microdiamant

Grinding

Resin- and metal-bond diamond grinding pads, abrasive paper

Grinding with diamond grinding pads

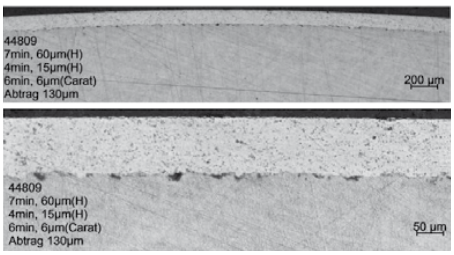
Diamond grinding pads

In addition to the already well-known PLATO, APOLLO and CARAT diamond grinding pads that have been used successfully for sample machining in metallography for many years, Microdiamant has now expanded the range of grinding pads with the SQUADRO fine grinding pad. Microdiamant is thus setting new standards in the trend to fine grinding that is increasingly replacing polishing.

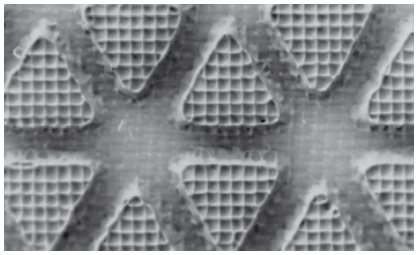
With the range of grinding pads from Microdiamant it is possible to machine up to 80% of all sample materials and coatings. Thanks to the wide range of diamond grain sizes from 3 µm to 251 µm, all process steps from rough grinding to fine grinding can be covered. Afterwards, it is only necessary to perform one or at the most two polishing steps using diamond slurries and polishing pads.

Advantages of diamond grinding pads

- The tool lifetimes of the APOLLO and SQUADRO diamond grinding pads are approx. 500 to 1,000 times longer than those of SiC grinding papers.
- APOLLO diamond grinding pads have a high removal rate and thus save a great amount of machining time.
- SQUADRO diamond grinding pads achieve a surface quality that allows polishing to be performed immediately afterwards. A lapping process is no longer necessary.
- Only water is needed for the cooling. For very demanding applications, SQUADRO can be used together with the lubricant LUB1 X20 to increase the material removal rate and surface quality.
- Microdiamant diamond grinding pads have a unique structure and can be used immediately without sharpening.
- The diamond grinding pads are self-sharpening thanks to the special resin bond.



HVOF coating



SQUADRO structure

PLATO

Metal-bond diamond grinding pad

For non-metallic samples such as ceramics, glass and rock samples we recommend the diamond grinding pad PLATO. The diamond particles on the surface are metal-bonded and ensure a high and steady removal, even in very hard materials. PLATO diamond grinding pads do not need to be pre-processed or dressed. Due to the high diamond concentration and quality the pad is self-sharpening. This grinding pad is suitable for almost all cooling lubricants because of its metal binding. In the field of stone processing even the dry usage is possible.

Properties	
Diameter	200/250/300 mm, larger diameters on request (up to 760 mm)
Diamond size	125/75/54/10 µm
Diamond type	RBM
Bond type	metal-bond
Mounting	stainless steel carrier / self-adhesive (PSA)

Application recommendations	
Max speed	15 m/s
Grinding pressure	13 N/cm^2 for ceramics
Coolant	water, alcohol, oil, emulsion
Typical applications	rough and fine grinding of non-metallic samples, embedded and non embedded samples

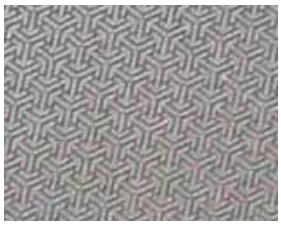
Self-sharpening The PLATO diamond grinding pads do not have to be dressed thanks to the self-sharpening effect. This prolongs the service life, minimizes costs and increases reproducibility.

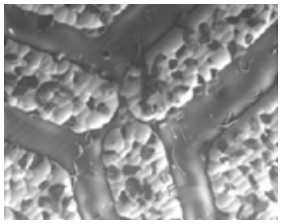
Precision size range Due to the narrow grain size spread, the number of particles with the same size is maximized, or fine and big grain fraction is reduced. This allows high material removal rates and excellent surface qualities.

Removal
9.0 0 10

Edge sharpness
7.0 0 10

Life
8.0 0 10





Flexible backing The flexible backing absorbs vibrations and reduces material fracturing, at the same time corrosion is prevented.

Consumption indicator The wear of the abrasive pad is indicated by the white coloration of the pellets.

Clean work For cooling only running water is required. The pellets can be cleaned with a brush (without the addition of acid) under running water.

