25 mm - 1.25" Samples, Dual-Cavity
5-3635	(6) 25 mm - 2" Samples, Teardrop
5-3650	(3) 2.1" x 3.7" (53 x 94 mm) Rectangles
5-3661	(8) 30 - 40 mm Samples, Dual-Cavity
5-3662	(6) 1.5" - 2" Samples, Dual-Cavity
5-3680	Sample Loading/Unloading Fixture, for 5-36XX Series



Sample Loading/Unloading Fixture (shown with 5-3461 sample holder)



Teardrop



Dual-Cavity



Rectangle

MultiPrep™ Systems New!

The **MultiPrep™ System** is a programmable machine that enables precise semiautomatic sample preparation of a wide range of materials for microscopic (**optical, SEM, FIB, TEM, AFM, etc.**) evaluation.

Capabilities include parallel polishing, angle polishing, site-specific polishing or any combination thereof. It provides reproducible results by eliminating inconsistencies between users, regardless of their skill.

Dual micrometers (pitch and roll) allow precise sample tilt adjustments relative to the abrasive plane. A rigid Z-indexing spindle maintains the predefined geometric orientation throughout the grinding/polishing process. Digital indicators enable quantifiable material removal, which can be monitored real-time, or preset for unattended operation. Variable speed rotation and oscillation maximize use of the entire grinding/polishing disc and minimize artifacts. Adjustable load control expands its capability to handle a range of small/delicate to large samples.



MultiPrep™ System, 8" Platen



Thin Film TEM Preparation



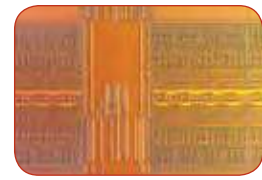
EBSD Preparation



Sample Shaping



Cross-Sectioning



IC Delayering

Accessories

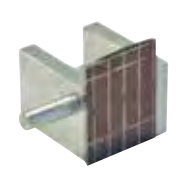
A wide variety of fixtures and accessories are available for either 8" or 12" platen systems. The cam-locking interface offers tool-free attachment and removal for ease of use.



#15-1005
Cam-Lock Adapter
for cross-sectioning/
thinning paddles



#15-1010
Cross-Sectioning
Paddle



#15-1010-RE
Cross-Sectioning
Paddle with
Reference Edge



#15-1013
TEM Wedge/FIB
Thinning Paddle



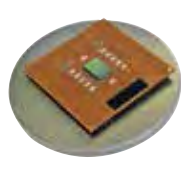
#15-1014
TEM Wedge/FIB
Thinning Fixture



#15-1018
SIMS/TEM
Thinning Fixture



#15-1020
Parallel Polishing
Fixture, 2.25"
(57 mm)



#15-1020-80 or
#15-1020-100
Parallel Polishing
Fixture, 80 or 100 mm



#15-1025
Teardrop Fixture,
40 mm Mount
Capacity



#15-1035
Weight Kit



#15-1045
Multipurpose
Fixture,
2" Wide



#15-1047
Multipurpose
Fixture,
1" Wide



#15-1050
Cross-Sectioning
Paddle, Clamp
Style



#15-ACMPF
MultiPrep™
Assorted Accessory/
Fixture Set



#120-30015
Digital Indicator
Measurement System

MultiPrep™ System, 8" Platen

Item	Description
15-2200	MultiPrep™ System, 8" , 100-240 V
15-2200-TEM	MultiPrep™ TEM System, 8" , 100-240 V

Dims: 15" W x 27" D x 22" H (381 x 685 x 560 mm)
Weight: 95 lb. (43 kg)

The TEM system has an O-ring spindle drive for smaller, delicate samples.

8" Platen Options (precision lapped to within +/- 2 µm):

10-1005	Precision Platen, 8" (203 mm)
10-1005M	Magnetic Platen, 8" (203 mm)

MultiPrep™ System, 12" Platen

Item	Description
15-2200-12	MultiPrep™ System, 12" , 100-240 V

Dims: 22" W x 28" D x 24" H (560 x 711 x 610 mm)
Weight: 125 lb. (57 kg)

The 12" system has a larger scaled positioning head and higher torque rotation/oscillation motors for preparation of larger or multiple samples exceeding an area of 1,600 mm².

12" Platen Options (precision lapped to within +/- 4 µm):

10-1010	Precision Platen, 12" (305 mm)
10-1010M	Magnetic Platen, 12" (305 mm)



MultiPrep™ System, 12" Platen



The 7" color LCD touchscreen is used to control all functions and is extremely easy to navigate, allowing greater efficiency among users. The intuitive interface includes universal icons and is optimized for productivity and function.

Positioning Head Features:

- ❖ Front digital indicator to display real-time material removal (sample advancement) with zeroing function, 1 µm resolution
- ❖ Precision spindle that indexes the sample perpendicular to the platen, and can rotate simultaneously
- ❖ Dual axis, micrometer controlled angular positioning of the sample (pitch and roll): +10° / -2.5° range (0.02° increments)
- ❖ Rear digital indicator to display vertical positioning (static) with zeroing function, 1 µm resolution
- ❖ Automatic sample oscillation, adjustable sweep with 8 speeds
- ❖ Full or limited automatic sample rotation with 8 speeds
- ❖ Cam-locking system that eliminates the need for tools and allows for precise repositioning of fixtures
- ❖ Variable sample load: 0-600 g (100 g increments)

Grinder/Polisher Features:

- ❖ Variable platen speed: 5-350 RPM (5 RPM increments)
- ❖ 7" color LCD touchscreen with keypad entry to control all functions
- ❖ Intuitive interface optimized for productivity and function
- ❖ Seamless integration with optional #5-7100 AD-5™ Fluid Dispenser for automatic operation
- ❖ 0.5 HP (375 W), high-torque motor
- ❖ Stable aluminum and stainless steel construction
- ❖ Timer for count-up or countdown operation
- ❖ Clockwise/counterclockwise platen rotation
- ❖ Electronic coolant control with adjustable valve
- ❖ Retractable coolant nozzle to allow quick and easy sample/bowl cleaning
- ❖ Emergency shut-off switch
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA



Precision/magnetic platens, accessories and consumables are sold separately.

M-Prep™ & TwinPrep 5™ Grinding/Polishing Machines

The **M-Prep™** and **TwinPrep™** grinding/polishing machines are designed for manual sample preparation. Powerful motors provide constant high torque output throughout the speed range. Touchpad controls activate coolant flow and start/stop. The stable, corrosion resistant RIM, aluminum and stainless steel construction ensures maximum durability. Dual motors on the TwinPrep 5™ allow both platens to rotate independently. **Standard/magnetic platens (see pages 34 & 35) and consumables are sold separately.**



M-Prep 5™ 8" or 10" Grinder/Polisher




M-Prep 6™ 12" Grinder/Polisher



TwinPrep 5™ 8" or 10" Grinder/Polisher

Features:

- ❖ Variable speed with digital display: either 10-500 RPM or 20-990 RPM (10 RPM increments)
- ❖ Touchpad switches to control run/stop and coolant functions
- ❖ Powerful 0.5 HP (375 W) DC motors that provide constant high torque output
- ❖ Dual motors on the TwinPrep 5™ to allow each platen to rotate independently
- ❖ Sturdy RIM, aluminum and stainless steel construction
- ❖ Corrosion/impact resistant cover
- ❖ Overflow diversion to protect internal components
- ❖ Quick-change platen design, anodized to resist wear and corrosion
- ❖ Low profile, tabletop design
- ❖ Electronic coolant control with adjustable flow control valve(s)
- ❖ Retractable coolant nozzle(s) that allows quick and easy sample/bowl cleaning
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

M-Prep 5™ Grinder/Polisher, 8" or 10" Platen

Item	Description
5-2200	M-Prep 5™ , 100-240 V, 10 - 500 RPM
5-2200-M	M-Prep 5™ , 100-240 V, 20 - 990 RPM

Dims: 15" W x 26" D x 9" H (381 x 660 x 230 mm)
Weight: 66 lb. (30 kg)

M-Prep 6™ Grinder/Polisher, 10" or 12" Platen

Item	Description
5-6200	M-Prep 6™ , 100-240 V, 10 - 500 RPM
5-6200-M	M-Prep 6™ , 100-240 V, 20 - 990 RPM

Dims: 22" W x 27" D x 10.5" H (560 x 690 x 267 mm)
Weight: 101 lb. (45 kg)

TwinPrep 5™ Grinder/Polisher, 8" or 10" Platen

Item	Description
5-7600	TwinPrep 5™ , 100-240 V, 10 - 500 RPM
5-7600-M	TwinPrep 5™ , 100-240 V, 20 - 990 RPM

Dims: 31" W x 26" D x 9.5" H (780 x 660 x 240 mm)
Weight: 136 lb. (62 kg)


MetPrep 1™ Grinding/Polishing Machine



MetPrep 1™ 8" or 10" Grinder/Polisher

The **MetPrep 1™** grinding/polishing machine is excellent for manual preparation for standard applications, or when polishing delicate samples using handheld tools with lapping films. It accepts 8" or 10" platens and offers digital control of all operations, including run/stop, coolant flow and platen rotation speeds in either clockwise or counterclockwise direction, with smooth, consistent low-end torque.

Features:

- ❖ Variable platen and jog speed: 5-350 RPM (5 RPM increments)
- ❖ Powerful 0.5 HP (375 W) high torque motor
- ❖ Sturdy RIM, aluminum and stainless steel construction
- ❖ Clockwise or counterclockwise platen rotation
- ❖ Touchpad switches to control all functions
- ❖ Electronic coolant control with adjustable valve
- ❖ Retractable coolant nozzle to allow quick and easy sample/bowl cleaning
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

Item	Description
5-2300	MetPrep 1™ , 100-240 V
	Dims: 15" W x 26" D x 9" H (381 x 660 x 230 mm) Weight: 66 lb. (30 kg)

Platens (see pages 31, 34 & 35) and consumables are sold separately.

TEM Wedge Polisher



#69-42005

Features:

- ❖ Lightweight anodized aluminum body for corrosion resistance
- ❖ Cam-lock lever that can be mounted on the right or left side according to operator's preference
- ❖ Low profile fixtures that fit under microscope objectives
- ❖ Aluminum cross-sectioning paddle that fits into most SEMs without the need to demount the sample

This polisher for thinning materials to electron transparency for TEM observation has rear micrometer heads that allow radial or axial (wedge) angle adjustments to the sample.

Nonrotating micrometer heads are available to eliminate faceting of Delrin® feet. The cross-sectioning and Pyrex® paddles attach using a cam-locking system, allowing quick, easy removal for sample inspection and exact repositioning throughout the polishing procedure. The small Pyrex® footprint reduces planarization time.

Item	Description
69-42000	TEM Wedge Polisher Kit with Low Profile Micrometer Heads
69-42005	TEM Wedge Polisher Kit with Nonrotating Micrometer Heads

Cross-Sectioning Tool



#69-50000

This tool is used to cross-section small, unencapsulated samples such as ICs and other electronic devices. Its unique design is stable, well-balanced and has a low center of gravity to avoid rocking during polishing. Adjustable PTFE feet are used to align the sample with the desired polishing plane.

The cross-sectioning paddle is attached using a cam-locking system, allowing quick, easy removal for sample inspection and exact repositioning throughout the polishing procedure.

Item	Description
69-50000	Cross-Sectioning Tool Kit

Standard Platens & Accessories

Standard Platens



Standard aluminum platens are precision lapped parallel, then hard anodized for maximum wear resistance. They are used with adhesive back discs, double sided adhesive discs and paper holding bands, or when converting to a magnetic platen using magnetic bases.

Item	Diameter
5-2005	8" (203 mm)
5-6010	10" (254 mm)
5-6005	12" (305 mm)

Disc Holding Bands



Disc holding bands, for securing plain back discs to a standard platen, are made of anodized aluminum. A protrusion around the top of the band allows variable sized discs (± 3 mm) to be secured.

Item	Diameter
125-10011	8" (203 mm)
125-10012	10" (254 mm)
125-10013	12" (305 mm)

Double Sided Adhesive Discs (Pk/10)



Double sided adhesive discs are adhered to a standard platen and used to secure plain back silicon carbide abrasive discs. Each provides 25-75 disc pulls depending on grit size, cycle time and force.

Item	Diameter
52-10005	8" (203 mm)
52-10003	10" (254 mm)
52-10000	12" (305 mm)

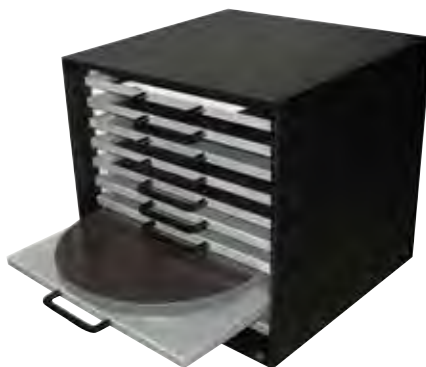
Magnetic Bases



Adhesive back magnetic bases adhere to standard platens, allowing magnetic system cloths/abrasive discs or ferromagnetic discs to be utilized (see page 35).

Item	Diameter
90-208300	8" (203 mm)
90-208302	10" (254 mm)
90-208305	12" (305 mm)

Platen/Disc Storage Cabinet



Shown with door removed for visual clarity

This durable aluminum cabinet accommodates up to 10 aluminum trays/shelves (reversible) for storage of platens, discs or cloths up to 12" (305 mm) diameter. The hinged, clear plastic door with magnetic lock prevents dust contamination. Five (5) trays are included.

Item	Description
5-8100	Platen/Disc Storage Cabinet
	Dims: 14" W x 14" D x 14" H (355 x 355 x 355 mm) Weight: 35 lb. (16 kg)

Accessories

5-8105	Aluminum Tray / Shelf
--------	-----------------------

Magnetic Platens & Accessories

Magnetic Platens



Magnetic platens combine a standard aluminum platen with a cross-hatched magnetic surface for maximum flatness and grip. Only one platen is needed throughout the grinding and polishing process, allowing all magnetic system cloths/abrasive discs or ferromagnetic discs to be utilized.

Item	Diameter
5-2005M	8" (203 mm)
5-6010M	10" (254 mm)
5-6005M	12" (305 mm)

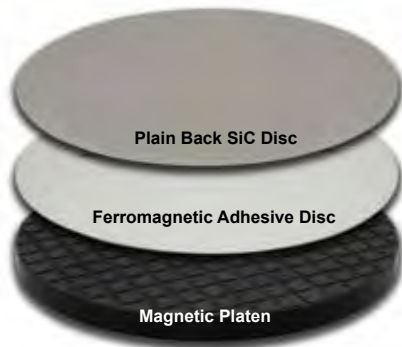
Ferromagnetic Support Discs



These reusable ferromagnetic stainless steel discs feature a nonslip backing and allow adhesive back cloths/abrasive discs to be changed quickly and easily when using magnetic platens.

Item	Diameter
55-51000	8" (203 mm)
55-51002	10" (254 mm)
55-51005	12" (305 mm)

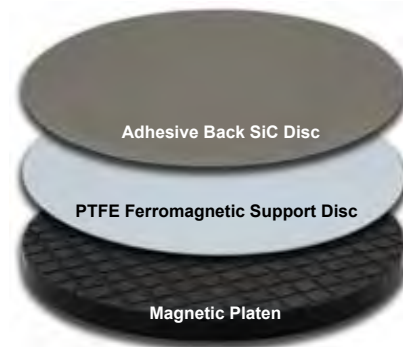
Ferromagnetic Adhesive Discs



Ferromagnetic adhesive discs combine a rigid stainless steel disc with an adhesive surface that allows plain back silicon carbide abrasive discs to be secured to magnetic platens. The nonslip backing keeps the disc in place even for coarse grinding. Each provides 25-75 disc pulls depending on grit size, cycle time and force.

Item	Diameter
52-20008	8" (203 mm)
52-20010	10" (254 mm)
52-20012	12" (305 mm)

PTFE Ferromagnetic Support Discs



These reusable, durable ferromagnetic support discs combine a PTFE surface with a rigid stainless steel disc. This allows adhesive back abrasive discs/polishing cloths to be easily removed after use without any adhesive transfer. The nonslip backing keeps the disc in place even for coarse grinding.

Item	Diameter
55-52000	8" (203 mm)
55-52002	10" (254 mm)
55-52005	12" (305 mm)


AD-5™ Fluid Dispenser

The **AD-5™** fluid dispenser provides automatic, unattended application of abrasive polishing suspensions and lubricants. Its functions are controlled through Allied's MetPrep 3™, MetPrep 4™, DualPrep 3™ or MultiPrep™ Systems, and can also be used with **ANY** brand polishing machine as a standalone system.

Programming the dispensing time, length and frequency delivers reproducible results by eliminating inconsistencies between operators. This increases productivity and efficiency, while reducing consumables usage. Intuitive menu navigation and simple logic programming make the dispenser easy to use.

The AD-5™ features five (5) dispensing positions, two of which include a flush cycle to prevent clogging when using colloidal suspensions. Peristaltic pump technology offers mist-free drip delivery to the polishing surface.

