

Grinding and Polishing Systems For Materialography



KULZER
MITSUI CHEMICALS GROUP

Kulzer Materialography

Making the invisible visible

Making reliable judgements about the nature of specimens is one of the main aspects of materialographic examinations. Perfectly prepared specimens support cause and effect analysis considerably.



Kulzer: mature product range for all specimen preparation at high quality.

Developing new horizons together: we are ready and available for you.

Over recent years, the use of new materials has seen a rapid development. Ever thinner coatings and extreme variations in hardness in one single specimen demand special methods of specimen preparation.

Precise surface preparation is a relevant factor for making statements in the field of materials testing. Only optimal specimen preparation can reveal the actual microstructures of any given material reliably.

Kulzer offers you a mature, clearly structured product range for materials research with solutions for all specimen preparations in high quality.

The result: minimisation of the preparation steps and low material consumption – a cost-efficient system for first class grinding results.

Kulzer is your reliable partner for all of your materialography requirements. We offer you individual advice on site, free of charge, and work out preparation methods for new tasks together with you – convince yourself of the quality of our products in your own laboratory!

THE KULZER PRODUCT RANGE

- broad spectrum of applications
- high application safety of the products
- high service life and therefore optimum cost-benefit ratio
- high quality of grinding and polishing agents enables fewer work-stages, dramatically reducing both material and time expenditure
- optimum grinding quality delivers ideal removal rates and short preparation times (*edge sharpness*)



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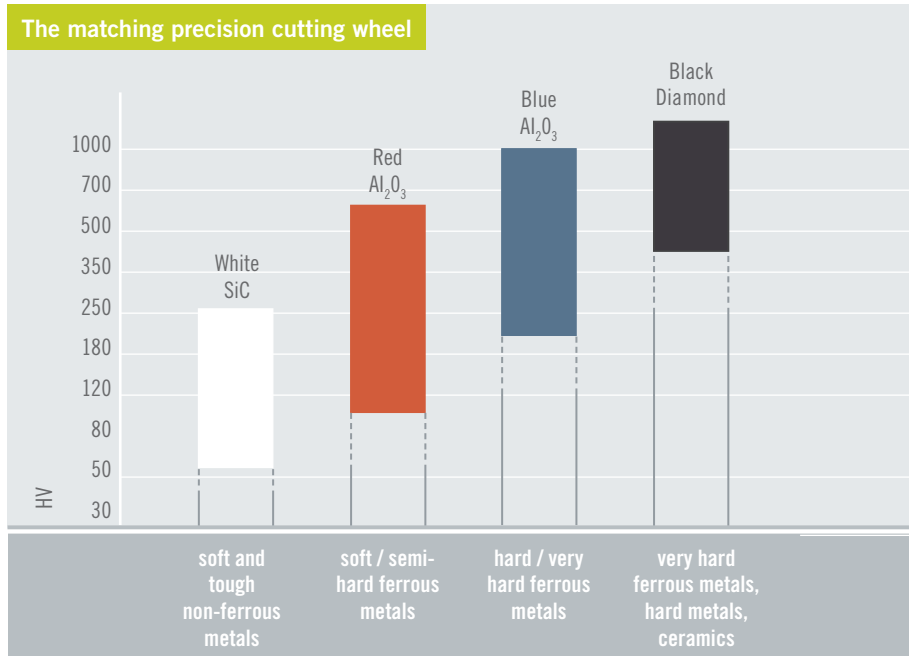
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Benefit from the rational work techniques through perfectly coordinated products.

Precision cut-off wheels

Extraordinary, constant cutting quality



Developed for very high requirements, these cut-off wheels offer the user precise cutting, also thanks to the binding agent and the quality of the grinding agent. The cut-off wheels can be used on all customary cutting machines from all manufacturers and create very fine, precise cuts which reduce all subsequent processing steps to a minimum.



Diamond cut-off wheels

Precision cut-off wheels

Available in 4 version depending on hardness and abrasive used.

White (SiC)

66064594 125 x 12.7 x 0.45 mm
 66064595 150 x 12.7 x 0.45 mm
 Quantity per delivery unit: 5 pcs.

66058082 203 x 25.4 x 1 mm
 66058083 230 x 22 x 1.2 mm
 66058084 250 x 32 x 1.5 mm
 66058085 305 x 32 x 1.5 mm
 Quantity per delivery unit: 10 pcs.

Red (Al_2O_3)

66058070 125 x 12.7 x 0.45 mm
 66058071 150 x 12.7 x 0.45 mm
 Quantity per delivery unit: 5 pcs.

66058072 203 x 25.4 x 1 mm
 66058073 230 x 22 x 1.2 mm
 66058074 250 x 32 x 1.5 mm
 66058075 305 x 32 x 1.5 mm
 Quantity per delivery unit: 10 pcs.

Blue (Al_2O_3)

66058076 125 x 12.7 x 0.45 mm
 66058077 150 x 12.7 x 0.45 mm
 Quantity per delivery unit: 5 pcs.

66058078 203 x 25.4 x 1 mm
 66058079 230 x 22 x 1.2 mm
 66058080 250 x 32 x 1.5 mm
 66058081 305 x 32 x 1.5 mm
 Quantity per delivery unit: 10 pcs.