Order information
Part number 30630
PLATO diamond grinding pad
250 mm – 75 µm
self-adhesive (PSA)

Packing unit
1 piece per box

PLATO

Diameter	Grit size	Part number self-adhesive (PSA)	Part number metal carrier
200 mm	125 µm	30420	304201
250 mm	125 µm	30620	306201
300 mm	125 µm	30720	307201
200 mm	75 µm	30430	304301
250 mm	75 µm	30630	306301
300 mm	75 µm	30730	307301
200 mm	54 µm	30471	304711
250 mm	54 µm	30673	306731
300 mm	54 µm	30773	307731
200 mm	10 µm	30472	304721
250 mm	10 µm	30672	306721
300 mm	10 µm	30772	307721

Larger diameters on request

APOLLO-S

Resin-bond diamond grinding pad

APOLLO-S is a self-sharpening, flexible diamond grinding pad for flat- and fine grinding applications, replacing traditional SiC paper pad in grinding of various materials. Precision graded diamond and optimized grit concentration lead to short process times, flat surfaces and superior edge sharpness.

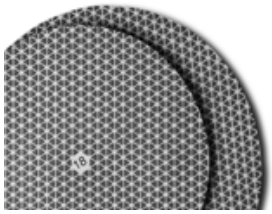
Removal
8.0 0 10

Edge sharpness
7.0 0 10

Life
8.0 0 10

Pad diameter	Bond	Diamond size	Diamond type
200mm	resin	125 µm	FRD
250mm	resin	75 µm	FRD
300mm	resin	54 µm	FRD
350mm	resin	18 µm	RBM

larger diameters on request



Max speed	15m/s
Grinding pressure	5-7 N/cm^2 for steel and comparable materials 13 N/cm^2 for ceramics
Typical application	Rough and fine grinding of metallic and non-metallic materials Embedded and unembedded samples
Mounting	Stainless steel plate with special grip surface / flexible adhesive backing
Coolant	Water

Self-sharpening Dressing is not necessary due to the self-sharpening characteristics, leading to prolonged life time, reduced costs and high repeatability.

Precision graded micron diamond sizes Narrow particle size distribution maximizes the amount of particles of the same size while fine and coarse particles are minimized. This feature allows for both high process reproducibility and superior results in surface quality.

Flexible base The flexible base absorbs vibrations and thus reduces material fractures and prevents corrosion.

Usage indicator The surface of the diamond grinding pad turns white to indicate end of life.

Clean workspace Only water needed as coolant, resulting in clean workspace and easy cleaning of workpiece.

Order information
Part number 32200
APOLLO-S diamond grinding pad
200mm – 125 µm
with adhesive backing

Packing unit
1 piece per box

Pad diameter	Diamond size	Part number Adhesive backing	Part number Stainless steel backing
200mm	125 µm	32200	322001
250mm	125 µm	32210	322101
300mm	125 µm	32220	322201
350mm	125 µm	32230	322301
200mm	75 µm	32250	322501
250mm	75 µm	32260	322601
300mm	75 µm	32270	322701
350mm	75 µm	32280	322801
200mm	54 µm	32010	320101
250mm	54 µm	32110	321101
300mm	54 µm	32170	321701
350mm	54 µm	32190	321901
200mm	18 µm	32011	320111
250mm	18 µm	32111	321111
300mm	18 µm	32171	321711
350mm	18 µm	32191	321911

SQUADRO-M / SQUADRO-H

Resin-bond diamond grinding pad

SQUADRO-M and SQUADRO-H are innovative diamond grinding pads that extends fine grinding to single-micron grit sizes. They replace conventional lapping processes, achieving superior results in terms of material removal rate, surface quality, work piece geometry and tool life. SQUADRO diamond grinding pads provide for an easy, clean and efficient fine grinding process.

Properties	
Diameter	200/ 250/ 300/ 350 mm, larger diameters (up to 760 mm) on request
Diamond size	60 µm/ 30 µm/ 15 µm/ 6 µm/ 3 µm
Diamond type	RBM
Bond type	SQUADRO-M: resin, medium hard; SQUADRO-H: resin, hard
Base	textile base
Mounting	stainless steel carrier/ self-adhesive (PSA)
Abrasive layer thickness	0,4 mm

Application recommendations	
Max speed	15 m/s
Grinding pressure	5-7 N/cm^2 for steel and comparable materials 13 N/cm^2 for ceramics
Coolant	Water
Typical applications	SQUADRO-M: Fine grinding of metals, ceramics and glasses SQUADRO-H: Fine grinding of hard materials, ceramics and sharp-edged workpieces

Fine grinding with unmatched precision SQUADRO-M and SQUADRO-H enable fine grinding of various materials with diamond micron sizes down to 3 µm and matches surface qualities previously only achieved with lapping processes – easy, clean, efficient.