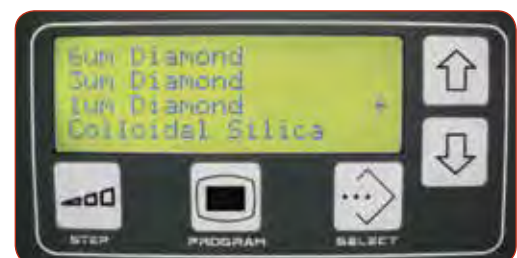
Features:

- ❖ Five (5) dispensing positions, 16 oz. (500 mL) capacity; 128 oz. (3.8 L) adapter kit available
- ❖ User-defined menu labeling (abrasive type & size, lubricant, cloth, material and menu name)
- ❖ Pump reverse after cycle to prevent dripping/contamination
- ❖ Remote function to enable seamless integration and automatic activation with Allied's grinding and polishing systems
- ❖ Local function to allow standalone operation with any grinder/polisher
- ❖ Pulse duration: 0.5-6 seconds (0.5 second increments)
- ❖ Pulse frequency: 1-10 per minute
- ❖ In-cycle priming that allows temporary "full rate" dispensing onto polishing surface
- ❖ One-touch priming function for quick, initial charging of new cloths
- ❖ One-touch activation independent of menu for simple operation
- ❖ Prestart charging of new/dry polishing cloths
- ❖ Allows dispensing of colloidal suspensions (silica, silica/alumina and alumina) with rinse/flush function to avoid clogging
- ❖ Two (2) positions with high-speed pumps for oxide polishing
- ❖ Peristaltic pumps for mist-free drip dispensing
- ❖ 25 programmable menus
- ❖ Optional password protection of menus
- ❖ Touchpad switches to control all functions
- ❖ Backlit 4-line LCD
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 



AD-5™ Fluid Dispenser shown with MetPrep 3™/PH-3™ System

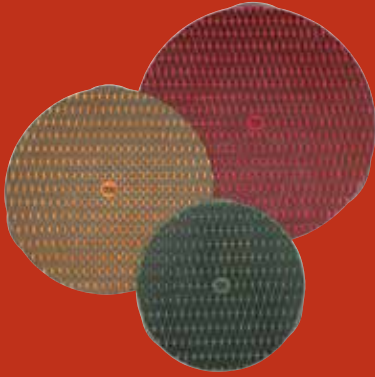
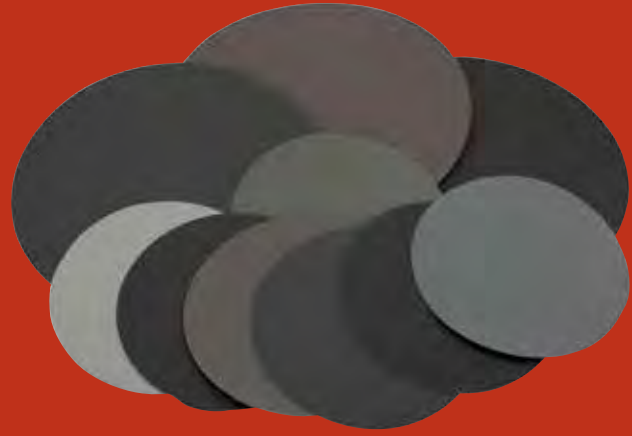
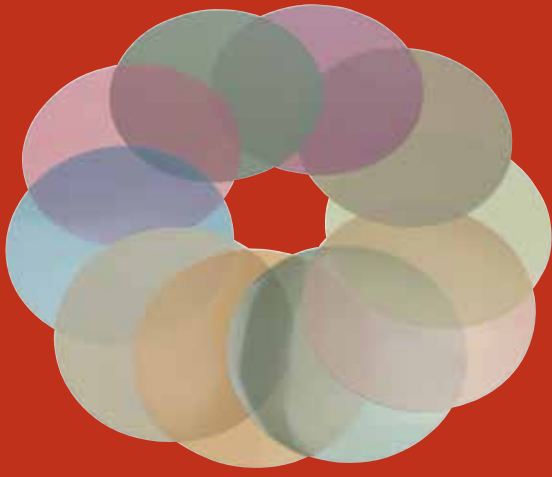
Item	Description
5-7100	AD-5™ , 100-240 V
	Dims: 8" W x 25" D x 9" H (203 x 635 x 229 mm) Weight: 28 lb. (13 kg)



25 programmable menus



Convenient pivoting arm with nozzle design features stainless steel tips that are easily removed for cleaning.



Grinding/Polishing Consumables

(Pages 38 - 54)



Silicon Carbide Discs

Designed for metallographic applications to coarse and fine grind a wide variety of materials, these discs feature superior mineral grading, a unique resin topcoat and a latex additive in the paper. This combination resists water penetration, creating a durable, long-lasting disc with uniform cutting characteristics that minimizes sample deformation. They are made with high quality thick C-weight backing and are recommended for general laboratory requirements.



Plain Back Discs (Pk/100)				Adhesive Back Discs (Pk/100)		
8" (200 mm)	10" (250 mm)	12" (300 mm)	Grit (FEPA)	8" (200 mm)	10" (250 mm)	12" (300 mm)
50-10000	50-11000	50-10145	60 (P-60)	50-10045	50-11045	50-10215
50-10001	50-11003	50-10146	80 (P-80)	50-10046	50-11047	50-10217
50-10005	50-11005	50-10150	120 (P-120)	50-10050	50-11050	50-10220
50-10010	50-11010	50-10155	180 (P-180)	50-10055	50-11055	50-10225
50-10015	50-11015	50-10160	240 (P-280)	50-10060	50-11060	50-10230
50-10020	50-11020	50-10165	320 (P-400)	50-10065	50-11065	50-10235
50-10025	50-11025	50-10170	400 (P-800)	50-10070	50-11070	50-10240
50-10030	50-11030	50-10175	600 (P-1200)	50-10075	50-11075	50-10245
50-10029	50-11029	50-10174	600 Fine*	50-10074	50-11074	50-10244
50-10035	50-11035	50-10176	800 (P-2400)	50-10076	50-11076	50-10246
50-10040	50-11040	50-10177	1200 (P-4000)	50-10077	50-11077	50-10247
50-10041	50-11041	50-10178	1200 Fine**	50-10078	50-11078	50-10248
ASSORT-P/B	ASSORT-P/B 10	ASSORT-P/B 12	Assortment	ASSORT-PSA	ASSORT-PSA10	ASSORT-PSA12
(Includes 25 each 180, 320, 600, 1200/P-4000 Grit)				(Includes 25 each 180, 320, 600, 1200/P-4000 Grit)		

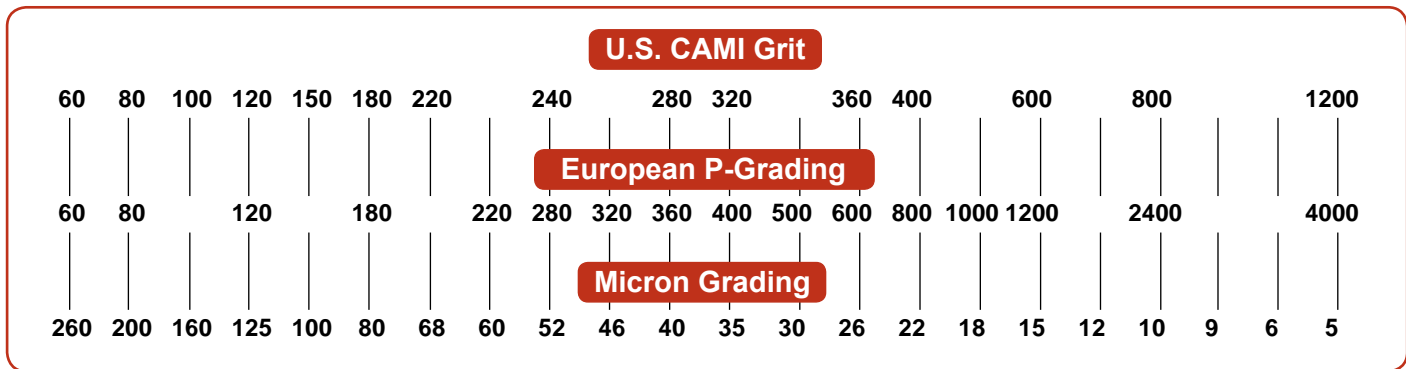
Features:

- ❖ Premium resin bonding system that retains abrasive for sustained material removal and long life
- ❖ Premium thick C-weight base with high latex content for superior waterproofing
- ❖ Special low-tack adhesive for easy removal of the disc from platen without adhesive transfer
- ❖ Wide, low-profile tabs for easy liner removal
- ❖ Tab for easy disc removal from platen after use



Wide, low-profile tab enables easy liner removal

Abrasive Grade Comparison Chart



*** 600 Fine Grit**

- 600 fine grit minimizes loading when preparing samples cold mounted in epoxy or acrylic.
- Provides a finer surface finish, which can reduce subsequent polishing time.

- Rougher finish
- Higher removal

- Smoother finish
- Lower removal



1200 Fine Grit



1200 (P-4000) Grit

**** 1200 Fine Grit vs. 1200 (P-4000) Grit**

- 1200 fine grit is an electrostatically coated abrasive. The SiC particles stand on end, which provides more of a **cutting action** for continued material removal. It is recommended for softer materials that smear, step grinding for failure analysis, and serial sectioning.
- 1200 (P-4000) grit is sputter coated, which randomizes the orientation of the SiC particles. This provides more of a **polishing action** and does not remove as much material as 1200 fine grit. It can be used for a wide variety of applications.

Zirconia Alumina Discs (Pk/25)

Zirconia alumina provides rapid material removal and excellent wear resistance without generating excessive heat. It is recommended when grinding hard, ferrous metals and alloys on automatic or high speed manual grinding machines. All discs are adhesive backed.



Grit	8" (200 mm)	10" (250 mm)	12" (300 mm)
60	50-10045-Z	50-11045-Z	50-10215-Z
120	50-10050-Z	50-11050-Z	50-10220-Z

4" x 36" Abrasive Belts (Pk/10)

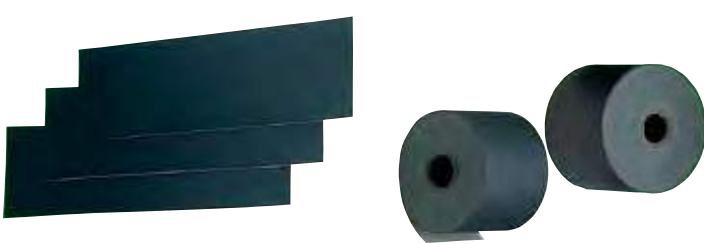
These durable cloth-backed abrasive belts support various grinding requirements. Use silicon carbide for general laboratory applications, aluminum oxide for ferrous metals and zirconia alumina for heavy stock removal.



Grit	SiC	Al ₂ O ₃	ZrAl
60	50-10415	-	50-10420-Z
80	50-10420	50-10460	50-10425-Z
120	50-10425	50-10470	50-10435-Z
180	50-10430	50-10475	-
240	50-10435	50-10480	-

Silicon Carbide Strips & Rolls

Silicon carbide rolls and strips are designed for metallographic applications to coarse and fine grind a wide variety of materials.



3" x 11" Adhesive Back Strips (Pk/100)	Grit	3-7/16" x 75' Plain Back Rolls (Each)
50-10535	240	50-10395
50-10540	320	50-10400
50-10545	400	50-10405
50-10550	600	50-10410
50-10555	800	50-10411
50-10560	1200	50-10412

Grinding Stones

Use Al₂O₃ for grinding ferrous metals and alloys, and SiC for grinding non-ferrous metals such as titanium and aluminum or when mixing non-ferrous and ferrous metals. (Dimensions listed are diameter x thickness x arbor hole.)



Item	Description	Dimensions
81-10895	Al ₂ O ₃ , 60 Grit	14" x 1.75" x 1.5"
81-10900	Al ₂ O ₃ , 150 Grit	14" x 1.75" x 1.5"
81-10905	Green SiC, 150 Grit	14" x 1.75" x 1.5"
81-10910	Green SiC, 120 Grit	14" x 1.75" x 1.5"
81-10920	Al ₂ O ₃ , 150 Grit	8" x 2" x 1.25"

Dia-Grid Diamond Discs

Dia-Grid Diamond Discs are recommended for hard-to-grind materials. They feature diamond particles either nickel plated or resin bonded in raised patterns that provide increased cutting rates, enhanced cooling and efficient removal of debris. They are extremely durable and provide excellent edge retention and sample flatness. Wide, low-profile tabs allow easy disc removal after use. Each disc features a rigid ferromagnetic stainless steel backing with nonslip coating for magnetic platens.

Metal Plated

Metal plated discs are recommended for materials including ceramics, carbides and metal matrix composites. **Adhesive back discs are also available. To order, remove 'M' from the item number.**

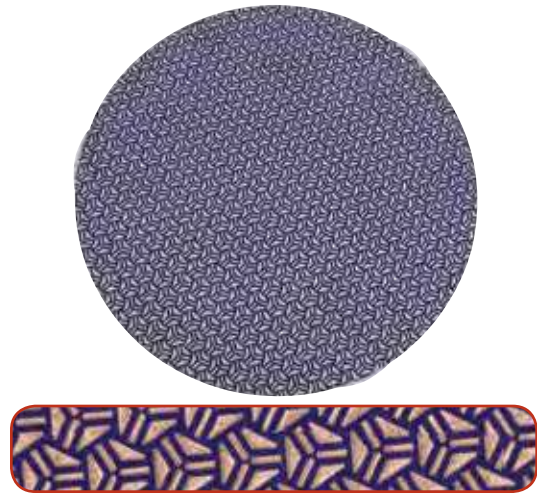
Grade	8" (200 mm)	10" (250 mm)	12" (300 mm)
260 µm	50-50000M	50-50100M	50-51000M
125 µm	50-50005M	50-50105M	50-51005M
70 µm	50-50010M	50-50110M	50-51010M
30 µm	50-50015M	50-50115M	50-51015M
15 µm	50-50025M	50-50125M	50-51025M
9 µm	50-50035M	50-50135M	50-51035M
6 µm	50-50040M	50-50140M	50-51040M



Resin Bond

Resin bond discs are recommended for a wide variety of materials including hard metals and nonmetal coatings. **Adhesive back discs are also available. To order, remove 'M' from the item number.**

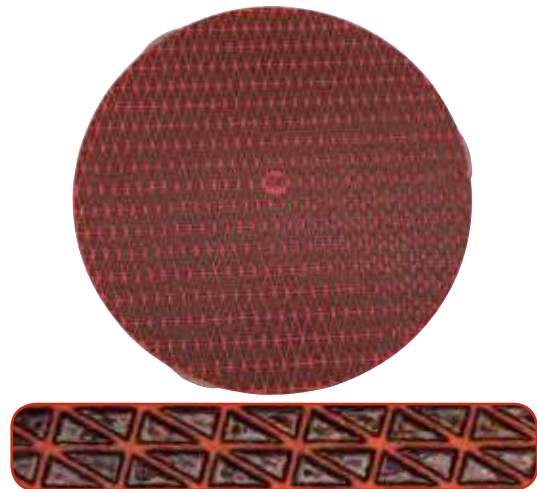
Grade	8" (200 mm)	10" (250 mm)	12" (300 mm)
80 Grit	50-80800M	50-81000M	50-81200M
120 Grit	50-80805M	50-81005M	50-81205M
220 Grit	50-80810M	50-81010M	50-81210M
40 µm	50-80820M	50-81020M	50-81220M
25 µm	50-80825M	50-81025M	50-81225M
9 µm	50-80830M	50-81030M	50-81230M



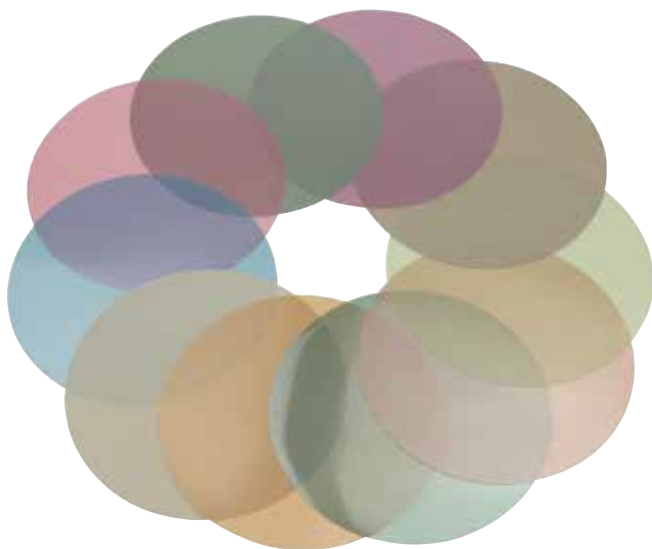
Resin Bond RIGID

Resin bond RIGID discs are designed for aggressive removal of materials such as sintered carbide, ceramic, hard metals and optical glass. They provide excellent flatness and durability. **Adhesive back discs are also available. To order, remove 'M' from the item number.**

Grade	8" (200 mm)	10" (250 mm)	12" (300 mm)
120 Grit	50-70805M	50-71005M	50-71205M
220 Grit	50-70810M	50-71010M	50-71210M
600 (P-1200) Grit	50-70820M	50-71020M	50-71220M

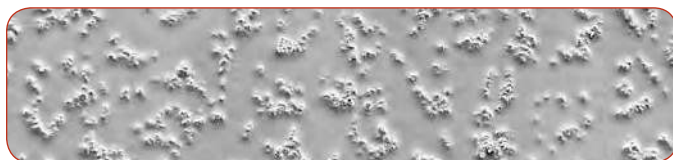


Diamond Lapping Film



Standard Discs (Pk/5)

Standard Diamond Lapping Film consists of precision graded diamond particles resin bonded to a uniform film. They provide excellent edge retention and maintain coplanarity regardless of varying materials or hardness within the sample. These discs are typically used for unencapsulated cross-sectioning, TEM wedge/plan-view polishing, backside polishing and FIB sample thinning.



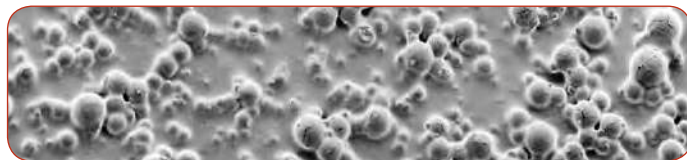
SEM photo, 6 µm Standard Diamond Lapping Film (150X)

Grade (µm)	8" (200 mm) Plain Back	8" (200 mm) Adhesive Back	12" (300 mm) Plain Back
60	50-30030	-	-
45	50-30035	-	-
35	50-30038	50-30118	50-31238
30	50-30040	50-30120	50-31240
15	50-30045	50-30125	50-31245
9	50-30050	50-30130	50-31250
6	50-30055	50-30135	50-31255
3	50-30060	50-30140	50-31260
1	50-30065	50-30145	50-31265
0.5	50-30070	50-30150	50-31270
0.25	50-30073	50-30153	-
0.1	50-30075	50-30155	50-31275
Assort	50-30076*	50-30156*	-

*Includes 1 of each grade except 45 & 60 µm

Type B Discs (Pk/5)

Type B Diamond Lapping Film has diamond particles contained in ceramic beads that are resin bonded to the film. As the beads wear away, new diamond particles are exposed to allow continuous, aggressive material removal. Type B film provides a coarser finish grade-for-grade compared with standard diamond lapping film, and is typically used for encapsulated samples.