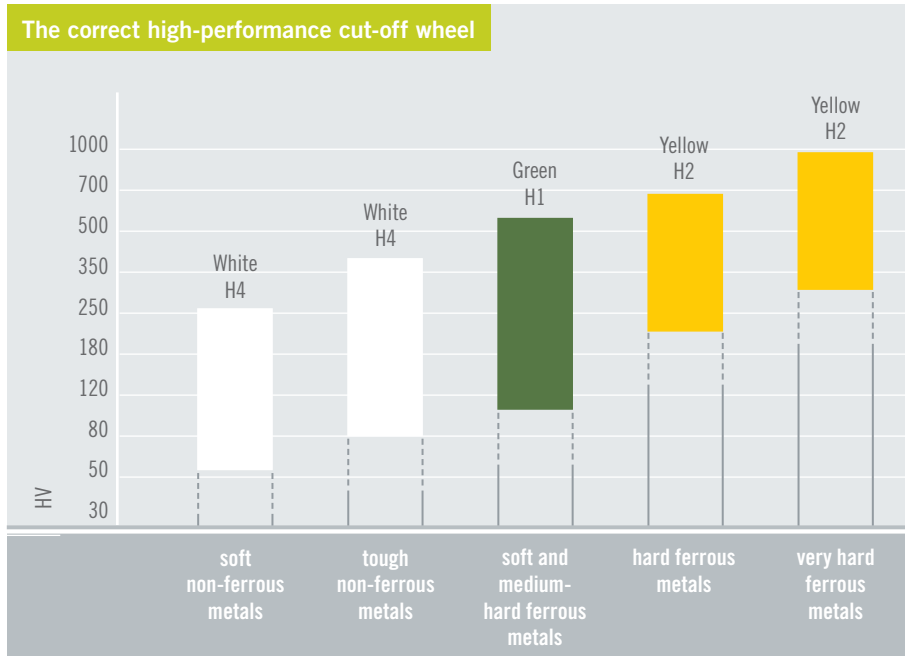
Black (Diamond)

66050376 102 x 12.7 x 0.3 mm
 66050377 127 x 12.5 x 0.4 mm
 66050378 152 x 12.7 x 0.5 mm
 66058067 203 x 12.7 x 0.8 mm
 66058068 254 x 32 x 1 mm
 66058069 305 x 32 x 1.3 mm
 Quantity per delivery unit: 1 pcs.



Precision cut-off wheels

High-performance cut-off wheels



Adapter Rings

For cut-off wheel to adjust the internal diameter to different drive shafts.

Adapter Ring PVC*

66070154	22.1–12.7 mm
66064596	25.4–12.7 mm
66064597	25.4–22.1 mm
66064598	32–25.4 mm

Quantity per delivery unit: 5 pcs.

Adapter Ring Metal**

66070155	22.1–12.7 mm
66064599	25.4–12.7 mm
66064600	25.4–22.1 mm
66064601	32–25.4 mm

Quantity per delivery unit: 5 pcs.

* For all disks with metal reinforced inner holes

** For all disks without metal reinforcement in the inner hole

Due to their structure, binder and abrasive grit the high-performance cut-off wheels enable high cutting speeds. The strictly controlled manufacturing process guarantees the consistently high cutting quality with low wear – the optimum cut-off wheel for process-accompanying quality control.

The cut-off wheels, which can be used universally on all customary cutting machines, reduce the time required for the subsequent preparation steps due to their very good cutting properties. As a result of the efficient cutting and low wear, these cut-off wheels offer a very good cost-benefit ratio.



Cutting Fluid 721

Coolant for closed circuit cooling.

Cutting Fluid 721

66054648	1 canister, 5 litres
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Concentrated liquid to cool cut-off wheel and work piece during the cutting procedure, including corrosion protection for cutting machine and work piece. Dilute in water between 5 and 15%.



High-performance cut-off wheels

Available in 3 versions

White H4

66050374	250 x 32 x 1.5 mm
66050375	305 x 32 x 2 mm
66064593	350 x 32 x 2.5 mm
66066259	400 x 32 x 3 mm

Quantity per delivery unit: 10 pcs.

Green H1

66018285	250 x 32 x 1.5 mm
66018287	305 x 32 x 2 mm
66064591	350 x 32 x 2.5 mm
66066273	400 x 32 x 3 mm

Quantity per delivery unit: 10 pcs.