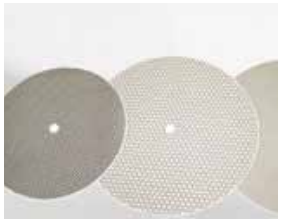
Innovative design SQUADRO diamond grinding pads consist of micron diamond abrasives embedded in a structured matrix of high-performance polymers. The resin structures are mounted on a textile base, which absorbs vibrations and thus improves surface quality.

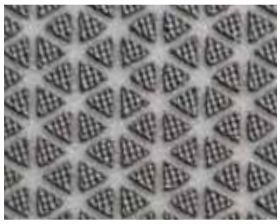
Removal
8.0 0 10

Edge sharpness
7.0 0 10

Surface quality
8.0 0 10

Life
9.0 0 10





Precision graded micron diamond sizes A narrow particle size distribution allows for both superior surface quality and highest material removal rate.

Easy handling SQUADRO can be used on any standard lapping or polishing machine. The mounting options (stainless steel carrier or self-adhesive backing) are designed for quick and easy changes of grit size.

Long tool life The massive abrasive layer allows for long tool life, minimal set-up time and low process cost.

Self-sharpening SQUADRO diamond grinding pads can be used out of the box without dressing. Thanks to the self-sharpening bond system, the diamond grinding pads do not require conditioning during the process to continuously achieve excellent grinding results.

Clean process Working with SQUADRO is environmentally friendly and clean. Cooling is done by water or our lubricant LUBX20, no diamond slurries or lubricants are needed.

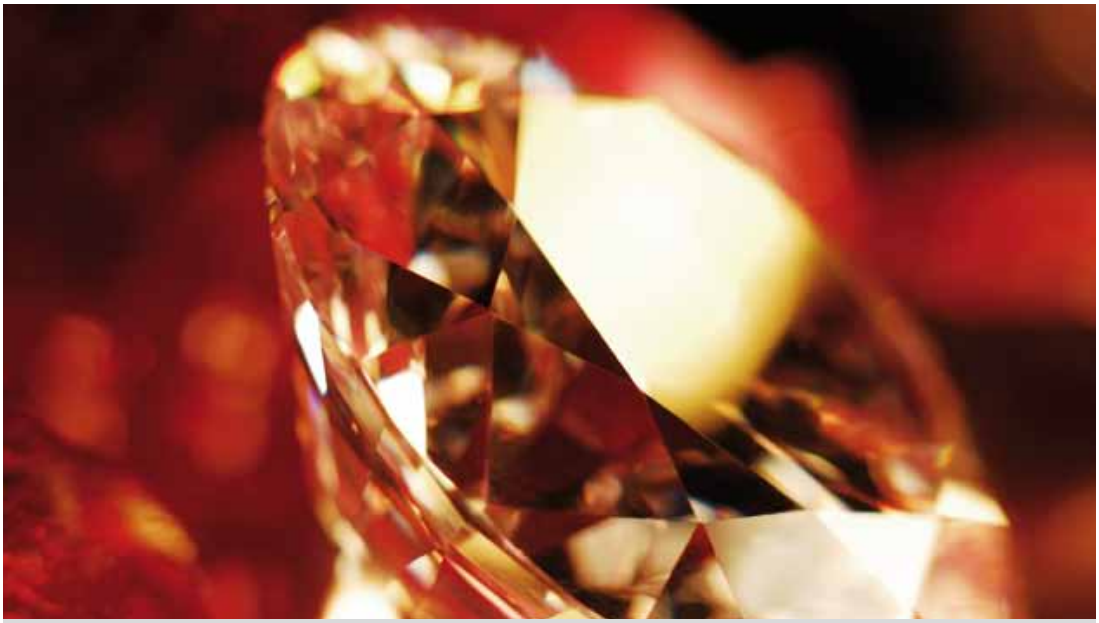
Versatile SQUADRO can be used to grind a wide range of materials such as steel, stainless steel, steel alloys, optical glasses, various crystals, industrial ceramics, ceramic seals and other materials.

Order information
Part number 3344152
SQUADRO-H diamond grinding pad
250 mm – 15 µm
self-adhesive (PSA)

Packing unit
1 piece per box

		SQUADRO-M		SQUADRO-H	
Diamond size	Diameter	Part number self-adhesive	Part number Metal carrier	Part number self-adhesive	Part number Metal carrier
60 µm	200 mm	334601	335601	3344601	3354601
	250 mm	334602	335602	3344602	3354602
	300 mm	334603	335603	3344603	3354603
	350 mm	334604	335604	3344604	3354604
30 µm	200 mm	334301	335301	3344301	3354301
	250 mm	334302	335302	3344302	3354302
	300 mm	334303	335303	3344303	3354303
	350 mm	334304	335304	3344304	3354304
15 µm	200 mm	334151	335151	3344151	3354151
	250 mm	334152	335152	3344152	3354152
	300 mm	334153	335153	3344153	3354153
	350 mm	334154	335154	3344154	3354154
6 µm	200 mm	334061	335061	3344061	3354061
	250 mm	334062	335062	3344062	3354062
	300 mm	334063	335063	3344063	3354063
	350 mm	334064	335064	3344064	3354064
3 µm	200 mm	334031	335031	3344031	3354031
	250 mm	334032	335032	3344032	3354032
	300 mm	334033	335033	3344033	3354033
	350 mm	334034	335034	3344034	3354034