SEM photo, 6 µm Type B Diamond Lapping Film (150X)

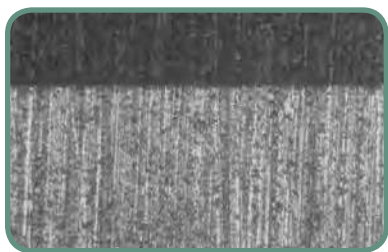
Grade (µm)	8" (200 mm) Plain Back	8" (200 mm) Adhesive Back	12" (300 mm) Adhesive Back
9	50-30050B	50-30130B	50-30170B
6	50-30055B	50-30135B	50-30175B
3	50-30060B	50-30140B	50-30180B
1	50-30065B	50-30145B	50-30185B
0.5	50-30070B	-	-

Storage Book

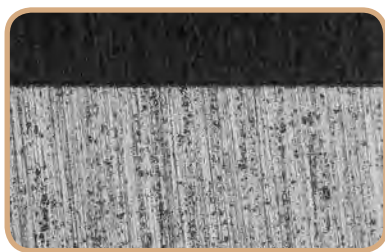


Chemically pure and lint-free blotting paper dries and protects lapping film. Wax paper separates each blotter.

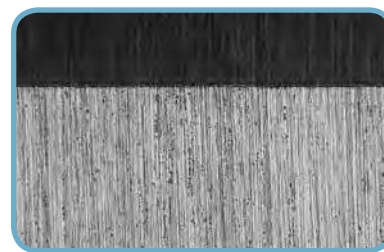
Item	Description
50-30000	Storage Book for 8" Discs



30 μm @ 100X (20 seconds)



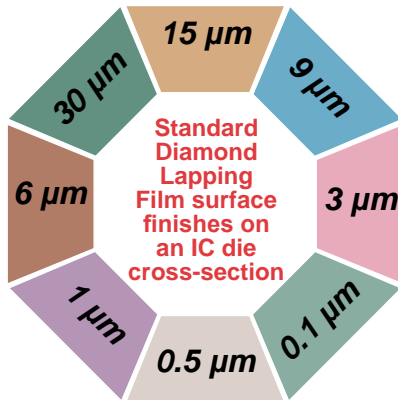
15 μm @ 100X (20 seconds)



9 μm @ 100X (20 seconds)



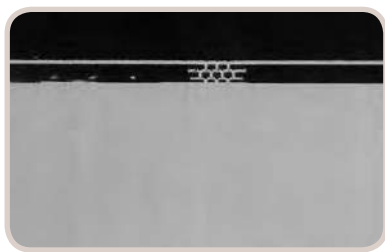
6 μm @ 100X (20 seconds)



3 μm @ 100X (20 seconds)



1 μm @ 500X (20 seconds)



0.5 μm @ 1,000X (20 seconds)



0.1 μm @ 1,000X (20 seconds)

Al₂O₃ , SiC & SiO₂ Lapping Film

Lapping film consists of a mylar film coated with resin containing either aluminum oxide, silicon carbide or silicon dioxide abrasive. It is recommended for fine grinding and lapping applications where edge retention is important. These films are for use with either encapsulated or unencapsulated samples but are not recommended for power head applications.

Features:

- ❖ Micron graded premium abrasives from 30 to 0.01 μm
- ❖ Precision backing for uniformity and sample planarity
- ❖ Resistance to water, oil and most solvents
- ❖ Color coding for quick identification



Aluminum Oxide Lapping Film



Silicon Carbide & Silicon Dioxide Films

Aluminum Oxide: for ferrous metals, glass
Silicon Carbide: for non-ferrous metals, polymers
Silicon Dioxide: as an alternative to colloids and cloths for final polish on SEM and TEM samples

8" (200 mm) Plain Back Discs (Pk/50)

Grade (μm)	Al ₂ O ₃	SiC	SiO ₂
30	50-20040	50-20075	-
15	-	50-20080	-
12	50-20045	-	-
9	50-20050	50-20085	-
5	50-20052	50-20090	-
3	50-20055	-	-
1	50-20060	-	-
0.3	50-20065	-	-
0.05	50-20067	-	-
0.01	-	-	50-20097 (Pk/20)
Assortment	50-20070*	50-20105*	-

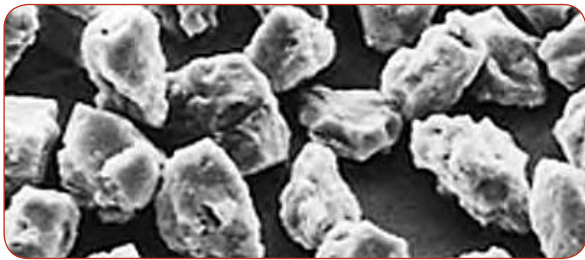
*Includes 10 of each grade

Diamond Polishing

Diamond is preferred for most polishing applications when compared to other abrasives. Although diamond is more costly per unit, the amount required to polish is substantially less by a greater factor than the difference in price. Diamond also cuts faster, requiring less time to achieve an improved surface finish and produce an accurate representation of the true microstructure with fewer artifacts (smearing, scratches, etc.). All products are precision graded by Swiss micronizing standards for high performance.

Polycrystalline Diamond

With many more cutting surfaces per particle, polycrystalline diamond provides higher removal rates than monocrystalline abrasive. As it cuts, it breaks down in its original shape, allowing for finer finishes in less time. Because polycrystalline has no cleavage planes, it cannot splinter like monocrystalline diamond. It causes less subsurface deformation, and is excellent when polishing samples composed of different materials or hardness.



Monocrystalline Diamond

Monocrystalline diamond provides a cost-effective means for good stock removal and finish. It has a slightly irregular shape with multiple cutting edges, and is recommended for general applications where polycrystalline's features are not required.



Diamond Suspensions

Allied diamond suspensions are specifically formulated to ensure that the diamond particles remain suspended and separated throughout the stable liquid carrier. They are excellent for distributing diamond easily and uniformly over the cloth or platen surface, and are made with either alcohol (water-free), glycol or water based formulas. All 8 oz. and 16 oz. bottles include a flip-top and trigger sprayer for dispensing. Gallons include a pre-labeled 16 oz. empty bottle for dispensing convenience.

Glycol Based

Water soluble and environmentally friendly, this diamond suspension is mixed with a glycol base for improved cooling and is ideal for manual application or automatic "drip" dispensing systems, where lubricant is also applied.



Polycrystalline			Monocrystalline	
16 oz. (480 mL)	128 oz. (3.8 L)	Grade (µm)	16 oz. (480 mL)	128 oz. (3.8 L)
90-29995	90-29995-G	0.05	-	-
90-30000	90-30000-G	0.10	-	-
90-30005	90-30005-G	0.25	-	-
90-30010	90-30010-G	0.50	-	-
90-30015	90-30015-G	1	90-31015	90-31015-G
90-30020	90-30020-G	3	90-31020	90-31020-G
90-30025	90-30025-G	6	90-31025	90-31025-G
90-30030	90-30030-G	9	90-31030	90-31030-G
90-30035	90-30035-G	15	90-31035	90-31035-G
90-30040	90-30040-G	30	90-31040	90-31040-G
-	-	45	90-32145	90-31045-G

Water Based



Water soluble and environmentally friendly, this 99% water based formula is recommended for manual application or automatic “spray/drip” dispensing systems, where lubricant is also applied.

Polycrystalline				Monocrystalline	
8 oz. (240 mL)	16 oz. (480 mL)	128 oz. (3.8 L)	Grade (μm)	16 oz. (480 mL)	128 oz. (3.8 L)
90-32995	90-31995	90-31995-G	0.05	-	-
90-33000	90-32000	90-32000-G	0.10	-	-
90-33005	90-32005	90-32005-G	0.25	-	-
90-33010	90-32010	90-32010-G	0.50	-	-
90-33015	90-32015	90-32015-G	1	90-32115	90-32115-G
90-33020	90-32020	90-32020-G	3	90-32120	90-32120-G
90-33025	90-32025	90-32025-G	6	90-32125	90-32125-G
90-33030	90-32030	90-32030-G	9	90-32130	90-32130-G
90-33035	90-32035	90-32035-G	15	90-32135	90-32135-G
90-33040	90-32040	90-32040-G	30	90-32140	90-32140-G
-	-	-	45	90-32145	90-32145-G

Alcohol Based



Alcohol based suspension is recommended for water-sensitive materials such as zinc, magnesium and steel with nonmetallic inclusions. Use with alcohol based lubricants only. This formula is recommended for manual application or automatic “spray/drip” dispensing systems, where lubricant is also applied.

Polycrystalline		
16 oz. (480 mL)	Grade (μm)	128 oz. (3.8 L)
90-3AB0.25	0.25	90-3AB0.25-G
90-3AB1	1	90-3AB1-G
90-3AB3	3	90-3AB3-G
90-3AB6	6	90-3AB6-G
90-3AB9	9	90-3AB9-G

DiaLube



DiaLube is a water soluble and environmentally friendly suspension premixed with a propylene glycol based polishing lubricant. It is excellent for quick application of both abrasive and lubricant without the need for precise dripping ratios.

Polycrystalline		
16 oz. (480 mL)	Grade (μm)	128 oz. (3.8 L)
90-3DL1S	1 (Soft)	90-3DL1S-G
90-3DL1H	1 (Hard)	90-3DL1H-G
90-3DL3	3	90-3DL3-G
90-3DL6	6	90-3DL6-G
90-3DL9	9	90-3DL9-G

Diamond Compound



Allied diamond compounds are specifically formulated for metallographic sample preparation and offer a higher concentration of diamond compared to suspensions. They are water soluble and compatible with glycol or alcohol based lubricants. Diamond compounds are typically used as a standalone product or to charge polishing cloths before applying diamond suspension.

Polycrystalline		Grade (µm)	Monocrystalline	
5 gram	18 gram		5 gram	18 gram
90-21055-S	90-20995-S	0.05	-	-
90-21060-S	90-21000-S	0.10	-	-
90-21065-S	90-21005-S	0.25	90-21065	90-21005
90-21070-S	90-21010-S	0.50	90-21070	90-21010
90-21075-S	90-21015-S	1	90-21075	90-21015
90-21080-S	90-21020-S	3	90-21080	90-21020
90-21085-S	90-21025-S	6	90-21085	90-21025
90-21090-S	90-21030-S	9	90-21090	90-21030
90-21095-S	90-21035-S	15	90-21095	90-21035
90-21100-S	90-21040-S	30	90-21100	90-21040
-	-	45	90-21105	90-21045

Polishing Lubricants

Lubricants are used to enhance the polishing performance of diamond suspensions, compounds, sprays and films. They reduce friction and increase the life of polishing cloths. All 16 and 32 oz. bottles include trigger sprayer and flip-top for dispensing, and can be applied manually or used with automatic dispensers. Gallons include a prelabeled 16 oz. empty bottle for dispensing convenience.

	RedLube	GreenLube	PurpleLube
Viscosity	High	Medium	Low
Base	Glycol	Glycol/H ₂ O	Alcohol
Odor	None	None	Mild
Water-Free	Yes	No	Yes

PurpleLube



A low viscosity, water-free ethyl alcohol based polishing lubricant, PurpleLube is formulated to minimize alcohol scent. It is excellent for increased stock removal, when water cannot be tolerated or when used with alcohol based diamond suspensions.

Item	Unit
90-205010	16 oz. (480 mL)
90-205005	32 oz. (950 mL)
90-205000	128 oz. (3.8 L)
90-204995	5 gal. (19 L)

RedLube



A water-free, high viscosity glycol based lubricant, RedLube is used for metallographic preparation of soft and/or ductile materials.

Item	Unit
90-207010	16 oz. (480 mL)
90-207005	32 oz. (950 mL)
90-207000	128 oz. (3.8 L)
90-206995	5 gal. (19 L)

GreenLube



A medium viscosity glycol/water-based lubricant, GreenLube is used for general metallographic preparation.

Item	Unit
90-209010	16 oz. (480 mL)
90-209005	32 oz. (950 mL)
90-209000	128 oz. (3.8 L)
90-208995	5 gal. (19 L)

Colloidal Suspensions

Used for final polishing, colloidal suspensions are mixtures of abrasive particles dispersed throughout a chemically aggressive liquid carrier. This combination provides a chemical-mechanical polishing action, resulting in deformation-free surfaces. The modified pH of these suspensions can provide delineation of grain boundaries and other microstructural features for some sample types.

0.05 µm Non-Crystallizing Silica



This non-crystallizing silica suspension with 9.8 pH produces an excellent final polish for a wide variety of materials, especially non-ferrous metals, PCBs and ICs.

Item	Unit
180-20015	16 oz. (480 mL)
180-20010	32 oz. (950 mL)
180-20000	128 oz. (3.8 L)

0.02 µm Non-Crystallizing Silica



A non-crystallizing silica suspension with 9.8 pH, this formula produces ultrafine surface finishes for demanding SEM/TEM analysis.

Item	Unit
180-40015	16 oz. (480 mL)
180-40010	32 oz. (950 mL)
180-40000	128 oz. (3.8 L)

0.04 µm Non-Stick/Rinsable Silica



An excellent final polishing suspension for most materials, this unique formula features a pH of 10 and rinses easily from samples and equipment, even after it dries. It is slow drying, making it an ideal choice for prolonged polishing requirements such as those for EBSD. The pH may be modified with chemical solutions to improve microstructural contrast.

Item	Unit
180-25015	16 oz. (480 mL)
180-25010	32 oz. (950 mL)
180-25000	128 oz. (3.8 L)

0.05 µm Silica/Alumina



This unique 8.5 pH mixture combines colloidal silica and alumina. The addition of gamma alumina allows improved mechanical polishing. It is used to final polish both ferrous and non-ferrous metals, metal matrix composites and various nonmetallic materials.

Item	Unit
180-70015	16 oz. (480 mL)
180-70010	32 oz. (950 mL)
180-70000	128 oz. (3.8 L)

0.05 µm Alumina



With a pH of 3.5, this acidic alumina suspension is used to final polish ferrous metals and ceramics. Its nonclogging formula flows easily through fluid dispensing systems, and it can be diluted with DI water up to 3:1.

Item	Unit
180-30015	16 oz. (480 mL)
180-30010	32 oz. (950 mL)
180-30000	128 oz. (3.8 L)

0.03 µm Alumina



This acidic alumina suspension with a pH of 3.5 is used to final polish ferrous metals and ceramics. Its nonclogging formula flows easily through fluid dispensing systems, and it can be diluted with DI water up to 3:1. The 0.03 µm formula provides finer surface finishes for demanding applications.

Item	Unit
180-80015	16 oz. (480 mL)
180-80010	32 oz. (950 mL)
180-80000	128 oz. (3.8 L)

Alumina Polishing

Allied alumina powders are made to the tightest quality specifications and are used for final polishing of metallographic specimens. Accurately controlled purity levels and particle size distribution ensure optimum polishing results. Mix with DI water to produce a liquid slurry. The 0.05 µm particle type/shape is gamma, while 0.3 and 1 µm are alpha.



Powder, De-agglomerated

De-agglomerated alumina powder is specially treated to reduce the number of agglomerates (groups of particles in each grade of manufactured alumina), providing fast, uniform surface finishes.

Item	Description
90-187050	0.05 µm, 1 lb. (450 g)
90-187055	0.05 µm, 5 lb. (2.3 kg)
90-187120	0.3 µm, 1 lb. (450 g)
90-187125	0.3 µm, 5 lb. (2.3 kg)
90-187190	1 µm, 1 lb. (450 g)
90-187195	1 µm, 5 lb. (2.3 kg)

Suspension, De-agglomerated

Alumina suspensions are de-agglomerated and water based. Chemically stable, the premixed formulas are a clean, convenient alternative to powders and are ideal for the finest finishes.

Item	Description
90-187505	0.05 µm, 6 oz. (180 mL)
90-187540	0.05 µm, 32 oz. (950 mL)
90-187575	0.05 µm, 128 oz. (3.8 L)
90-187510	0.3 µm, 6 oz. (180 mL)
90-187545	0.3 µm, 32 oz. (950 mL)
90-187580	0.3 µm, 128 oz. (3.8 L)
90-187515	1 µm, 6 oz. (180 mL)
90-187550	1 µm, 32 oz. (950 mL)
90-187585	1 µm, 128 oz. (3.8 L)

Powder, Standard

Standard alumina powder is recommended where the benefits of de-agglomerated powders are not required.

Item	Description
90-187015	0.05 µm, 1 lb. (450 g)
90-187020	0.05 µm, 5 lb. (2.3 kg)
90-187085	0.3 µm, 1 lb. (450 g)
90-187090	0.3 µm, 5 lb. (2.3 kg)
90-187155	1 µm, 1 lb. (450 g)
90-187160	1 µm, 5 lb. (2.3 kg)

FinalPrep Polishing Solution



FinalPrep is a de-agglomerated, polycrystalline alumina solution excellent for final polishing applications for nearly any material. With a pH of 9 to 9.5, the basic chemical element enhances microstructural features. It works exceptionally well for polishing soft, ductile or precious metals, such as gold and silver.

Item	Description
90-187705	0.05 µm, 6 oz. (180 mL)
90-187725	0.05 µm, 16 oz. (480 mL)
90-187740	0.05 µm, 32 oz. (950 mL)
90-187775	0.05 µm, 128 oz. (3.8 L)

Polishing Cloths



A wide range of polishing cloths is offered for fine grinding or for coarse, intermediate and final polishing of all materials. They are available either with adhesive backing for standard platens, or with rigid (steel) or flexible (rubber) ferromagnetic backing for magnetic platens.

Adhesive Backing: Each cloth is secured to an individual, dedicated platen or support disc using its **adhesive** backing. Removal and reapplication is discouraged because of reduced adhesion. Adhesive backed polishing cloths are the most economical choice.



Standard Platen



Adhesive Backing

Flexible Ferromagnetic (FM) Backing: Each cloth features a **flexible** ferromagnetic backing that adheres to magnetic platens. Multiple discs can be used with one magnetized platen, reducing the number of platens needed for each procedure, machine or lab.