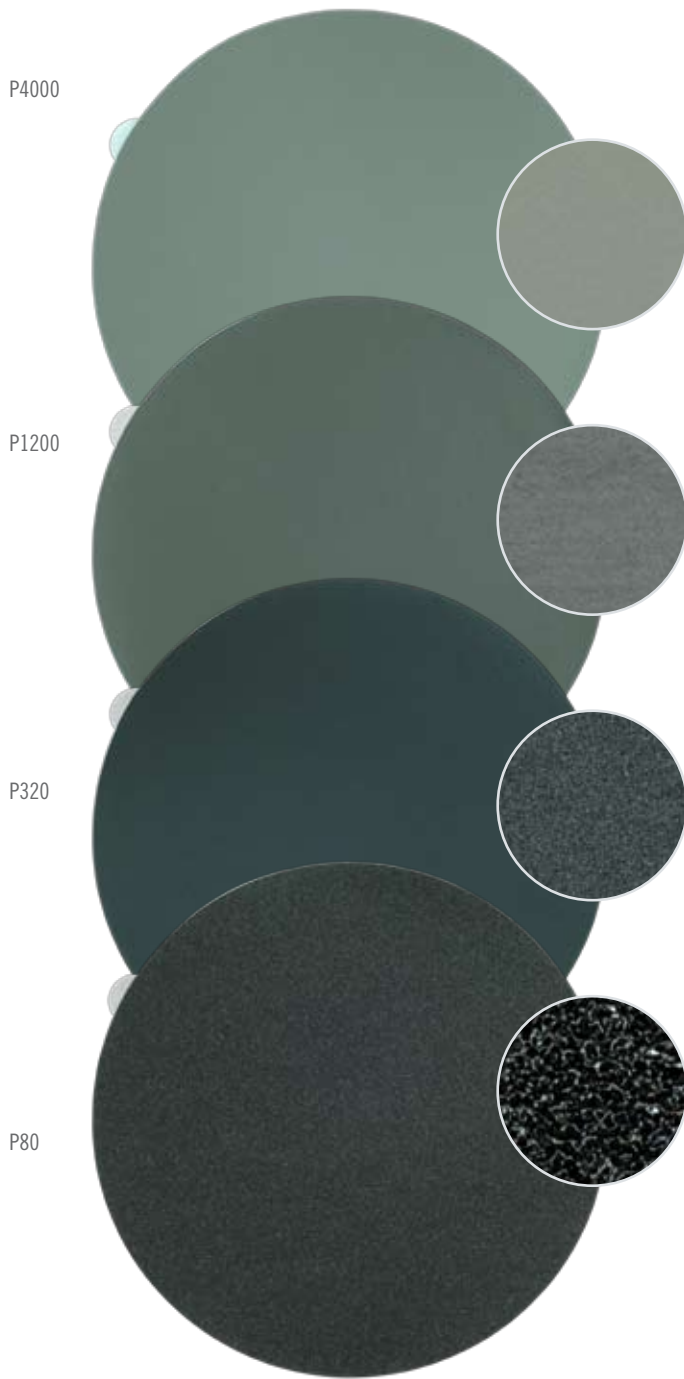
Yellow H2

66018288	250 x 32 x 1.5 mm
66018289	305 x 32 x 2 mm
66064592	350 x 32 x 2.5 mm
66066257	400 x 32 x 3 mm

Quantity per delivery unit: 10 pcs.

Technodisc® SiC-Paper

Solid silicon carbide abrasive paper



The decidedly stable SiC-Paper guarantees a very good, even removal – the reliable classic in materialography, in particular for softer materials.

Specifications

Carrier	latex/paper, tear-proof, waterproof, flexible
Grinding agent	silicon carbide
Binder	synthetic resin
Scatter	closed
Version	self-adhesive or non-self-adhesive

SiC-Paper non-self-adhesive

Quantity per delivery unit: 100 pcs.

Technodisc SiC-Paper P80

66061031	Ø 200 mm
66061032	Ø 230 mm
66061033	Ø 250 mm
66061034	Ø 300 mm

Technodisc SiC-Paper P120

66058025	Ø 200 mm
66061038	Ø 230 mm
66058032	Ø 250 mm
66058039	Ø 300 mm

Technodisc SiC-Paper P240

66058026	Ø 200 mm
66061040	Ø 230 mm
66058033	Ø 250 mm
66058040	Ø 300 mm

Technodisc SiC-Paper P320

66058027	Ø 200 mm
66061042	Ø 230 mm
66058034	Ø 250 mm
66058041	Ø 300 mm

Technodisc SiC-Paper P400

66058028	Ø 200 mm
66061044	Ø 230 mm
66058035	Ø 250 mm
66058042	Ø 300 mm

Technodisc SiC-Paper P600

66058029	Ø 200 mm
66061046	Ø 230 mm
66058036	Ø 250 mm
66058043	Ø 300 mm

Technodisc SiC-Paper P1200

66058030	Ø 200 mm
66061048	Ø 230 mm
66058037	Ø 250 mm
66058044	Ø 300 mm

Technodisc SiC-Paper P2500

66058031	Ø 200 mm
66061050	Ø 230 mm
66058038	Ø 250 mm
66058045	Ø 300 mm

Technodisc SiC-Paper P4000

66067822	Ø 200 mm
66067823	Ø 230 mm
66067824	Ø 250 mm
66067825	Ø 300 mm

SiC-Paper self-adhesive

Quantity per delivery unit: 100 pcs.