Larger diameters on request (max. 760 mm)



CARAT

Resin-bond diamond grinding pad

CARAT is a self-sharpening diamond grinding pad for fine-grinding applications, replacing traditional SiC paper. Brittle materials such as nitride and oxide layers on steel can be ground without chipping, materials with low dimensional stability can be processed without deformation. Short process times, flat surfaces and superior edge sharpness are achieved due to precision graded diamond and optimized grit concentration.

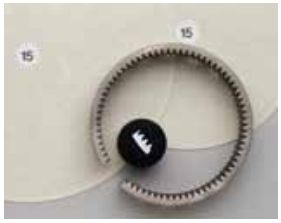
Removal
7.0 0 — 10

Edge sharpness
7.0 0 — 10

Life
8.0 0 — 10

Pad diameter	Bond	Diamond size	Diamond type
200mm	resin	15 µm	MSY
250mm	resin	6 µm	MSY
300mm	resin	3 µm	MSY

larger diameters on request



Max speed	15m/s
Grinding pressure	5 – 7 N/cm^2 for steel and comparable materials 13 N/cm^2 for ceramics
Typical application	Fine grinding of metallographic samples and brittle materials
Mounting	Stainless steel plate with special grip surface / flexible adhesive backing
Coolant	Water

Self-sharpening Dressing is not necessary due to the self-sharpening characteristics, leading to prolonged life time, reduced costs and high repeatability.

Precision graded micron diamond sizes Narrow particle size distribution maximizes the amount of particles of the same size while fine and coarse particles are minimized. This feature allows for both high process reproducibility and superior results in surface quality.

Flexible base The flexible base absorbs vibrations and thus reduces material fractures and prevents corrosion.

Clean workspace Only water needed as coolant, resulting in clean workspace and easy cleaning of workpiece. Important, do not use alcohol as coolant of for cleaning!

Order information
Part number 33001
CARAT diamond grinding pad
200 mm – 15 µm
with adhesive backing

Packing unit
1 piece per box

Pad diameter	Diamond size	Part number Adhesive backing	Part number Stainless steel backing
200mm	15 µm	33001	330011
250mm	15 µm	33002	330021
300mm	15 µm	33003	330031
200mm	6 µm	33011	330111
250mm	6 µm	33012	330121
300mm	6 µm	33013	330131
200mm	3 µm	33021	330211
250mm	3 µm	33022	330221
300mm	3 µm	33023	330231

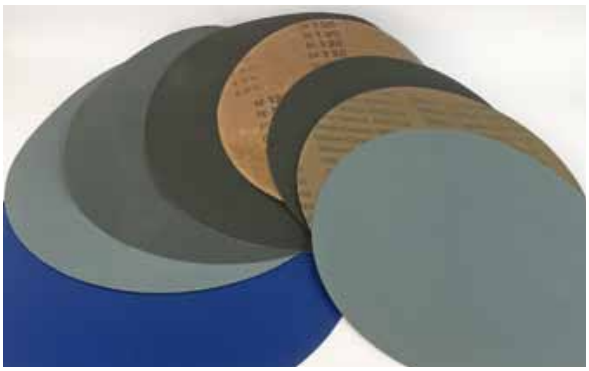
larger diameters on request

Grinding with grinding paper and foil

Grinding paper

In addition to the diamond grinding pads, Microdiamant also provides the complete range of conventional, high-quality wet grinding papers. These are available with various backings: standard for clamping ring systems, self-adhesive and with PET backing for silicone mounting discs such as our Fast Fix.

The diameters 200, 230, 250, 300 and 350 mm, in the grain size range from P80 to P4000, are available from stock.



Wet grinding paper

Grinding foils

Grinding foils are better if long tool life and high quality are required. These are available with two different backings: self-adhesive, and with PET backing for silicone mounting discs. The grinding foils are available from stock in the diameters 200, 250, 300 and 350 mm.

Microdiamant provides grinding foils in 3 grain types:

- Ceramic bonding with zirconium for the pre-grinding with a high material removal rate from P100 to P800
- Silicon for fine grinding from 3 to 40 µm
- Diamond for fine grinding of minerals and rock samples from 0.5 to 40 µm

Grinding foils