Magnetic Platen



Flexible FM Backing

Rigid Ferromagnetic (FM) Backing: Each cloth features a **rigid** ferromagnetic backing that adheres to magnetic platens. Multiple discs can be used with one magnetized platen, reducing the number of platens needed for each procedure, machine or lab. The backing offers corrosion resistance, high stiffness and a rounded, burr-free edge for safer handling. Rigid discs are also well suited for applications that utilize alcohol based suspensions, slurries and lubricants, where prolonged polishing times are needed (EBSD), or in high force applications that generate more heat.



Magnetic Platen



Rigid FM Backing

Polishing Cloth Selection and Information Guide

Refer to this table for recommended combinations of cloths, lubricants and abrasive types/sizes.

Cloth	Recommended μm Size	For use with:			Recommended Lubricant
		Diamond	Alumina	Colloidal Suspensions	
PLAN-Cloth 	30 - 6	Yes	No		Adhesive: All
					Flexible FM: RedLube, GreenLube
PLAN-B 	15 - 3	Yes	No		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Gold Label 	15 - 3	Yes	No		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
TECH-Cloth 	9 - 1	Yes	No		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
White Label 	6 - 0.25	Yes	No		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
DiaMat 	6 - 0.05	Yes			Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Kempad 	9 - 1	Yes	No		Adhesive / Flexible FM: RedLube, GreenLube
Pan-B 	6 - 0.25	Yes	No		Adhesive / Flexible FM: RedLube, GreenLube
Chem-Pol 	1 - 0.02	No	Yes		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Final A 	1 - 0.02	No	Yes		Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Spec-Cloth 	1 - 0.05	Yes		No	Adhesive, RedLube, GreenLube
Vel-Cloth 	1 - 0.05	Yes		No	Adhesive / Flexible FM: RedLube, GreenLube
Final B 	3 - 0.05	Yes			Adhesive / Flexible FM: RedLube, GreenLube
Red Final C 	3 - 0.02	Yes			Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Final P 	3 - 0.05	Yes			Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube
Final-POL 	3 - 0.05	Yes			Adhesive / Rigid FM: All
					Flexible FM: RedLube, GreenLube



Grinding / Polishing

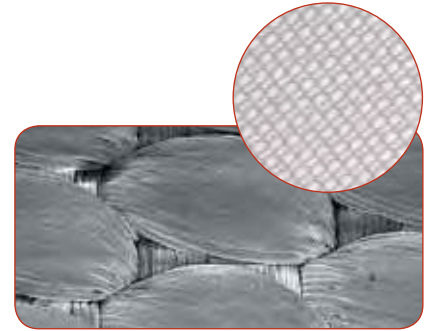
Woven Polishing Cloths

Woven cloths feature a cross-weave pattern, where abrasive particles embed and provide efficient material removal. They feature low compression, applying effective pressure to the loose abrasive particles for maximum material removal and flatness. The cross-weave pattern is ideal for fine grinding, or coarse and intermediate polishing, and is more aggressive than non-woven cloths.

PLAN-Cloth

Very hard, resin coated, durable, coarse woven polyester for use with diamond (30-6 μm). Produces high material removal rate and excellent flatness for fine grinding or coarse and intermediate polishing on a variety of materials.

Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	85-150-005	85-150-010	85-150-015
Flexible FM	5	85-500-005	85-500-010	85-500-015



PLAN-B

Very hard, resin coated, dense woven polyester for use with diamond (15-3 μm). Maintains superior edge retention and flatness and provides aggressive material removal for coarse to intermediate polishing of metals, ceramics and refractory materials. Not recommended for cold mounted materials.

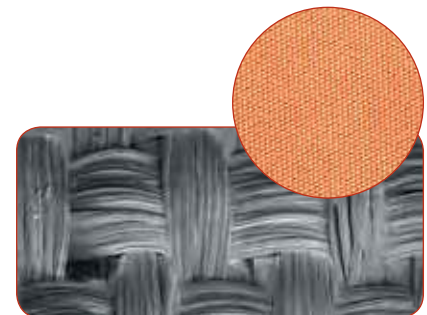
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	5	90-150-580	90-150-585	90-150-590	90-150-595
Flexible FM	5	90-500-580	90-500-585	90-500-590	---
Rigid FM	5	90-700-580	90-700-585	90-700-590	90-700-595



Gold Label

Dense, uniquely woven nylon, extremely durable for use with diamond (15-3 μm). Produces excellent flatness and provides a very high material removal rate on a wide variety of materials. Exceptional for intermediate polishing.

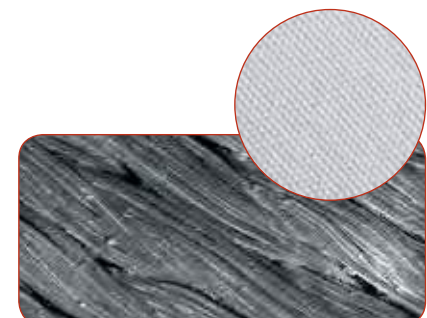
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	10	90-150-210	90-150-217	90-150-220	90-150-223
Flexible FM	5	90-500-210	90-500-217	90-500-220	---
Rigid FM	5	90-700-210	90-700-217	90-700-220	90-700-223



TECH-Cloth

Dense, woven synthetic silk for use with diamond (9-1 μm). Produces very good edge retention and provides excellent finish and flatness. Especially good for coatings and samples composed of materials with varying hardness.

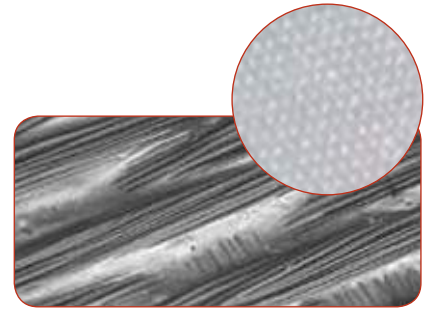
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	10	85-150-360	85-150-365	85-150-370	85-150-375
Flexible FM	5	85-500-360	85-500-365	85-500-370	---
Rigid FM	5	85-700-360	85-700-365	85-700-370	85-700-375



White Label

Very dense, woven, low-nap silk for use with diamond (6-0.25 μ m). Provides excellent flatness and edge retention prior to final polishing on a wide variety of materials. Ideal for eliminating pullout in the final polishing steps.

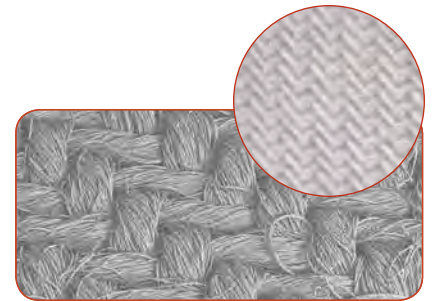
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	5	90-150-500	90-150-505	90-150-510	90-150-515
Flexible FM	5	90-500-500	90-500-505	90-500-510	---
Rigid FM	5	90-700-500	90-700-505	90-700-510	90-700-515



DiaMat

Woven wool with a medium nap and low resilience for use with diamond (6-0.25 μ m), colloidal suspensions or alumina. Provides very good edge retention and surface finish on a wide variety of materials including metals and polymers.

Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	5	90-150-550	90-150-555	90-150-560	90-150-565
Flexible FM	5	90-500-550	90-500-555	90-500-560	---
Rigid FM	5	90-700-550	90-700-555	90-700-560	90-700-565



Non-Woven Polishing Cloths

Non-woven cloths feature low compression, with surfaces that tend to be softer than woven cloths. A non-woven cloth can have fibers interlaced throughout the surface, but the pattern is random rather than a cross-weave. Non-woven cloths are less aggressive, so they are better suited for intermediate and final polishing steps.

Kempad

Non-woven, very low-nap textile for use with diamond (9-1 μ m). Provides good removal and flatness on a wide variety of materials.

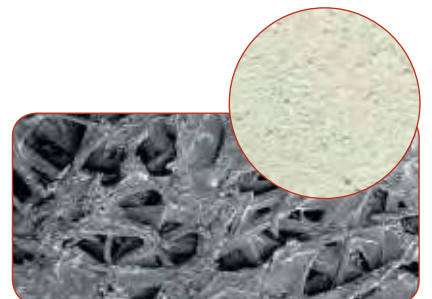
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	90-150-005	90-150-015	90-150-020
Flexible FM	5	90-500-005	90-500-015	90-500-020



Pan-B

Dense, non-woven, planarized textile for use with diamond (6-0.25 μ m). Provides good removal rates and edge retention on a wide variety of materials.

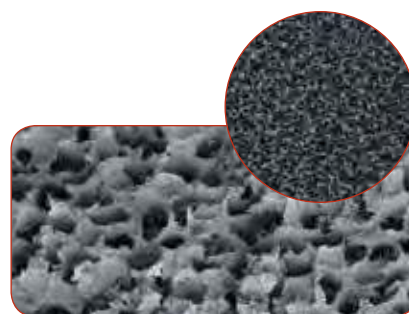
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	85-150-100	85-150-105	85-150-110
Flexible FM	5	85-500-100	85-500-105	85-500-110



Chem-Pol

Dense, non-woven, low-nap porous polyurethane for chemical/mechanical polishing using colloidal suspensions or alumina (1-0.02 μm). This long-lasting cloth provides an excellent final polish for a wide variety of materials.

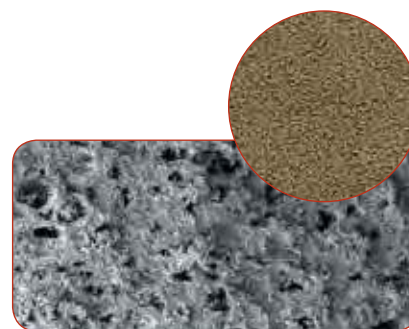
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	5	180-10050	180-10058	180-10060	180-10065
Flexible FM	5	180-10550	180-10558	180-10560	---
Rigid FM	5	180-10750	180-10758	180-10760	180-10765



Final A

Highly dense, non-woven, low-nap porous polyurethane pad for use with colloidal suspensions or alumina (1-0.02 μm). Excellent for final polishing a wide variety of materials. Especially effective in eliminating smearing and pullout when preparing soft metals such as copper and aluminum, porous structures/materials or materials for SEM to TEM evaluation.

Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	5	180-10005	180-10010	180-10015
Flexible FM	5	180-10505	180-10510	180-10515
Rigid FM	5	180-10705	180-10710	180-10715



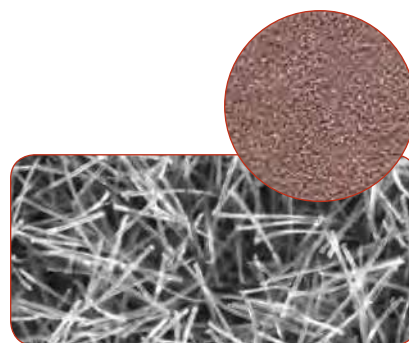
Napped (Flocked) Polishing Cloths

Napped cloths, also known as flocked cloths, have various length fibers and fabric stiffness. They are mostly used for final polishing, as the flock pattern brushes the sample to clean and remove intermediate polishing scratches. Firm fibers are commonly used for polishing softer metals and materials, while soft fibers are useful for preparing harder materials.

Spec-Cloth

Firm, medium-nap, synthetic rayon flock for use with diamond (1-0.25 μm) or alumina. For general polishing of a wide range of materials.

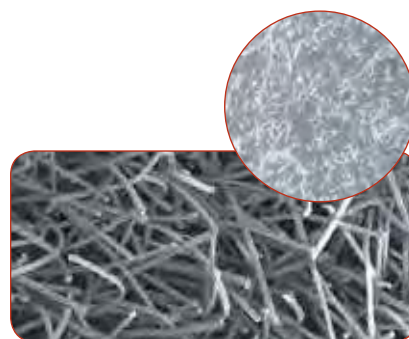
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	90-150-285	90-150-292	90-150-295



Vel-Cloth

Soft, medium-low-nap synthetic flock for use with diamond (1-0.25 μm) or alumina. Provides very good flatness on a wide variety of materials.

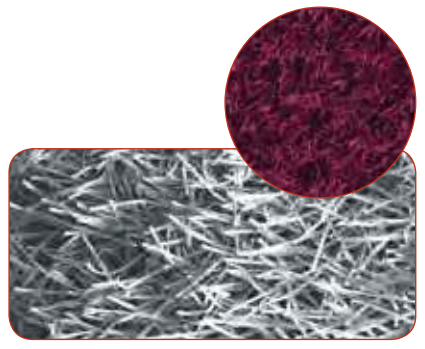
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	90-150-400	90-150-412	90-150-410
Flexible FM	5	90-500-400	90-500-412	90-500-410



Final B

Soft, low-nap rayon flock for use with diamond (3-0.25 μm) or alumina. Provides excellent finish and flatness, especially with hard materials, ferrous metals and glass.

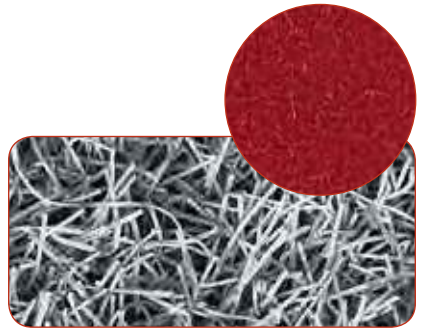
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	10	90-150-230	90-150-232	90-150-235
Flexible FM	5	90-500-230	90-500-232	90-500-235



Red Final C

Dense, medium-nap, soft synthetic silk flock for use with diamond (3-0.02 μm), colloidal suspensions or alumina to provide an excellent final polish on a wide variety of materials. Especially effective when preparing materials for SEM or TEM evaluation.

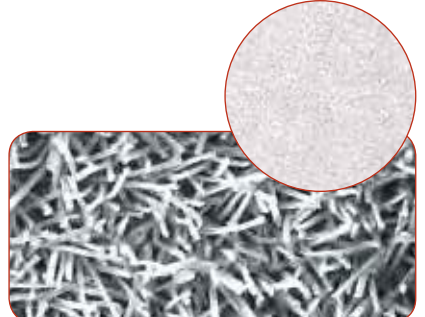
Backing	Qty	Diameter		
		8" / 200 mm	10" / 250 mm	12" / 300 mm
Adhesive	5	90-150-350	90-150-352	90-150-355
Flexible FM	5	90-500-350	90-500-352	90-500-355
Rigid FM	5	90-700-350	90-700-352	90-700-355



Final P

Dense, low-nap firm synthetic flock for use with diamond (3-0.05 μm), colloidal suspensions or alumina. Ideal for final polishing soft metals such as copper, aluminum and solder.

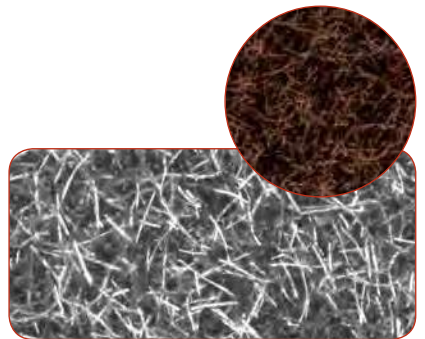
Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	10	85-150-500	85-150-505	85-150-510	85-150-515
Flexible FM	5	85-500-500	85-500-505	85-500-510	---
Rigid FM	5	85-700-500	85-700-505	85-700-510	85-700-515



Final-POL

Very durable, soft, low-nap synthetic flock for use with diamond (3-0.25 μm) or alumina. Excellent for final polishing ferrous metals and composites.

Backing	Qty	Diameter			
		8" / 200 mm	10" / 250 mm	12" / 300 mm	14" / 350 mm
Adhesive	5	90-150-705	90-150-710	90-150-715	90-150-720
Flexible FM	5	90-500-705	90-500-710	90-500-715	---
Rigid FM	5	90-700-705	90-700-710	90-700-715	90-700-720





X-Prep®
(Pages 56 - 58)

X-Prep® Vision™
(Page 59)



Milling



The **X-Prep®** is a specialized 5-axis CNC-based milling/grinding/polishing machine designed to support electrical and physical failure analysis techniques and other applications requiring high-precision sample preparation.

It features a wizard-based, user-friendly, intuitive interface that guides the operator through a screen sequence. Each screen provides the operator with instructions and options to ensure that every parameter and function is defined before operation. Help buttons on each screen provide access to additional explanation and instruction.

A high-definition (720p) color camera projects a magnified, razor-sharp image of the sample onto the touchscreen to help the operator define the X/Y milling/grinding/polishing boundary.

Automatic tilt adjustment levels the sample plane parallel to the X/Y plane of the cutting tool. Unevenly mounted or tilted samples can easily be leveled using this function.

A variety of fixtures and accessories are available to accommodate a range of sample types and sizes.


Accessories and consumables are sold separately.

Item	Description
15-9600	X-Prep® System, 115 V
15-9600-230	X-Prep® System, 230 V

Features:

- ❖ Optional 3D Software Module for added functionality/capability that includes: automatic 3D mapping/profiling, convex and concave profile deprocessing, and Excel® profile visualization/profile manipulation macro
- ❖ Motorized leveling stage for:
 - Automatic parallel leveling of sample to the X/Y tool plane
 - Sample leveling - dual-axis control with 0.5 µm resolution
 - Definable "off-axis" tilt adjustment
- ❖ Quiet operation: ~ 15-20 dB over ambient
- ❖ Powerful, high speed spindle to grind ceramics, silicon, metals, glass and more
- ❖ Tabletop, compact footprint
- ❖ 12" color LCD, touchscreen graphic user interface
- ❖ Easy-to-use, wizard-based workflow that guides the operator through system setup to define: X/Y/Z tool position; X/Y tool feed rate, pattern and overlap; Z-force; and Z-position
- ❖ No need for G-coding or programming knowledge
- ❖ Live HD (720p) video navigation to define X/Y milling/grinding/polishing boundary
- ❖ Complete material removal across an entire plane before advancing to the next Z-increment
- ❖ Automatic, incremental Z-axis tool advancement with coordinated X/Y movement, enabling unattended operation
- ❖ Pneumatic/automatic collet that allows quick, easy tool change

Technical Data:

- ❖ 5,000-100,000 RPM Spindle
 - 3-Phase AC Motor
 - Precision ceramic bearings lubricated for life
 - Air sealed, electronically balanced
- ❖ Closed loop X/Y-axis positioning, 1 µm resolution
- ❖ Closed loop Z-axis positioning, 0.1 µm resolution, 1 µm accuracy
- ❖ Closed loop Z-axis force control, 0.5 to 10 N
- ❖ Three (3) Z-control modes of the tool:
 - Position (Milling & Grinding)
 - Position Force (Grinding & Polishing)
 - Floating Force (Polishing)
- ❖ Up to 100 x 100 mm X/Y travel
- ❖ Collet clamp that accommodates 3 mm shank Ø x 38 mm length tools
- ❖ Dims: 21" W x 27" D x 25" H (533 x 686 x 622 mm)
- ❖ Weight: 210 lb. (95 kg)
- ❖ CE compliant for EU
- ❖ Two (2) year warranty
- ❖ Designed & manufactured by Allied in the USA 

3D Deprocessing

3D capability is required to uniformly deprocess warped samples exhibiting either a convex or concave physical profile. It is useful for package deprocessing and die thinning for electrical fault localization methods that demand extreme uniformity of material removal and final thickness control.