Technodisc SiC-Paper P80

66061021	Ø 200 mm
66061022	Ø 230 mm
66061023	Ø 250 mm
66061024	Ø 300 mm

Technodisc SiC-Paper P120

66058046	Ø 200 mm
66061035	Ø 230 mm
66058053	Ø 250 mm
66058060	Ø 300 mm

Technodisc SiC-Paper P240

66058047	Ø 200 mm
66061039	Ø 230 mm
66058054	Ø 250 mm
66058061	Ø 300 mm

Technodisc SiC-Paper P320

66058048	Ø 200 mm
66061041	Ø 230 mm
66058055	Ø 250 mm
66058062	Ø 300 mm

Technodisc SiC-Paper P400

66058049	Ø 200 mm
66061043	Ø 230 mm
66058056	Ø 250 mm
66058063	Ø 300 mm

Technodisc SiC-Paper P600

66058050	Ø 200 mm
66061045	Ø 230 mm
66058057	Ø 250 mm
66058064	Ø 300 mm

Technodisc SiC-Paper P1200

66058051	Ø 200 mm
66061047	Ø 230 mm
66058058	Ø 250 mm
66058065	Ø 300 mm

Technodisc SiC-Paper P2500

66058052	Ø 200 mm
66061049	Ø 230 mm
66058059	Ø 250 mm
66058066	Ø 300 mm

Technodisc SiC-Paper P4000

66069201	Ø 200 mm
66070156	Ø 230 mm
66069202	Ø 250 mm
66069203	Ø 300 mm

Technodisc® Diamond grinding disks

Self-adhesive Diamond grinding disks

The nickel-bound Technodisc diamond grinding disks are very sure-grip and distinguish themselves through high removal rate. They are available in grain sizes of 250 µm, 125 µm, 75 µm, 40 µm and 20 µm.

The Technodisc system is rounded off by the two, very fine Technodisc 30 and 10 µm with synthetic resin binder. The excellent efficiency is due to high service life and the good and fast removal rate of Technodisc.

Technodisc disks can also be combined easily with other grinding systems.

The Technodisc 125 µm is, e.g. as pre-grinding process for hard metal, a good preparer for the subsequent CAMEO DISK SILVER with BioDiamant Liquid green. However, it can be used just as well for cold mounted, semi-hard steels with poor separating cut as preparation for the subsequent CAMEO DISK PLATINIUM. The nickel bond allows good pre-grinding – both with the embedding resin and steel. Water or the “Booster Liquid” is used as lubricant (see page 20).

Alternative lubricants can also be used for water-sensitive specimens.

Technodisc Diamond grinding disks

Quantity per delivery unit: 1 pcs.

Technodisc

Diamond grinding disk 10 µm

64708640	Ø 200 mm
64708660	Ø 250 mm
64708670	Ø 300 mm

Technodisc

Diamond grinding disk N 20 µm

64708639	Ø 200 mm
64708659	Ø 250 mm
64708669	Ø 300 mm

Technodisc

Diamond grinding disk 30 µm

64708638	Ø 200 mm
64708658	Ø 250 mm
64708668	Ø 300 mm

Technodisc

Diamond grinding disk N 40 µm

64708637	Ø 200 mm
64708657	Ø 250 mm
64708667	Ø 300 mm

Technodisc

Diamond grinding disk N 75 µm

64708635	Ø 200 mm
64708655	Ø 250 mm
64708665	Ø 300 mm

Technodisc

Diamond grinding disk N 125 µm

64708633	Ø 200 mm
64708653	Ø 250 mm
64708663	Ø 300 mm

Technodisc

Diamond grinding disk N 250 µm

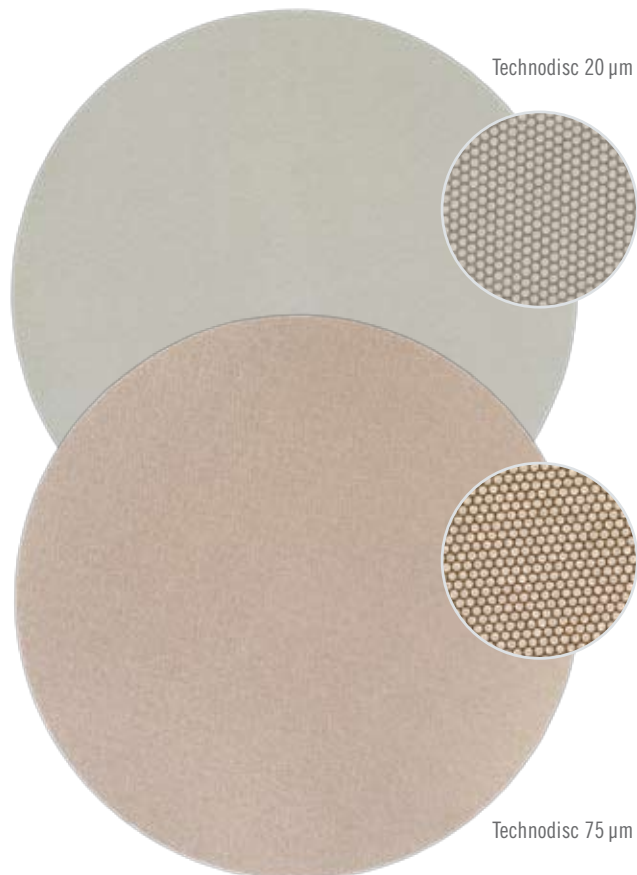
64708632	Ø 200 mm
64708652	Ø 250 mm
64708662	Ø 300 mm

Matching metal disks to stick on the disk

Quantity per delivery unit: 1 pcs.