The advantage of deprocessing a device by following its physical profile is that it remains in its “as-manufactured” physical state. This approach increases accuracy of material removal and reduces the risk of either mechanically induced or post-processing stress relaxation damage such as cracking or delamination.

The 3D software module supports the use and/or creation of custom/predictive maps to control the milling profile. Both symmetrical and asymmetrical profiles can be used and adjusted to match the physical changes encountered, providing a high degree of versatility to the operator.



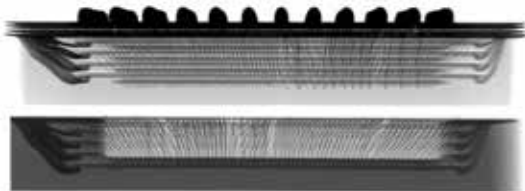
Convex/curved die profile



Uniform flip-chip silicon thinning



Uniform FR4 substrate delayering



- Stacked die deprocessing – X-ray image before (top) and after (bottom)
- 8-layer die stack deprocessed to die 7
- 4-layer board deprocessed to layer 1

In support of:

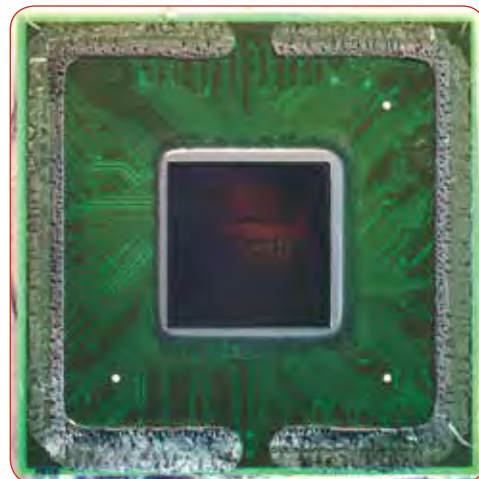
- ❖ Package-level failure analysis
- ❖ TDR, GMR/SQUID & Lock-In Thermography
- ❖ Laser/Photon EFA Tools
 - High NA SIL
- ❖ High-Throughput FIB processing
 - Design debug/circuit edit
- ❖ Nano/e-Probing



Flat plane deprocessing produces nonuniform material removal and thickness.

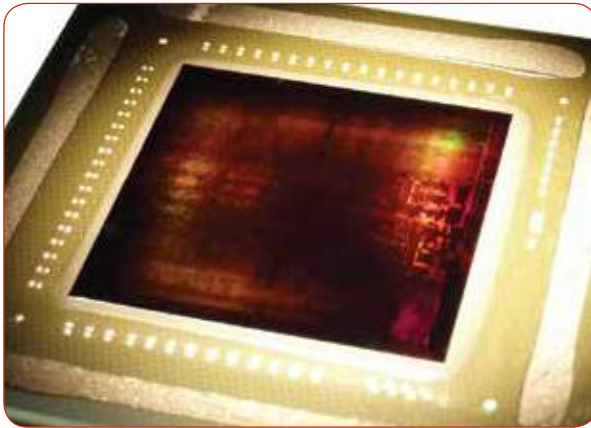
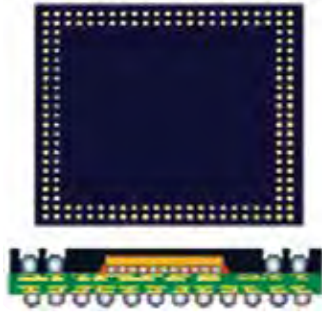


Deprocessing the device by following its profile ensures uniform material removal.



Ultrathin Die Deprocessing

Item	Description
15-9171	3D Software Module



Silicon die thinned to near transparency through the backside

3D TSV – Stacked Die

- Flip-chip - GPU
- NAND/Flash memory
- SoC, PoP and SiC – mobile processors
- Hybrid Super SoC's
- WL/CSP – Wafer and chip-scale package
- 2.5D Devices - FPGA

Lead Frame

- Thin small outline package (TSOP)
- Shrink small outline package (SSOP)
- Small outline IC (SOIC)
- Dual inline package (DIP)

Leadless Quad

- Plastic leaded chip carrier (PLCC)
- Quad flat no-lead (QFN)
- Quad flat package (QFP)



Pre-chemical decapsulation - Cu bond wire



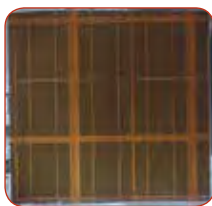
QFN



MCM



MOSFET/Bipolar device FA



Uniform ultrathin bare die silicon thinning



Uniform copper (Cu) pillar deprocessing - molded package, stacked die



Small device deprocessing



Ceramic package

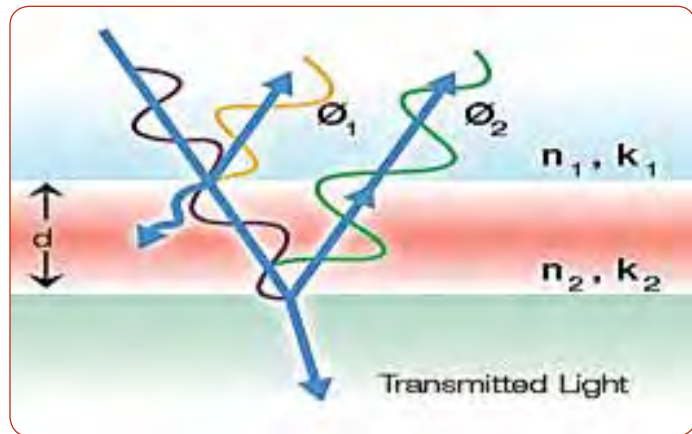
X-Prep® Vision™ Substrate Measurement Instrument



X-Prep® Vision™ is a metrology tool that enables measurement of silicon and semitransparent substrates. It is necessary for applications that require uniform thinning to a specific target with a tolerance of $\pm 5 \mu\text{m}$ or better.

The X-Prep® fixture adapter is also secured to the motorized stage on the X-Prep® Vision™, ensuring the measurement/tool control coordinates remain aligned when transferred between systems.

A library with data on over 130 materials (e.g., GaAs, InGaAs, SiC, Sapphire/ Al_2O_3 , InP, SiGe, GaN, photo-resist) is included with every system.



Measurement & Observation - How It Works

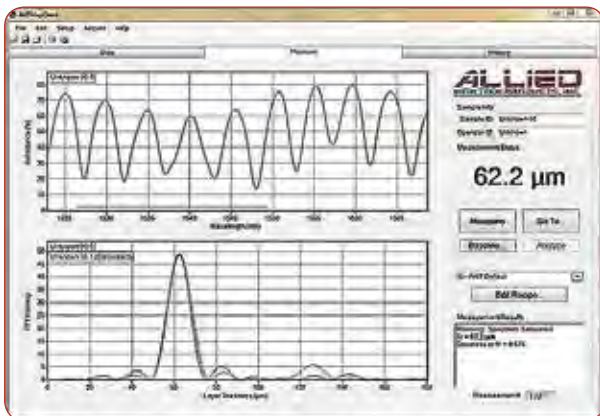
IR light is focused onto a sample, and a unique signal based on the refractive index of the material is created. The return signal is analyzed by the software to produce a thickness value.

Measuring Below 10 μm Thickness

For applications requiring thinning to less than $10 \mu\text{m}$, precise measurement is possible only by adding the visible light spectrometer accessory.

Features:

- ❖ Multipoint scan or single-point thickness measurement
- ❖ $10 \mu\text{m}$ to 1 mm thick range of measurement (15 nm to 1 mm thick when configured with #15-51000 Spectrometer)
- ❖ Motorized, automatic X/Y/Z with autofocus and < 1s acquisition time
- ❖ "Drive to Coordinate" software navigation
- ❖ Viewing of either 2D plot/map or 3D graph
- ❖ Software automation extendable through .NET
- ❖ Stage fitted with X-Prep® fixture adapter
- ❖ 100 mm x 100 mm stage travel
- ❖ Data export using standard Windows methods
- ❖ Dims: 14" W x 17" D x 19" H (355 x 431 x 483 mm)
- ❖ Weight: 34 lbs (15 kg)
- ❖ One (1) year warranty



Single-point measurement display

Item	Description
15-50100	X-Prep® Vision™ 100 Substrate Measurement Instrument, 100-240 V

Accessories

15-51000	Visible Light Spectrometer and CCD Camera
15-50020	CCD Camera

Milling

X-Prep® Accessories

Fixtures

A variety of fixtures are available to accommodate many sample sizes. Tabs on each fixture secure a borosilicate glass carrier onto which samples are mounted using wax. The fixtures feature a serrated interface that reduces surface contact to minimize sample registration errors. Borosilicate resists warping and maintains its shape through thermal cycling. It is easily machined using diamond tools for sample registration, or to produce clearance pockets for accommodating leads on device packages, capacitors or flip-chip die.

The fixture depth allows the sample to be submerged in lubricant during operation, maintaining lower sample and tool temperature, increasing tool life and eliminating airborne particulates.



Item	Description
15-9125	2" x 2" with 20 Borosilicate Carriers
15-9126	Borosilicate Glass Carriers, 2" x 2" (Pk/20)
15-9135	3" x 3" with 10 Borosilicate Carriers
15-9136	Borosilicate Glass Carriers, 3" x 3" (Pk/10)
15-9140	4" x 4" with 10 Borosilicate Carriers
15-9141	Borosilicate Glass Carriers, 4" x 4" (Pk/10)
15-9147	4" x 6" with 10 Borosilicate Carriers
15-9148	Borosilicate Glass Carriers, 4" x 6" (Pk/10)

Ruby Tipped Probe

The ruby tipped probe is an accessory used for leveling and profiling samples on the X-Prep®. The probe stylus can be replaced should it become damaged or chipped.



Item	Description
15-92RTP	Ruby Tipped Probe, with 1 mm Ø Stylus
28-85175A14	Replacement Stylus, 1 mm Ø
28-2060.5	Replacement Stylus, .5 mm Ø

Dust Extraction Vacuum, HEPA Filtration

This quiet vacuum provides maximum health protection from exposure to airborne contaminants generated from dry cutting and/or grinding processes.

It features a triple filtration system with carbon and micro-particle filter that are easy to change. Its automatic control operates the unit only when suction is required. Noise: ~ 15-20 dB over ambient.



Item	Description
15-9180	Vacuum System, 115 V
15-9185	Vacuum System, 230 V

Dims: 13" W x 13" H x 15" D (330 x 330 x 381 mm)

X-Prep® Consumables

Carbide End Mills (Pk/4)

Made of solid carbide for maximum performance and durability, these end mills are used to cut a wide variety of materials, including soft metals (**Al & Cu**), circuit board (**PCB**) substrates, ferrous metals (**Fe**) and other nonmetals.



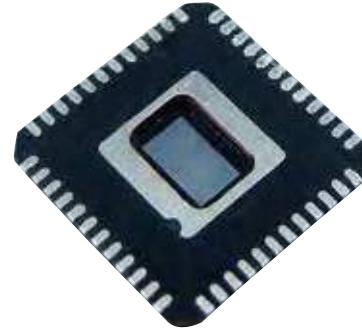
4-Flute

2-Flute

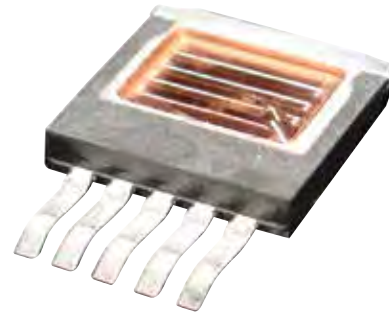
2-Flute

2-Flute end mills have deeper, longer gullets for greater chip-carrying capacity, and are center cutting.

Tip Ø x L	PCB	Al & Cu	Fe
0.05 mm x 38 mm	-	15-922F0.05	-
0.25 mm x 38 mm	15-922FP0.25	15-922F0.25	15-922FS0.25
0.5 mm x 38 mm	15-922FP0.5	15-922F0.5	15-922FS0.5
0.7 mm x 38 mm	15-922FP0.7	15-922F0.7	15-922FS0.7
1 mm x 38 mm	15-922FP1.0	15-922F1.0	15-922FS1.0
1.5 mm x 38 mm	15-922FP1.5	15-922F1.5	15-922FS1.5
2 mm x 38 mm	15-922FP2.0	15-922F2.0	15-922FS2.0
3 mm x 38 mm	15-922FP3.0	15-922F3.0	15-922FS3.0



Open small areas
(as little as 100 x 100 µm).

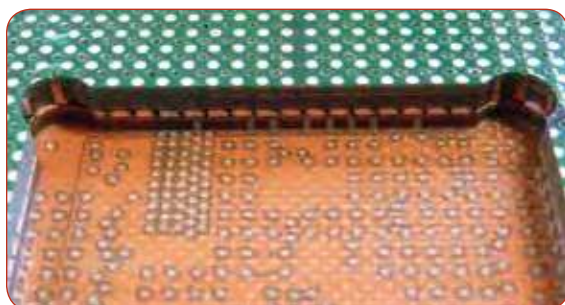


Easily machine through copper to
expose silicon.

4-Flute

4-Flute end mills produce finer finishes and last longer than 2-flute end mills, because wear is distributed over a greater area. They also remove material more quickly and can be moved across the sample at a higher rate.

Tip Ø x L	PCB	Al & Cu	Fe
0.7 mm x 38 mm	15-924FP0.7	15-924F0.7	15-924FS0.7
1 mm x 38 mm	15-924FP1.0	15-924F1.0	15-924FS1.0
1.5 mm x 38 mm	15-924FP1.5	15-924F1.5	15-924FS1.5
2 mm x 38 mm	15-924FP2.0	15-924F2.0	15-924FS2.0
3 mm x 38 mm	15-924FP3.0	15-924F3.0	15-924FS3.0

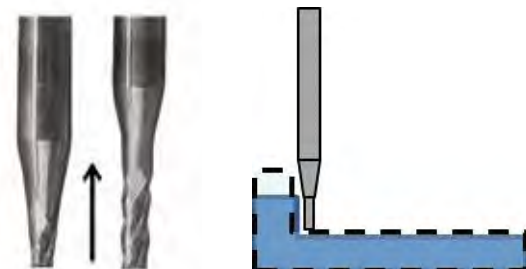


PCB tools are specially coated for cutting through glass-fiber reinforced circuit board material.

4-Flute, Long Reach

Long Reach end mills feature cutting flutes that extend up from the tip approximately 3x the tip diameter to allow cutting into deeper cavities.

Tip Ø x L	Al & Cu	Fe
0.7 mm x 38 mm	15-924F0.7-3	15-924FS0.7-3
1 mm x 38 mm	15-924F1.0-3	15-924FS1.0-3
1.5 mm x 38 mm	15-924F1.5-3	15-924FS1.5-3



Standard end mills (left) have tapered tips that may restrict the depth of the cavity they can produce when compared to long reach end mills (right).

Milling

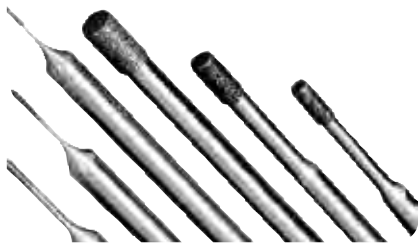
Metal Bonded Diamond Tools (Pk/2)

Metal bonded diamond tools are recommended for grinding nonmetals such as mold compound, silicon, glass and ceramic. Compared to plated tools, they are made with finer diamonds bound in a metal matrix that maintains better shape/profile, and they provide longer life, higher accuracy and finer surface finish.



Item	Description
15-92CMB3.0	Coarse, 3 mm Ø x 38 mm L
15-92MMB1.0	Medium, 1 mm Ø x 38 mm L
15-92MMB1.5	Medium, 1.5 mm Ø x 38 mm L
15-92MMB3.0	Medium, 3 mm Ø x 38 mm L
15-92FMB0.55	Fine, 0.55 mm Ø x 38 mm L
15-92FMB0.70	Fine, 0.7 mm Ø x 38 mm L
15-92FMB1.0	Fine, 1 mm Ø x 38 mm L
15-92FMB1.5	Fine, 1.5 mm Ø x 38 mm L
15-92FMB2.0	Fine, 2 mm Ø x 38 mm L
15-92FMB3.0	Fine, 3 mm Ø x 38 mm L
15-92VFMB0.20	Very Fine, 0.2 mm Ø x 38 mm L
15-92VFMB0.40	Very Fine, 0.4 mm Ø x 38 mm L
15-92VFMB0.50	Very Fine, 0.5 mm Ø x 38 mm L
15-92VFMB0.70	Very Fine, 0.7 mm Ø x 38 mm L
15-92VFMB1.0	Very Fine, 1 mm Ø x 38 mm L
15-92VFMB1.5	Very Fine, 1.5 mm Ø x 38 mm L
15-92VFMB2.0	Very Fine, 2 mm Ø x 38 mm L
15-92VFMB3.0	Very Fine, 3 mm Ø x 38 mm L

Plated Diamond Tools (Pk/4)



Plated diamond tools are used for bulk removal of plastic/composite materials and other nonmetals including glass and ceramic.