Metall disk

66064626	Ø 200 mm
66064628	Ø 250 mm
66064629	Ø 300 mm



Comparison grain size SiC-Papers/Diamond grinding disks

Designation	Grain size
P80	269 µm
P120	125 µm
P240	58.5 µm (± 2.0)
P320	46.2 µm (± 1.5)
P400	35.0 µm (± 1.5)
P600	25.8 µm (± 1.0)
P1200	15.3 µm (± 1.0)
P4000	2.5 µm (± 1.0)

Picture below:
Macro photograph P4000



Technodisc 250 µm

CAMEO® DISK PLATINIUM

High service life, gentle and even material removal

The PLATINIUM diamond grinding disks are an alternative to SiC-Paper for grinding medium-hard to hard materials such as steel, hard metal, ceramics and various composites.

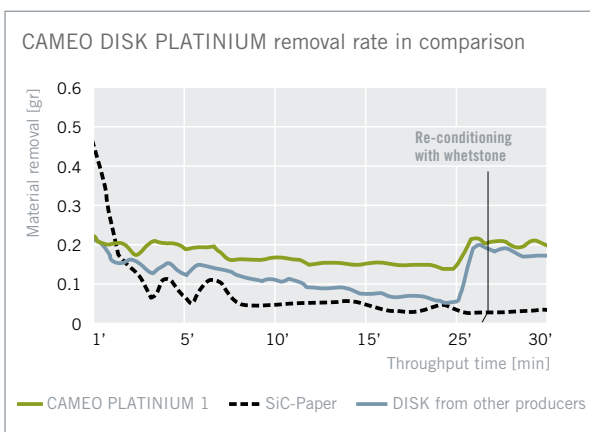
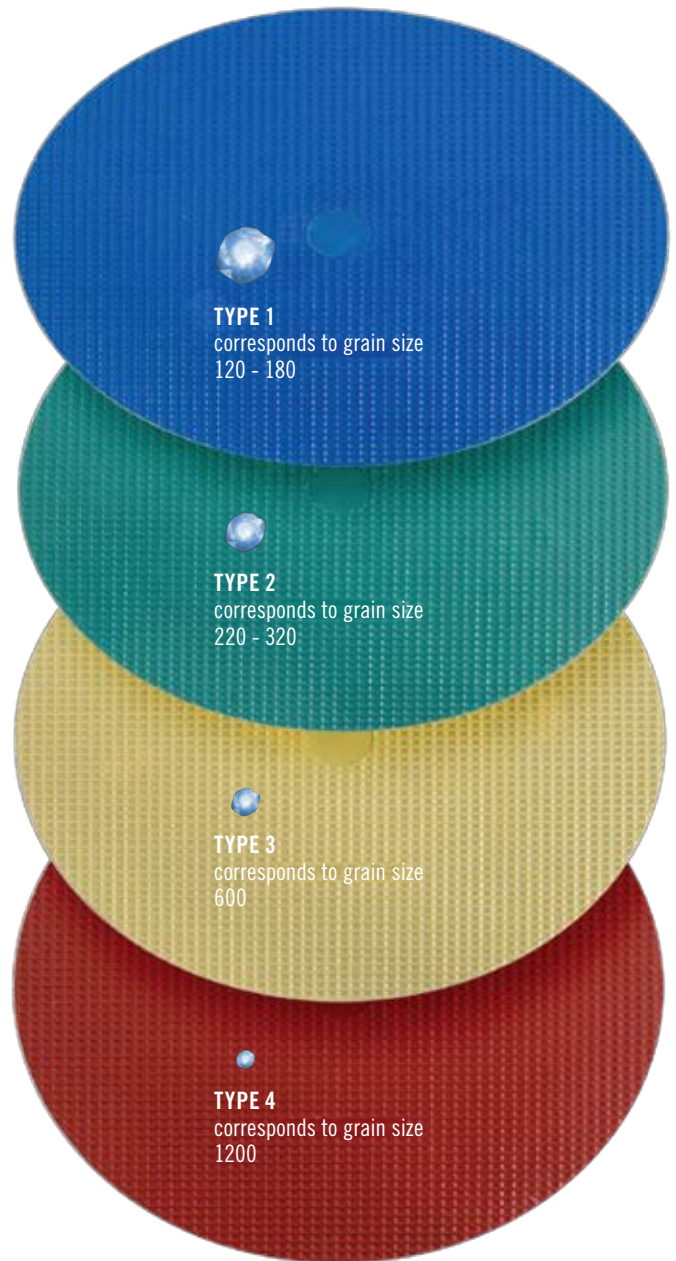
The CAMEO DISK Platinum diamond grinding disks can be used in all common automatic and semi-automatic grinding and polishing machines. Due to the narrow lattice of the diamond studded ridges CAMEO DISK PLATINIUM is well suited for manual preparation.

The CAMEO DISK PLATINIUM are very easy to use. Water or the “Booster Liquid” is used as lubricant (see page 20). Alternative lubricants can also be used for water-sensitive specimens.

The edge sharpness is considerably improved in comparison to preparation with SiC-Paper, which is due both to the abrasive material, (Diamond) and also the even, stable carrier material.

Even non-mounted specimens and large welding joints can be processed without any problems after a clean separation cut. After 2 or a maximum of 3 grinding stages all specimens are prepared perfectly for the subsequent polishing process!