Item	Description
15-92CP1.0	Coarse, 1 mm Ø x 38 mm L
15-92CP1.5	Coarse, 1.5 mm Ø x 38 mm L
15-92CP3.0	Coarse, 3 mm Ø x 38 mm L
15-92FP0.7	Fine, 0.7 mm Ø x 38 mm L
15-92FP1.0	Fine, 1 mm Ø x 38 mm L
15-92FP1.5	Fine, 1.5 mm Ø x 38 mm L
15-92FP3.0	Fine, 3 mm Ø x 38 mm L

Diamond Grinding Discs (Pk/100)

Diamond grinding discs are ideal for grinding and thinning silicon, glass and ceramic. They are secured to mounts using glue. Diameter selection depends on corner radius and restrictions of sample. *See Loctite® 454™ or 460™ on page 63.*



Item	Description
15-92CGD5	Coarse, 5 mm Ø
15-92CGD9	Coarse, 9 mm Ø
15-92MCGD5	Medium, 5 mm Ø
15-92MCGD9	Medium, 9 mm Ø
15-92FGD3	Fine, 3 mm Ø
15-92FGD5	Fine, 5 mm Ø
15-92FGD9	Fine, 9 mm Ø
15-92FGD12	Fine, 12 mm Ø
15-92VFGD3	Very Fine, 3 mm Ø
15-92VFGD5	Very Fine, 5 mm Ø
15-92VFGD9	Very Fine, 9 mm Ø
15-92VFGD12	Very Fine, 12 mm Ø

X-Lube

X-Lube is a solvent-free lubricant used for milling, grinding and polishing applications. By submerging the sample during operation, debris is contained in the liquid, and the sample and tool are kept cooler. It is specially formulated to minimize splashing.



Item	Unit
15-92XL32	32 oz. (950 mL)
15-92XL128	128 oz. (3.8 L)

Large Diameter Mounts (Pk/5)

Mounts are used to secure grinding or polishing discs for preparation of areas greater than 25 mm². They are made of a hardened steel for rigidity and precision ground to eliminate vibration at high speeds.



Item	Dimensions
15-92PS3	3 mm Ø x 38 mm L
15-92PS5	5 mm Ø x 38 mm L
15-92PS9	9 mm Ø x 38 mm L
15-92PS12	12 mm Ø x 38 mm L

Large Diameter Polishing Discs (Pk/50)

Large diameter polishing discs are used for preparing larger samples to produce smooth, mirror-like, scratch-free finishes. They are secured to mounts using a high performance adhesive such as LocTite® 454 or 460™.



Item	Description
180-10951	Planar Pad, Plain Back, 5 mm Ø
180-10952	Planar Pad, Plain Back, 9 mm Ø
180-10953	Planar Pad, Plain Back, 12 mm Ø
90-150-543	DiaMat, Plain Back, 5 mm Ø
90-150-544	DiaMat, Plain Back, 9 mm Ø
90-150-545	DiaMat, Plain Back, 12 mm Ø
90-150-733	Final-POL, Plain Back, 5 mm Ø
90-150-734	Final-POL, Plain Back, 9 mm Ø
90-150-735	Final-POL, Plain Back, 12 mm Ø
180-10023	Final A, Plain Back, 5 mm Ø
180-10024	Final A, Plain Back, 9 mm Ø
180-10025	Final A, Plain Back, 12 mm Ø
180-10083	Chem-Pol, Plain Back, 5 mm Ø
180-10084	Chem-Pol, Plain Back, 9 mm Ø
180-10085	Chem-Pol, Plain Back, 12 mm Ø

Polishing Sheets (Pk/4)

Small diameter polishing discs can be extracted from 6" x 6" sheets using a punch.



Item	Description
180-10910	X-Pad II, 6" x 6" Sheet
180-10950	Planar Pad, 6" x 6" Sheet
180-10930	Final-POL, 6" x 6" Sheet
180-10105	Final A, 6" x 6" Sheet
180-10935	Final X, 6" x 6" Sheet
180-10960	Chem-Pol, 6" x 6" Sheet

Punches (Pk/25)

Punches feature a disposable, razor-sharp, medical grade stainless steel tip used to extract polishing discs.



Item	Dimensions
15-92P0.5-D	0.5 mm Ø
15-92P1-D	1 mm Ø
15-92P1.5-D	1.5 mm Ø
15-92P2-D	2 mm Ø
15-92P3-D	3 mm Ø

Small Diameter Mounts (Pk/20)

Small diameter polishing discs are secured to mounts using LocTite® 454 or 460™.



Item	Dimensions
15-9250.5	0.5 mm Ø x 38 mm L
15-9251	1 mm Ø x 38 mm L
15-9251.5	1.5 mm Ø x 38 mm L
15-9252	2 mm Ø x 38 mm L
15-9253	3 mm Ø x 38 mm L

Adhesives

These gel-based and liquid-based adhesives are used to secure grinding and polishing discs to mounts.



Item	Description
71-40045G	LocTite® 454™ Gel, 3 g Tube
71-40045	LocTite® 460™ Liquid, 20 g Bottle

Ultrasonic Cleaners



Ultrasonic cleaners create microscopic bubbles that penetrate small crevices and explode upon contact, removing debris that regular washing can leave behind. Cleaning is useful prior to mounting, as it improves adhesion of the mounting material to the sample, and prevents particles from contaminating cloths or scratching samples during the polishing process. All units have a stainless steel tank, mechanical timer and cover. Units with digital timers and/or heaters are also available. For 230 V systems, add "-230" to the item number.

Item	Description
95-18005	Model 1800, 0.5 gal. capacity, 6" L x 5.5" W x 4" D tank size, 115 V
95-10110	Solid Tray
95-10113	Mesh Basket
95-10115	Perforated Tray
95-18025	Beaker Cover (1 x 600 mL)
95-28005	Model 2800, 0.75 gal. capacity, 9.5" L x 5.5" W x 4" D tank size, 115 V
95-10130	Solid Tray
95-10133	Mesh Basket
95-10135	Perforated Tray
95-28025	Beaker Cover (2 x 600 mL)
95-38005	Model 3800, 1.5 gal. capacity, 11.5" L x 6" W x 6" D tank size, 115 V
95-10150	Solid Tray
95-10153	Mesh Basket
95-10155	Perforated Tray
95-38025	Beaker Cover (3 x 250 mL)
95-58005	Model 5800, 2.5 gal. capacity, 11.5" L x 6" W x 6" D tank size, 115 V
95-10170	Solid Tray
95-10175	Perforated Tray
95-58025	Beaker Cover (4 x 600 mL)
95-88005	Model 8800, 5.5 gal. capacity, 19.5" L x 11" W x 6" D tank size, 115 V
95-10190	Solid Tray
95-10195	Perforated Tray
95-10200	Beaker Cover (6 x 600 mL)



Available Accessories

Graduated Beakers

Item	Description
95-10205	250 mL Pyrex® Glass
95-10215	600 mL Pyrex® Glass
95-10220	600 mL Stainless Steel

GP Cleaning Solution

Biodegradable and caustic-free, this solution is used in ultrasonic cleaners for general purpose cleaning applications. It removes soils, fingerprints, dust, light oils and grease from metallographic specimens and other laboratory items. It is mixed with water at 10-12% by volume.

Item	Unit
95-10230	32 oz. (950 mL)
95-10235	128 oz. (3.8 L)



Micro Organic Soap

This high-purity cleaning solution is for removing microcontaminants and polishing solutions from samples prior to microscopic examination. It is mixed with water at 2-5% by volume.

Item	Unit
148-10000	32 oz. (950 mL)



Compressed Air Spray

This dry, nontoxic, nonflammable air spray removes water, dust or other particles from polished samples, optics or other laboratory items.

Item	Unit
200-20000	14 oz. (392 g) Aerosol Can
200-20005	Case/12 Cans





**Inverted
Microscopes**
(Pages 66-67)

**Upright
Microscopes**
(Pages 68-69)



Stereo / Zoom Microscopes
(Pages 70-72)



**Light Sources, Guides &
LED Illumination Systems**
(Page 73)

**Imaging / Software
Workstations &
Digital Cameras**
(Pages 74-76)

Zeiss Microscopes

Allied offers the complete line of materials microscopes from Carl Zeiss, including inverted, upright, stereo and zoom configurations. They are world-renowned for their superb optics, precision, quality and versatility.

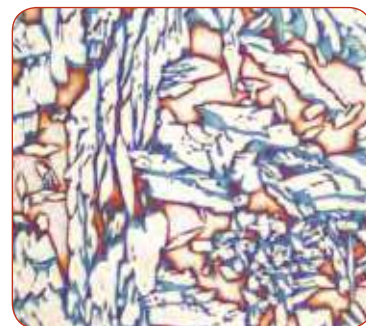
The unique pyramid design on inverted and upright systems offers greater stability and lower center of gravity, minimizing vibration. All controls are ergonomically positioned to provide ease of use and a high degree of operator comfort during inspection.

A wide range of components, objectives and contrasting methods (brightfield, advanced darkfield, circular differential interference contrast [C-DIC], polarization, total interference contrast [TIC] and fluorescence) are available to customize the ideal instrument for your particular application.

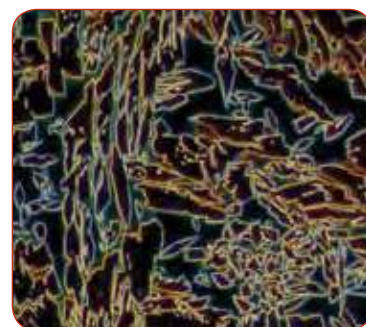
Contact Allied for technical, configuration and pricing information.

Inverted Microscopes

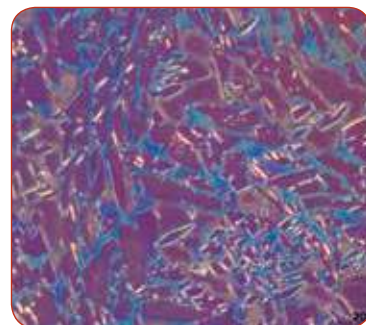
Axio Vert.A1 MAT



Brightfield



Advanced Darkfield



Polarization Contrast



Circular Differential Interference Contrast (C-DIC)

The **Axio Vert.A1 MAT** inverted microscope has a low-profile design and is well suited for routine examination of mounted samples. Capable of all common contrasting techniques, featuring an encoded objective turret, and with a power-saving eco mode, it is the most versatile of its class of microscopes.

Features:

- ❖ 5-position encoded objective turret and 4-position nonencoded reflector turret to support a wide variety of imaging techniques
- ❖ 12.5x to 1,500x optical magnification range
- ❖ Achromatic and Köhler illuminated light path
- ❖ Encoded components that allow communication between the microscope, AxioCam camera and ZEN Core imaging software, keeping track of the objective, calibration and lighting parameters
- ❖ Light Manager, which stores illumination settings of each objective
- ❖ Low-position fine and coarse focus knobs
- ❖ Capacity for large or heavy specimens
- ❖ 50 W halogen, 100 W halogen or LED light sources available with built-in power supply (Optional external power supply is available for higher light intensity.)
- ❖ Mechanical, gliding and scanning stages are available
- ❖ Optional eco mode: automatic switch-off after 15 minutes of inactivity

Axio Observer



Axio Observer 5



Axio Observer 7



Axio Observer 3

The **Axio Observer** is a research-grade metallograph designed for examination of mounted samples. With apochromatic optics, it provides extremely low light scattering, high contrast and aberration-free imaging for the highest quality results.



Features:

- ❖ 6-position encoded objective turret and 6-position encoded reflector turret to support a wide variety of imaging techniques
- ❖ 12.5x to 1,500x optical magnification range
- ❖ Optional Optovar tube lens that provides up to 2.5x optical multiplication
- ❖ Apochromatic Köhler illuminated light path with slot for rotatable polarization
- ❖ Encoded components that allow communication between the microscope, Axiocam camera and ZEN core imaging software, keeping track of the objective, calibration, contrasting technique, tube lens, lighting parameters and motorized X/Y stage parameters and coordinates
- ❖ Integration with ZEN core provides automatic scaling when changing objectives to ensure accurate measurements
- ❖ LCD that lists objective magnification, contrasting technique and light intensity
- ❖ Contrast Manager, which stores illumination settings of each objective and contrast technique, recalled automatically as each objective/reflector is positioned
- ❖ Sturdy mechanical X/Y stage with low-position coaxial controls (left or right), minimum 130 x 85 mm range
- ❖ Manual or motorized versions
- ❖ Low-position fine and coarse focus knobs
- ❖ Excellent for large or heavy specimens
- ❖ 12 V, 100 W halogen light source with built-in power supply (mercury, xenon and LED illumination available)

Upright Microscopes

Axio Imager



Axio Imager A2m - Manual, Encoded



Axio Imager M2m - Motorized, Encoded

The **Axio Imager** upright microscope features innovative, unprecedented technology in optical microscopy and is configurable for either manual or motorized operation.

Features:

- ❖ 7-position encoded objective turret and 6-position encoded reflector turret to support a wide variety of imaging techniques
- ❖ Apochromatic light train (unique to Zeiss) providing the best color correction available
- ❖ Köhler lighting principle, utilized in the reflected light train to improve lighting homogeneity, brightfield contrast and darkfield performance, providing a background so black that “darkfield” is characterized now as “advanced darkfield”
- ❖ Enhanced Contrast Optics, which provide the flattest field and best contrast available
- ❖ Patented light traps to eliminate stray light
- ❖ Unique imaging cell, improving stability by reducing thermal influences and vibration for razor-sharp image capture
- ❖ Vertically and horizontally adjustable binocular phototube
- ❖ Detachable stage carriers
- ❖ Dovetail interface that allows height adjustment of stage carriers
- ❖ 12.5x to 1,500x optical magnification range
- ❖ Optical multiplication up to 4x (optional)
- ❖ Encoded components that allow communication between the microscope, AxioCam camera and ZEN core imaging software, keeping track of the objective, calibration, optical technique, tube lens, lighting parameters, and motorized X/Y stage parameters and coordinates
- ❖ Integration with Zen core imaging software, which provides automatic scaling when changing objectives to ensure accurate measurements
- ❖ X, Y and Z measurement capability without computer interface (M2m and Z2m only)
- ❖ Sturdy mechanical X/Y stage with low-position coaxial controls (left or right), minimum 75 x 50 mm range
- ❖ Manual or motorized versions
- ❖ Low-position fine and coarse focus knobs
- ❖ Contrast Manager, which stores illumination settings of each objective and contrast technique, recalled automatically as each objective/reflector is positioned
- ❖ 12 V, 100 W halogen light source with built-in power supply (mercury, xenon and LED illumination available)

Axio Imager Vario



Axio Imager Vario - for larger samples & increased travel

The **Axio Imager Vario** combines maximum precision and the largest possible sample space for research, development and quality assurance applications. It is an ideal solution for thicker or larger samples, including solar cells, wafers, flat panel displays and more. The Vario has an ultrastable column, reliable focus, high accuracy, and a variety of stages and sample holders.

Features:

- ❖ 7-position encoded objective turret and 6-position encoded reflector turret to support a wide variety of imaging techniques
- ❖ Impressive sample space with vertical extension up to 254 mm (Z) and stage travel up to 300 mm (X/Y)
- ❖ 12.5x to 1,500x optical magnification range
- ❖ Optical multiplication up to 4x (optional)
- ❖ Encoded components that allow communication between the microscope, Axiocam camera and Zen core imaging software, keeping track of the objective, calibration, optical technique, tube lens, lighting parameters, and motorized X/Y stage parameters and coordinates
- ❖ Integration with Zen core imaging software which provides automatic scaling when changing objectives to ensure accurate measurements
- ❖ Manual or motorized versions
- ❖ Contrast Manager, which stores illumination settings of each objective and contrast technique, recalled automatically as each objective/reflector is positioned
- ❖ X, Y and Z measurement capability
- ❖ 12 V, 100 W halogen light source with built-in power supply (mercury, xenon and LED illumination available)

Axio Lab.A1



Axio Lab.A1

The **Axio Lab.A1** sets new standards for entry-level upright microscopes, offering an excellent price-to-performance ratio while achieving brilliant image quality based on Carl Zeiss ICS optics. Its intuitive operation makes this microscope a reliable system for routine applications in the laboratory involving defect analysis, quality inspection and materials testing.

Features:

- ❖ 5-position nonencoded objective turret and 4-position nonencoded reflector turret to support a wide variety of imaging techniques
- ❖ Enhanced Contrast Optics, which provide the flattest field and best contrast available
- ❖ 4-position reflector turret with push & click contrast modules
- ❖ Color-corrected reflected light path with aperture and field diaphragm, with a mount for rotatable polarization
- ❖ 50 W halogen light source with built-in power supply (LED lamp also available)
- ❖ Large field of view (22 mm)
- ❖ Transmitted light Pol versions also available for orthoscopy and conoscopy applications

Stereo Microscopes

Discovery Series

The **Discovery Series** stereo microscopes are designed for ergonomic and simplified operation, and provide increased depth of field through newly designed optics, improving color reproduction and contrast for unequalled resolution. Three different microscope bodies are available: V8 (manual zoom, 1-8x), V12 (motorized zoom/encoded, 0.8-10x) and V20 (motorized zoom/encoded, 0.75-15x).



Discovery V12

Features:

- ❖ Single or 3-position objective turret
- ❖ Magnification range of 2.25x to 345x (*stereo*), up to 525x (*mono*)
- ❖ Highest resolution stereo microscope available
- ❖ Largest depth of field with the deepest 3D effect
- ❖ Exceptionally high contrast
- ❖ Tilting, height-adjustable binocular phototube
- ❖ Programmable, illuminated Human Interface Panel (HIP), which stores and displays magnification and resolution
- ❖ Encoded stand for software recognition of parameters (V12 & V20)
- ❖ 350 mm vertical column with motorized control and zeroing function, 350 nm resolution
- ❖ Reflected and/or transmitted light base
- ❖ Integration with ZEN core imaging software for communication and control of the stereomicroscope



A 3-position encoded turret allows parfocality with four objectives from 0.63x, 1.0x, 1.5x and 3.5x, providing an astounding magnification range from 2.25x to 525x and large depth of field.