Apart from the extremely long service life, in particular excellent grinding quality is the main bonus! **Thereby, the preparation with CAMEO DISK PLATINIUM offers an excellent cost-benefit ratio!**



CAMEO DISK PLATINIUM

Quantity per delivery unit: 1 pcs.

PLATINIUM TYPE 1

66012983	Ø 200 mm
66013791	Ø 230 mm
66012986	Ø 250 mm
66012989	Ø 300 mm

PLATINIUM TYPE 2

66012984	Ø 200 mm
66013792	Ø 230 mm
66012987	Ø 250 mm
66012990	Ø 300 mm

PLATINIUM TYPE 3

66012985	Ø 200 mm
66013793	Ø 230 mm
66012988	Ø 250 mm
66012991	Ø 300 mm

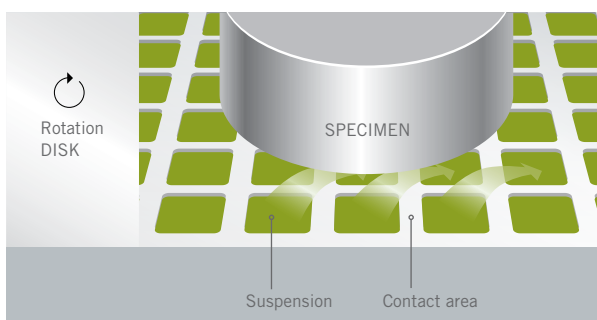
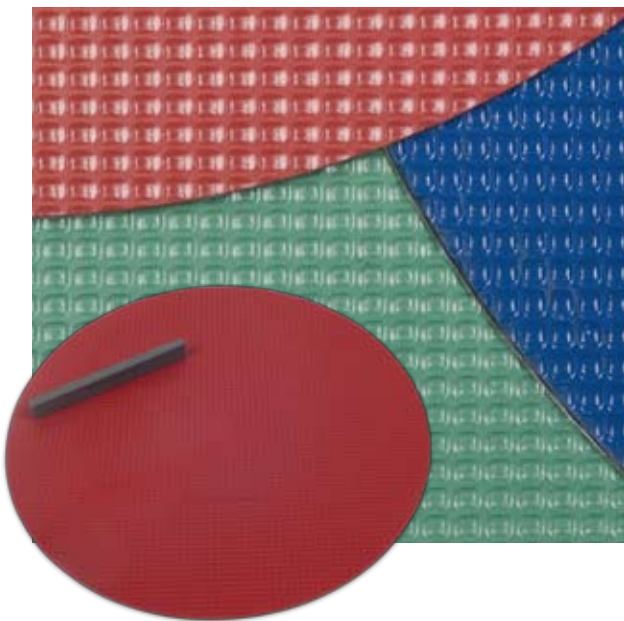
PLATINIUM TYPE 4

66018162	Ø 200 mm
66018163	Ø 230 mm
66018164	Ø 250 mm
66018165	Ø 300 mm

CAMEO DISK PLATINIUM AT A GLANCE

- excellent edge sharpness – even for non-embedded specimens
- simple handling, easy to clean
- reproducible results
- for manual and automatic grinding
- high service life; gentle, even material removal
- outstanding cost-benefit ratio
- suitable for most materials
- replaces a large number of SiC-Papers
- fewer and faster changeover times
- low storage requirements

The secret of the removal rate – the patented Cameo Disk cell structure.



TIPS FOR APPLICATION

Automatic preparation

To achieve precise flatness of the specimens and uniform wear of the disk, the specimen holder is placed so that the specimens reach all the way to the centre and protrude by a few millimeter beyond the working disk on the outer diameter. When using coarser working disks, it is favourable to change the specimen holder position occasionally to retain flatness of the disk and make optimum use of the abrasive agent.

Manual preparation

The CAMEO DISK PLATINIUM are superbly suited for manual preparation of specimens. During this preparation process, the specimens are guided by hand from the edge to the centre and back to achieve even wear of the disk.

Contact surface

The homogenous distribution of the diamonds on the CAMEO DISK PLATINIUM ensures a constant removal rate over the entire life span of the disk. The special comb structure guarantees optimum lubrication of the specimen throughout the grinding process. The individual cells help to keep the lubricant, resp. water on the surface thus counteracting the centrifugal force of the grinding disk. The excellent cutting performance of the CAMEO comb structure ensures a high removal rate whilst applying low pressure. This preserves the specimen, disk and machine.

Lubrication, micro-tanks

Through the permanent circulation of the lubricant between the individual combs it is utilized optimally and the dust generated by abrasion is continuously transported off.

Cleaning

Regular honing of the CAMEO DISK PLATINIUM with the enclosed rubbing brick under running water at 150 rpm directly in the machine reconditions the disk.

The specially designed surface of these resin-bonded diamond grinding disks guarantees an even and careful material removal.

CAMEO® DISK SILVER & GOLD

High continuous removal rate

CAMEO® DISK SILVER and CAMEO® DISK GOLD are lapping disks with a careful, continuous removal rate. BioDiamant Liquids serve as grinding agents. The CAMEO® Disk replaces work stages, where grinding papers with a grain size of 240 – 4000 are used as alternative for medium-hard to hard materials.