Data output to PC allows magnification, illumination, resolution and field of view data to be captured with each image.



The **Human Interface Panel (HIP)** replaces the conventional turning knob for motorized zoom control and/or focus.

It offers storage functions of all parameters and programmable entry of zoom speed, focus speed and vertical position.



The **System Control Panel (SyCoP)** is a complementary option to the HIP, enabling control of the microscope. It features the similar feel of a computer mouse and offers touchscreen control and programming of zoom, zoom speed, focus, focus speed, vertical positioning with 350 mm range and 350 nm resolution, eyepiece and objective magnification, and illumination control.



The tilting trinocular head (ergotube) provides variable viewing angles, height adjustment and interpupillary width adjustments for improved operational comfort.

Stemi Series

The **Stemi 508** offers a complete apochromatic system and new front optics for the best resolution and high contrast. It is designed for the workloads of everyday lab use and industrial inspections. Samples are displayed in rich detail, in sharp focus and free from distortion or color fringes.



Stemi 508

The **Stemi 305** offers better integrated illumination than any other entry level Greenough stereo microscope. Its compact design follows “clean desk” philosophy by incorporating an integrated power supply and hidden cables. It provides sharp, distortion-free 3D images, crisp in contrast and with no preparation required.



Stemi 305

Features:

- ❖ Lower viewing angle of 35° for better ergonomics than any other Greenough type stereo microscope for a more relaxed working posture
- ❖ 10x adjustable focusing eyepieces (16x and 25x available)
- ❖ 8:1 zoom range, 6.3x to 50x magnification range (interchangeable optics and eyepieces allow from 2x to 250x)
- ❖ Continuous or click-stop zoom adjustment (with 10 click-stops)
- ❖ Photoport for Zeiss Axiocam cameras, video or SLR cameras
- ❖ 35 mm field of view; up to 120 mm using interchangeable optics
- ❖ Configurable with standard bases or boom stands
- ❖ Multiple available stages including slide, circular ball-and-socket and rotating pol
- ❖ Integrated LED lighting and external illumination options

Features:

- ❖ Integrated LED illumination: vertical and oblique reflected and transmitted light
- ❖ ESD protection, which prevents samples from being damaged by electrostatic discharge
- ❖ 10x adjustable focusing eyepieces (16x and 25x available)
- ❖ 5:1 zoom range, 8x to 40x magnification range (interchangeable optics and eyepieces allow from 4x to 200x)
- ❖ 29 mm field of view; up to 58 mm using interchangeable optics
- ❖ Configurable with standard bases or boom stands
- ❖ Multiple available stages including slide, circular ball-and-socket and rotating pol
- ❖ Integrated LED lighting and external illumination options

Additional Features



Configurable with boom stands, standard bases, external illumination and many interchangeable optics, for a variety of applications.



Additional plug-in LED lighting options include: segmentable ringlight, vertical illuminator, spot illuminator and a double arm gooseneck, along with transmitted light options.

Zoom Microscope

Axio Zoom.V16



Axio Zoom.V16

The **Axio Zoom.V16** combines its 16x zoom with a high numerical aperture, large working distance and single objective to deliver resolutions up to twice as high as conventional stereomicroscopes, even at low to medium magnifications. Combined with contrasting methods traditionally found on compound microscopes, the Axio Zoom.V16 allows for more efficient imaging that speeds up quantitative analysis. The zoom functionality is fully motorized, and focusing is available in both manual and motorized versions.

Features:

- ❖ Apochromatic light path (unique to Zeiss), providing the best color correction available
- ❖ Magnification range of 3.5x to 258x (up to 644x with 25x eyepieces)
- ❖ EpiRel slider in the Epi-Illuminator Z, which produces a relief-like effect in coaxial incident light when the illumination is slightly inclined
- ❖ eZoom – a high precision, stepper motor based electronic zoom
- ❖ Object field up to 66 mm (using 10x eyepieces and 0.5x PlanApo Z objective)
- ❖ Long working distance
- ❖ Manual and motorized stage and focus available
- ❖ Column travel range up to 350 mm (manual) and up to 490 mm (motorized)
- ❖ Various contrasting techniques available: brightfield, darkfield, oblique light, polarization, fluorescence
- ❖ Motor-driven iris to select between Brightness Mode, Eyepiece Mode and Camera Mode
- ❖ Encoded stand for software recognition of parameters
- ❖ Integration with ZEN core imaging software for communication and control
- ❖ Available phototubes without eyepieces for completely digital imaging and analysis applications
- ❖ Compatibility with many accessories available for the Discovery Series stereo microscopes



Stereo/Zoom Illumination

LED Illumination Systems



Employing the newest technologies, **Schott** has integrated high-brightness LEDs and controller electronics into two innovative flicker-free illuminators. Both offer continuous dimming with a separate on/off switch. The **EasyLED** series is an innovative, self-contained illumination system with the controller electronics built into the illuminator head, and this saves countertop space and provides easy and ergonomic operation. The **VisiLED** illuminators include a control box and offer a wide range of illumination options and controls for more advanced applications.

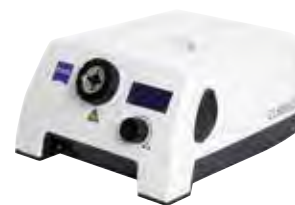
Features:

- ❖ White light (daylight), approximately 5,600 K
- ❖ Nearly constant color temperature when dimming
- ❖ High-reliability LEDs (30,000 operating hours)
- ❖ Low power consumption
- ❖ Operation free of noise and vibration
- ❖ Lightweight with thin flexible bundles
- ❖ Wide range of controllers: DC output (VisiLED)
- ❖ Selectable light direction (12 options) for maximum versatility (VisiLED)

Item	Description
120-600100	EasyLED Illuminator, 17 mm Ø
120-600120	EasyLED Dual Illuminator, 17 mm Ø
120-600200	EasyLED Ringlight, 66 mm ID
120-600400	EasyLED Transmitted Light Stage
120-400000	VisiLED, MC 1500 Multiple Controller
120-400040	VisiLED, MC 1000 Controller
120-400010	VisiLED, MC 750 Controller
120-400100	VisiLED Ringlight S40, 55-110 mm WD
120-400150	VisiLED Slim Ringlight S48, Dual Ring, 20-40 mm WD or 40-90 mm WD
120-400225	VisiLED Ringlight S80, 25-50 mm WD
120-400255	VisiLED Ringlight S80, 55-135 mm WD
120-400300	VisiLED DF Ringlight S40, 5-15 mm WD
120-400400	VisiLED Transmitted Light Stage

Zeiss CL/KL Series

Providing homogenous and flicker-free LED illumination, the CL series is the performance leader in light sources. The CL 6000 and CL 9000 feature an LCD display for intensity control, operation mode and memory function, and all CL units have a 3-position filter slider. The low energy consumption, long lifetime (50,000 operating hours) and white light output of the LED make it the ideal choice for stereomicroscopy. The CL 9000 emits up to 900 lumens and is equipped with a CAN interface, which allows the light source to be controllable by the SyCoP and ZEN core software.



Item	Description
12-4357009101	CL 6000 LED Light Source, 600 lm, 115 V
12-4357009000	CL 9000 LED Light Source, 900 lm, 115 V
12-4357009200	CL 4500 LED CRI 90 Light Source, 450 lm, 115 V
120-120300	KL 300 LED Light Source, 120-240 V
120-150700	KL 1500 Halogen 150 Watt Cold Light Source, 115 V
120-158210	Focusing Lens (without Filter)
120-158205	Polarizing Filter for 120-158210
120-157420	Slit Ringlight, 66 mm ID
120-158430	Polarizer/Analyzer for 120-157420

Schott ColdVision Series



The ColdVision ACE light sources are an economical choice providing up to 150 W of halogen illumination via numerous light guide options. Variable intensity control allows adjustment of light output. A standard EKE bulb is included.

Item	Description
120-A20500	Schott ColdVision 150 W Halogen Light Source, 115 V
120-A20520	Schott ColdVision 150 W Halogen Light Source, 115 V with Iris Diaphragm
120-A08500	Light Guide, Dual Branch Gooseneck, 7.6 mm Diameter x 460 mm Length
120-A08620	Ringlight, 47-62 mm, Vertical Exit
120-A08615	Polarizer/Analyzer for 120-A08620
120-A08635	Ringlight, 38-53 mm, Vertical Exit
120-A08632	Polarizer/Analyzer for 120-A08635
120-EKE	Halogen Bulb, 21 V/150 W

ZEN core Image Analysis Software

From materials research and development to industrial quality control and assurance, more and more materials laboratories are utilizing the advantages of digital microscopy. **Carl Zeiss** is driving this process with solutions that are continually setting new standards. A major component is **ZEN core**, the preferred image analysis software for the microscopist. With its unique modular architecture, it is equally suited for both newcomers and advanced users. It features seamless integration between camera and microscope for all imaging and analysis needs.

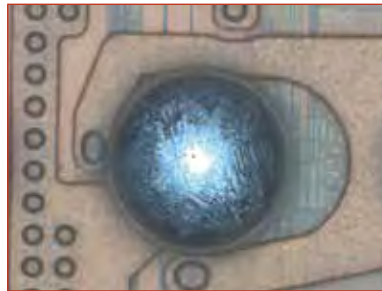
Features:

- ❖ Measurement of lines, angles, arcs, circles, area, perimeter and more
- ❖ Annotations/Text
- ❖ Contrast and filtering adjustment
- ❖ Full camera control
 - Exposure
 - White balance
 - Shade correction
 - Histogram
 - Image orientation
- ❖ Customizable workflows, toolbars and buttons
- ❖ Custom report generation, formattable with MS Word®
- ❖ Available in **32/64-bit** for **Windows 7®**

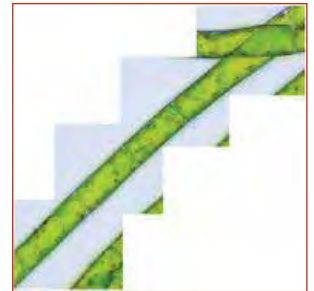


Modular Components:

- ❖ Panoramic image tiling
- ❖ Extended Focus (combining images from multiple focal planes)
- ❖ Auto Measurement (image segmentation)
- ❖ Z-Stack (automatic snapping of images from multiple focal planes — only on motorized microscopes)
- ❖ Imaging Plus (advanced image processing)
- ❖ Commander scripting
- ❖ VBA programming
- ❖ Mark & Find (motorized stage required)
- ❖ Autofocus (motorized stand only)
- ❖ Interactive Measurement
- ❖ Online Measurement (measurement on live images)
- ❖ High Dynamic Range Imaging
- ❖ Topography



Z-Stack/Extended Focus acquires and combines images from multiple focal planes to create a single sharp image.



Panoramic image tiling allows simple capturing and stitching of multiple images to make one large common image.

Why Consider ZEN core?

Integration with Zeiss Microscope and Camera – With each objective change, the magnification is captured and scalings are applied automatically (encoded microscopes). All data such as magnification, camera exposure and bit depth are tagged on snapped images.

Functionality – Zeiss gives users complete control over the system (camera, software and microscope) without using third party components, drivers, etc. Because Zeiss designs and manufactures all the components, they are designed to work together, seamlessly.

Support – Allied has image analysis experts to answer IA questions. Between Zeiss and Allied, users have access to two organizations for maximum support.

Versatility – A workflow can be designed to implement tasks easily and repeatedly. For advanced users, toolbars and macros can be customized to fit their needs.

Image Formats – ZEN core supports importing and exporting of most standard file formats. Its proprietary ZVI file retains image properties: calibration, brightness, contrast, gamma, user definable comments, keywords, date and more.

Imaging Workstations



Allied offers a wide range of computer systems, cameras, camera adapters, printers and accessories to help build a complete imaging workstation optimized for your specific application.

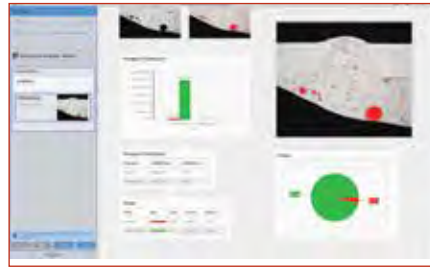
Image Analysis / Add-On Modules

Add-on modules expand the capability of ZEN core.



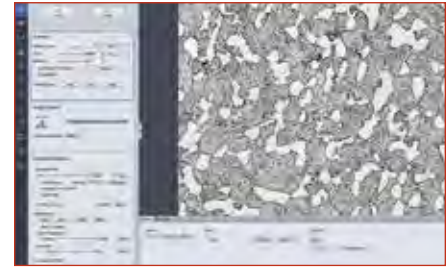
Grains

- ❖ Three measurement methods:
 - Automatic (reconstruct)
 - Interactive (intercept counting, with 6 different chord patterns)
 - Comparison (overlays)
- ❖ ASTM (I-IV), SEP, BS, DIN and EN standards
- ❖ "Wall Chart" comparative method



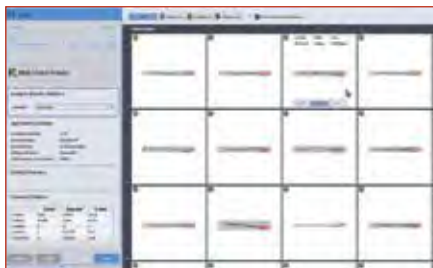
Multiphase

- ❖ Routine sample analysis of particle size, phase content, porosity
- ❖ Up to 32 phases: B/W or color
- ❖ Percent area, volume fraction and classifications
- ❖ Pearlite/ferrite content of steel



AutoMeasure

- ❖ Wizard for guided generation of programs
- ❖ Image processing, global/local segmentation and thresholding
- ❖ Custom measurement creation
- ❖ Data export into CSV and XML formats
- ❖ Measurement of porosity, particles, impurities and more



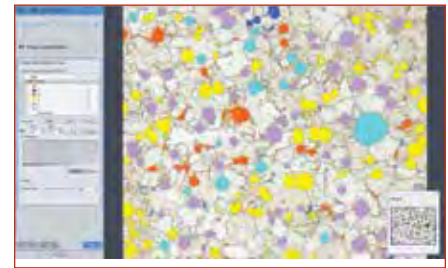
NMI

- ❖ Nonmetallic inclusions in steel: oxides, sulphides and nitrides
- ❖ ASTM, ISO, DIN, EN and JIS standards
- ❖ Worst Field and oversized particle measurement



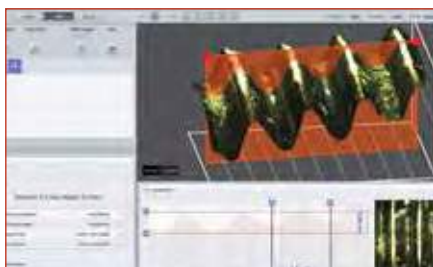
Coating Thickness

- ❖ Automatic measurement of coating thickness: raw thickness values, average thickness and statistics
- ❖ Single image or batch processing of multiple images



Graphite

- ❖ Graphite measurement in cast iron
- ❖ ASTM, ISO, EN and SAE standards
- ❖ Three measurement methods: Spherulite, Lamellar and Verricular



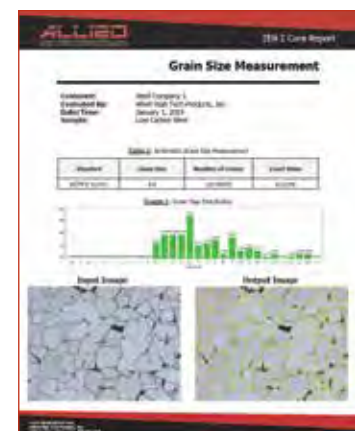
Topography

- ❖ Generation of isometric 3D images
- ❖ EN ISO 4287 roughness measurements
- ❖ Height map creation from Z data
- ❖ Stereogram viewing using anaglyph glasses



PCB Layers

- ❖ Automatic measurement of PCB layers: copper thickness, dielectric thickness, raw values and average thickness values
- ❖ Single image or batch processing of multiple images



One-Click Reports!

Axiocam Digital Cameras



Axiocam 512



Axiocam 506



Axiocam 503



Axiocam 305



Axiocam ICc 1



Axiocam 105 Color

The **Zeiss** line of Axiocam digital cameras offers seamless integration with ZEN core software, providing full control over all camera functions including exposure, white balance, shade correction and image orientation. ZEN core software is provided with each Axiocam. It may be installed on an unlimited number of computers so that if images need text/annotation or further measurements, these tasks can be performed without the use of the main image capture station. It also allows viewing of raw ZVI image files by anyone, similar to how Adobe Acrobat Reader is used to view PDF files.

ZEN core provides the following functions:

- ❖ Image capture
- ❖ Exposure control
- ❖ Color/shade correction
- ❖ Image orientation
- ❖ Basic measurements
- ❖ Annotations
- ❖ Circles
- ❖ Scale bar
- ❖ Text box



Camera Comparison Chart

Cameras for Quantitative Analysis			Cameras for Routine/Basic Analysis			
512	506	503	Axiocam Camera	305	ICc 1	105 Color
CCD II	CCD II	CCD II	Sensor Type	CMOS	CCD	CMOS
1"	1"	2/3"	Sensor Size	2/3"	1/2"	2/5"
1:1380	1:2500	1:2500	Dynamic Range	1:4800	1:280	1:200
250 μ s to 60 s	250 μ s to 60 s	250 μ s to 60 s	Exposure Time	100 μ s to 4 s	1 ms to 4 s	100 μ s to 2 s
3x14-bit	3x14-bit	3x14-bit	Digitization (Bit Depth)	3x12-bit	3x8-bit	3x8-bit
				3x8-bit		
12 MP	6 MP	2.8 MP	Resolution	5 MP	1.4 MP	5 MP
4,250 x 2,838	2,752 x 2,208	1,936 x 1,460		2,464 x 2,056	1,392 x 1,040	2,560 x 1,920
USB 3.0 / USB 2.0	USB 3.0 / USB 2.0	USB 3.0 / USB 2.0	Data Interface	USB 3.0	IEEE 1394b (FireWire 400)	USB 3.0 Micro/Standard
Yes	Yes	Yes	Peltier Cooling	Temp Stable @ 25° C	No	No

Mitutoyo



**Micro
Vickers / Knoop**
(Pages 78-79)



**Automatic Micro
Vickers / Knoop**
(Page 80)



Macro Vickers
(Page 81)



Rockwell
(Page 82)

Mitutoyo Testers

Allied offers the complete line of hardness/microhardness testers from Mitutoyo, including Vickers, Knoop, Rockwell and Rockwell Superficial configurations. As the leading metrology company in the world, Mitutoyo provides dependable product and technical support, state-of-the-art calibration and repair services, and cutting-edge research and development.