The patented, close meshed comb design of the CAMEO DISK optimises performance of the sprayed-on BioDiamant Liquid. The diamond suspension remains on the disk and is thus utilized with optimum efficiency. The CAMEO principle guarantees optimum flatness and careful material removal for all types of specimens with lowest material consumption.

Range of applications

Whether CAMEO DISK SILVER or GOLD need to be selected mainly depends on the material.

CAMEO DISK SILVER

Fine grinding of semi-hard to very hard materials (> 200 HV), to be used in combination with diamond liquids of 12–6 µm.

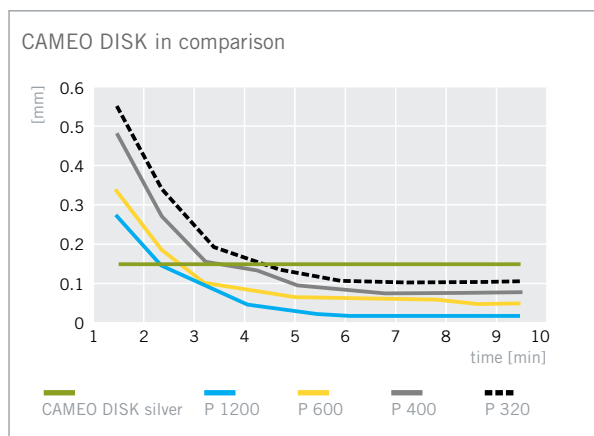
CAMEO DISK GOLD

Fine grinding of hard and brittle materials, e.g. ceramics, composite materials, soft materials and non-ferrous materials, to be used in combination with diamond liquids of 12–3 µm.

CAMEO DISK ADVANTAGES

- Simple handling.
- Very good removal rate.
- Grinding stages can be skipped, e.g. from a 120-grinding stone to CAMEO DISK SILVER with the green suspension!
- Economical – CAMEO replaces the whole range of SiC-Papers of grain sizes from 240 – 4000 with one single disk with ideal edge sharpness!
- The patented surface profile generates a high, continuous removal rate.
- The micro-tanks of the CAMEO surface keep the diamond suspension on the disk, the CAMEO DISK is optimally lubricated and the cutting edges of the diamond grains are utilized as best as possible. They distinctly reduce the need for diamond suspension in comparison to lapping systems from other providers.
- Compatible with all grinding and polishing systems!
- Time-saving preparation with optimum surface flatness of all specimens.
- Efficient: various diamond suspensions with different grain sizes may be used with one single CAMEO lapping disk. The disk adapts to the requirements.

Generally, lapping is considerably gentler than grinding and is therefore better suited for delicate, brittle specimens.



Removal rate of the CAMEO DISK SILVER in comparison to SiC-Papers of different grain sizes.

For most materials, BioDiamant Liquid green (9 µm) will be the correct choice. For materials which are particularly difficult to prepare or for composite materials, an optimum polishing result may be achieved with a coarser (blue, 12 µm) and/or a finer (yellow, 6 µm) BioDiamant Liquid.

To ensure optimum removal and ideal lubrication, the diamond suspension needs to be re-dosed sparingly at regular intervals.

CAMEO DISK SILVER & GOLD are lapping disks with a high, constant, removal rate – they create an excellent edge sharpness.

TIPS FOR APPLICATION

Automatic preparation

To achieve precise flatness of the specimens and uniform wear of the CAMEO DISK, the specimen holder is placed so that the specimens reach all the way to the centre and protrude by a few millimeters beyond the working disk on the outer diameter. When using larger working disks, it is favourable to change the specimen holder position occasionally to retain flatness of the disk and make optimum use of the abrasive agent.