With intuitive controls, easy operation and unparalleled stability, these systems are a high-quality addition to any testing and analysis environment. A variety of indenters, objectives, test forces, motorized components and external interfaces, among other accessories, are available to customize a tester for any application.

Micro Vickers / Knoop

Measuring microscope

Designed for measuring indentation dimensions, the microscope utilizes an integrated 10x eyepiece (video camera system #125-810354A can be installed).

LED illumination

LED illumination unit provides long service life and low power consumption.

Automatic turret

The positions of the indenter and objective lens can be automatically switched using the touchscreen (can also be manually switched).

Up to four (4) objective lenses and two (2) indenters can be installed.

Wide range of test force

Precision electromagnetic controls allow the desired test force to be set between the following:

HM-210: 10 gf to 1,000 gf

HM-220: 0.05 gf to 2,000 gf

Long working distance objectives

Six (6) infinity corrected objectives are available. 10x, 20x, 50x and 100x magnifications are used when measuring indentations; 2x and 5x are used for widefield observation.

Manual X/Y stage with digital micrometers

During test-site positioning, the positional information is digitally displayed on both the micrometers and the touchscreen.

● 1" x 1" (25 x 25 mm) standard

● 2" x 2" (50 x 50 mm) optional



HM-210/HM-220

Interfacing to external instruments

Test results can be printed on a printer or output to a PC using the following:

- USB 2.0 interface (for data communication) for PC
- Digimatic interface for DP-1VR, U-WAVE and USB-ITN
- Serial interface for DPU-414

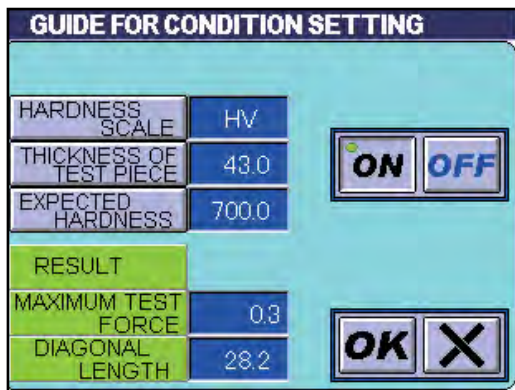


Video camera system

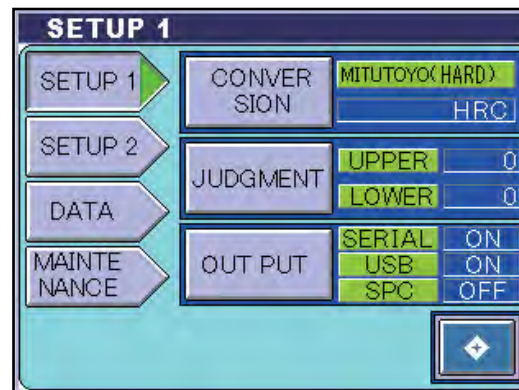
CCD camera and 8.4" TFT monitor enable observation and measurement of indentations at high magnification, reducing operator error.

Touchscreen controller

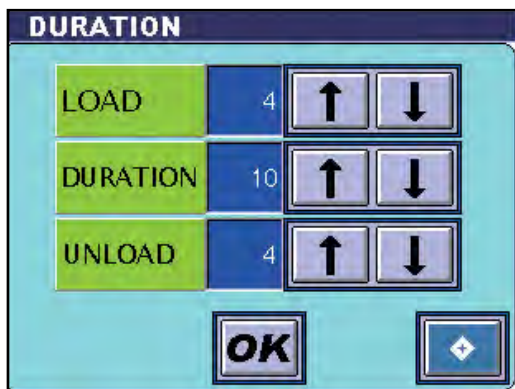
The touchscreen provides a full suite of basic functions necessary for hardness testing, including pass/fail determination, hardness value conversions and statistical calculations. The easy-to-understand graphic display enables intuitive operation. Functions for converting values and compensating for curved surfaces, as well as test condition guiding functions, are all provided as standard features.



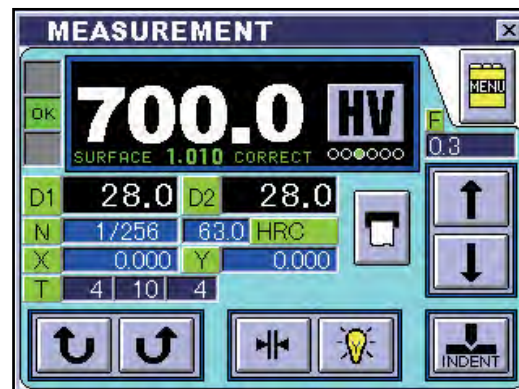
Enter the specimen thickness and the presumed hardness to set a test force that satisfies the conditions.



Select a conversion scale, enter a setting for Pass/Fail determination, and specify external output.



In addition to the test force dwell time, the user can specify loading and unloading testing times.



Display test conditions and test results.

Automatic Micro Vickers / Knoop

High speed USB Camera

The 3 megapixel, high speed USB camera allows fast and accurate measurements of the indentations.

LED Illumination

LED illumination unit provides long service life and low power consumption.

Automatic X/Y stage

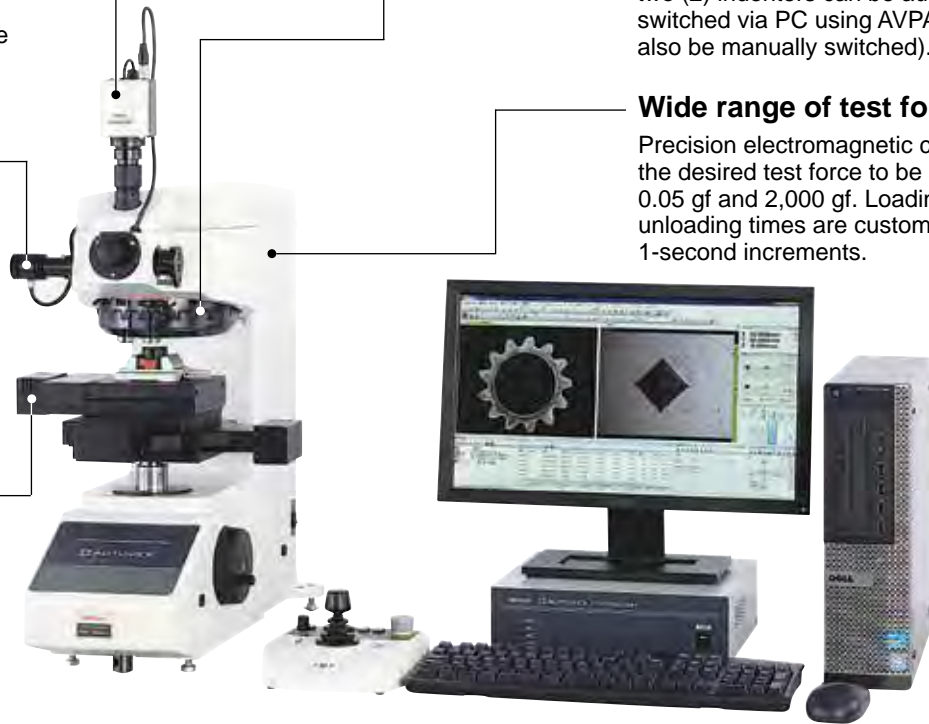
Automatic stage enhances measurement efficiency, reduces variation due to operator errors and enables repeatable test patterns via AVPAK. Joystick included for control without PC.

Automatic Turret

Up to four (4) objective lenses and two (2) indenters can be automatically switched via PC using AVPAK (can also be manually switched).

Wide range of test force controls

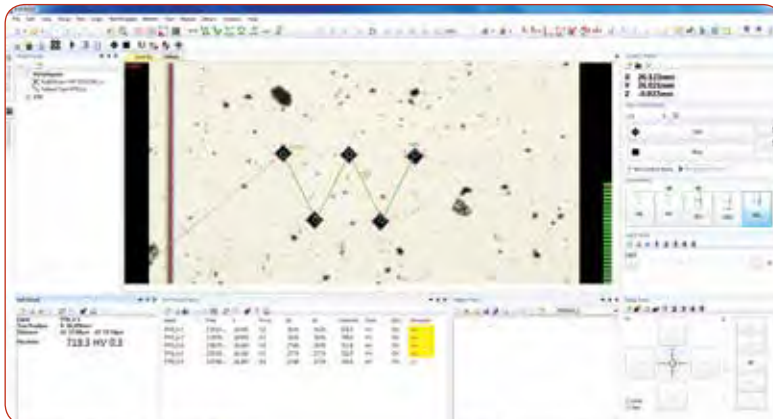
Precision electromagnetic controls allow the desired test force to be set between 0.05 gf and 2,000 gf. Loading, dwell and unloading times are customizable in 1-second increments.



HM-220 Type D

AVPAK Software

AVPAK software provides seamless integration between the microhardness tester and camera for completely automatic measurement and analysis. With multiple screen layouts for control, testing status, and result display, it is easy to use, highly customizable and powerful for a variety of applications.



Software Features:

- ❖ Indenter/objective turret control
- ❖ Illumination control
- ❖ Live camera view
- ❖ Automatic focus
- ❖ Contrast level meter
- ❖ Report generation
- ❖ Hardness distribution diagram
- ❖ Hardness curve
- ❖ Test pattern creation, saving and pasting
- ❖ Stage control and coordinate measurement
- ❖ Graphic view of stored images
- ❖ Digital zoom of test region
- ❖ Handling of multiple specimens
- ❖ In-process indentation status display
- ❖ High-performance image processing for automatic indentation measurement
- ❖ Rapid hardness calculations and conversions
- ❖ Pass/fail determination
- ❖ Curved surface compensation
- ❖ Statistical calculations

Accessories - Micro Vickers / Knoop



Self-Leveling Vise
#125-810020

This vise secures any mounted specimen that has a measuring surface difficult to stabilize perpendicular to the indenter axis.



Clamping Vise
#125-810016

This vise with 2" (51 mm) maximum opening secures a wide variety of sample sizes.



Digimatic Mini-Processor DP-1VR Printer
#125-2645045A

Easily print measurement data from the digimatic gage or perform statistical analysis with this device.

Test Blocks

Test blocks are available for a wide range of microhardness values and loads.

Macro Vickers / Knoop

LED illumination

LED illumination unit provides long service life and low power consumption.

Automatic turret

Up to three (3) long working distance objective lenses (from 2X to 100X) and two (2) indenters can be automatically switched via PC using AVPAK (can also be manually switched).

Touchscreen Controller

The intuitive touchscreen provides a full suite of functions, including pass/fail determination, hardness value conversion, curved surface compensation, offset information and test condition settings.



HV-110/HV-120

Monitor display

CCD camera and 8.4" TFT monitor enable observation and measurement of indentations and high magnification, reducing operator error (10x eyepiece also available for measurement without the camera).



Wide range of test force

Precision electromagnetic controls allow the desired test force to be set between the following:

HV-110: 1 kgf to 50 kgf
HV-120: 0.3 kgf to 30 kgf

Fully automated tester with motorized stage/focus and AVPAK software is also available.

Rockwell Hardness Tester

Projected-Nose Indenter

Projected-nose indenter arm easily reaches interior and exterior surfaces.



Backlit LCD Display

LCD backlit touchscreen controls hardness value, conversions, test conditions, OK/NG judgment, statistics, data offset, cylindrical/spherical compensation and more.

Closed Loop Force Control

Closed loop electronic test force provides accurate control for loading, dwelling and unloading conditions.

Automatic Braking and Loading

Manual specimen advancement is used until the automatic brake and automatic loading sequence starts.

Versatile Data Output

Data is output via SPC, serial and centronics interfaces for reporting and statistical analysis.



HR-530

Accessories - Macro Vickers / Knoop, Rockwell, Rockwell Superficial

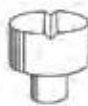
Flat Anvils



Diameter: 2.5" (64 mm)
Diameter: 1.5" (38 mm)

2.5" diameter is included with testers. 1.5" diameter and large round table anvils are available.

V Anvils



Diameter: 1.5" (38 mm)
Groove width: .38" (9.7 mm)



Diameter: 1.5" (38 mm)
Groove width: 1.5" (38 mm)



Diameter: .38" (9.7 mm)
Groove width: .38" (9.7 mm)

30 mm V-groove included with testers. 50 mm and 6 mm grooves are also available.

Test Blocks

Test blocks are available for a wide range of hardness values and loads.



Digimatic Mini-Processor DP-1VR Printer 125-2645045A

Easily print measurement data from the digimatic gage or perform statistical analysis with this device.



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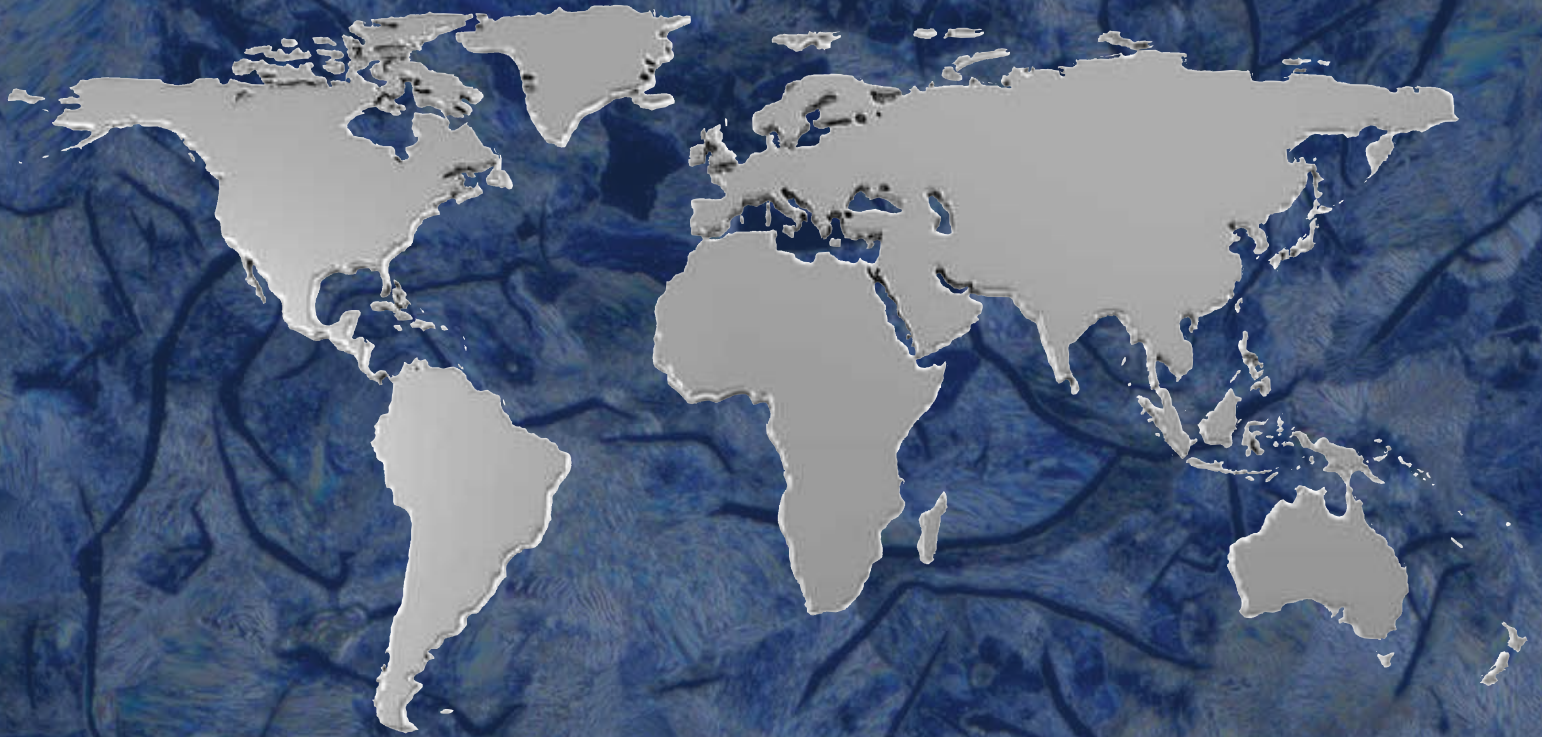
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Best By Date of Allied Consumables

'Best By Date' is the time period when Allied's products are at peak performance and strength. The products will continue to perform at full functionality beyond the BEST BY guidelines depending upon proper storage methods and temperatures. Until a product is immediately needed, it should be kept sealed and protected from light, oxygen and humidity. Products cannot be returned due to shelf life expiration and/or nonuse.

	<u>PRODUCT</u>	<u>BEST BY</u>
SECTIONING	CBN Blades	2 Years
	Cut-Off Wheels	2 Years
	Cutting Fluids	1 Year
	Diamond Blades	2 Years
MOUNTING	Acrylics	1.5 Years
	EpoxyBond 110	1 Year
	EpoxyMount	1 Year
	EpoxySet	1.5 Years
	Mold Releases	1 Year
	Mounting Powders	2 Years
	Phenolic Preforms	2 Years
GRINDING/POLISHING	Abrasive Belts	1 Year
	Abrasive Paper - Adhesive	1 Year
	Abrasive Paper - Plain	2 Years
	Alumina Powders	1 Year
	Alumina Suspensions	1 Year
	Colloidal Silica Suspensions	1 Year
	Dia-Grid Diamond Discs	2 Years
	Diamond Compounds	1 Year
	Diamond Sprays	1 Year
	Diamond Suspensions	1 Year
	FinalPrep Solution	1 Year
	Grinding Stones	2 Years
	Lapping Films	1 Year
	Polishing Cloths	1 Year
	Polishing Lubricants	1 Year
Zirconia Discs	1 Year	
CLEANING	GP Cleaning Solution	1 Year
	Micro Organic Soap	1 Year

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