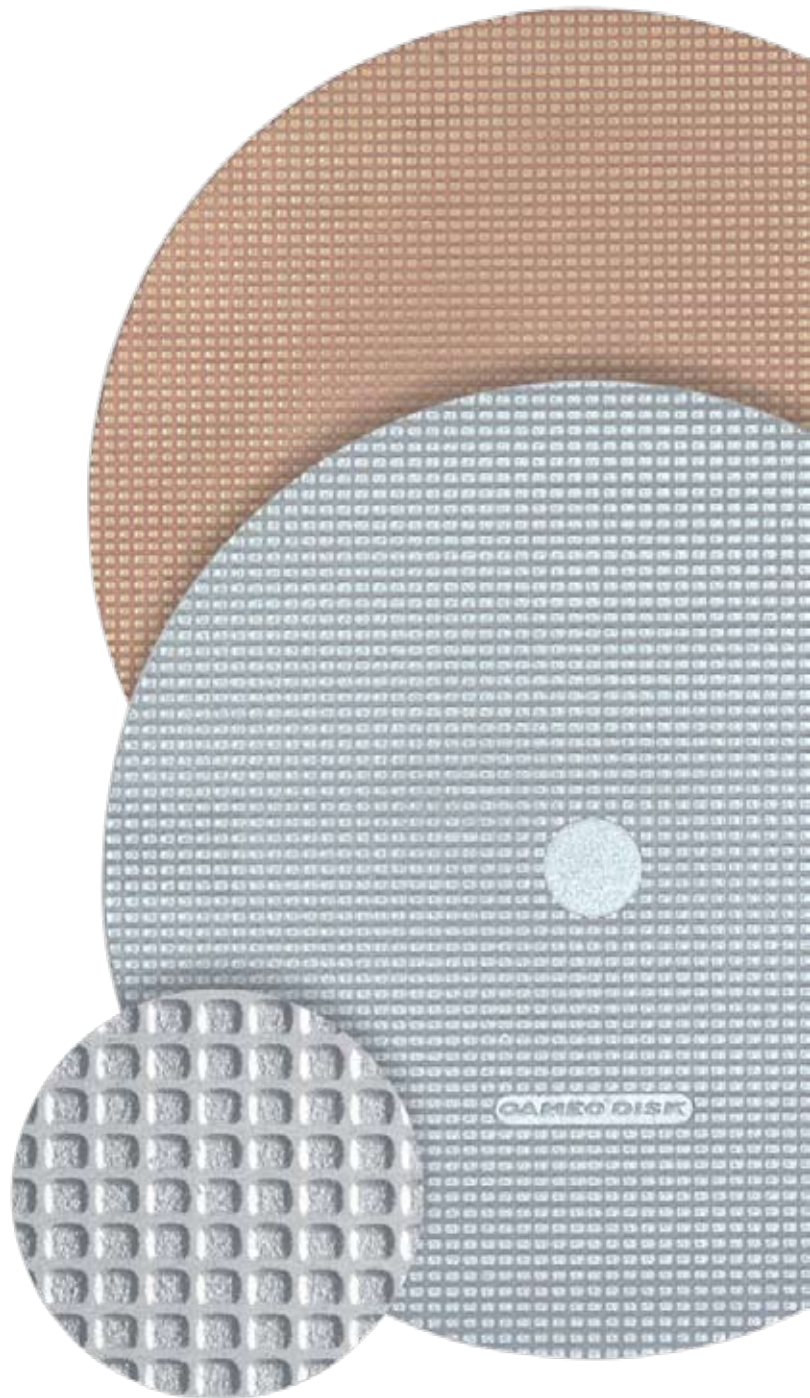
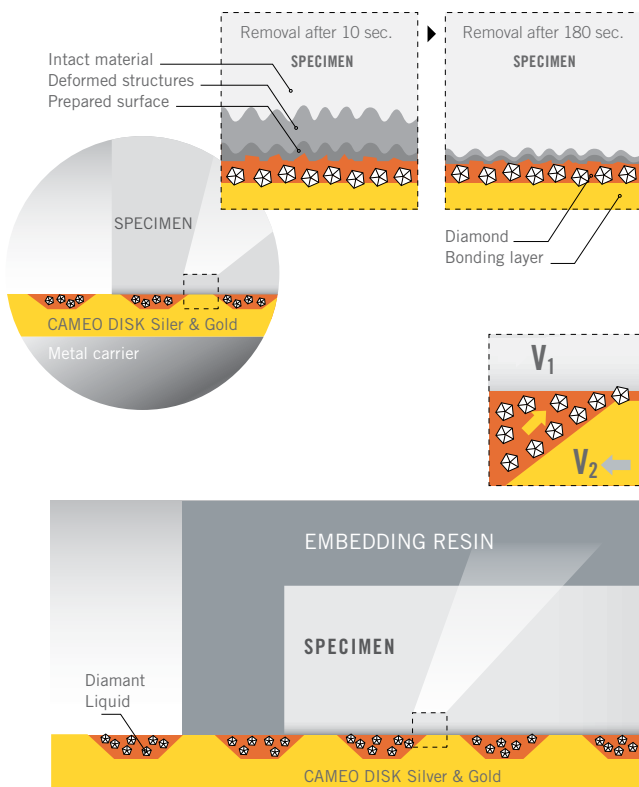
Manual preparation

The CAMEO DISK SILVER & GOLD are superbly suited for manual preparation of specimens. To achieve an even wear of the disk, the specimens are guided from the edge to the centre during the preparation process.

Cleaning

After use, the CAMEO DISK SILVER & GOLD are simply cleaned with a soft brush under running water and can then be used again with any desired diamond grain size.

Operation of the CAMEO DISK SILVER & GOLD



CAMEO DISK SILVER & GOLD

Quantity per delivery unit: 2 pcs.

CAMEO DISK SILVER

66005722	Ø 200 mm
66005723	Ø 230 mm
66005724	Ø 250 mm
66005725	Ø 300 mm

CAMEO DISK GOLD

66005730	Ø 200 mm
66005731	Ø 230 mm
66005732	Ø 250 mm
66005733	Ø 300 mm

TOUCH LAM® Polishing Cloths

Effective working with the TOUCH LAM® Polishing Cloths

Different types of cloths are available in the TOUCH LAM®-System. These differ in material and type of fabric, flocking or fibre, density and thickness. The cloths are finely graded, so that the polishing steps can be tuned individually to the preparation.

A polishing cloth is a complex combination of different material layers, each with a special function. The combination of layers determines the quality of the cloth and is responsible for polishing result and durability. The correct cloth is selected according to the type of specimen and/or the polishing step.

In combination with the correct polishing agents, even the most challenging specimen surfaces can be polished artefact-free in a very short time. Too many polishing steps and long polishing times, especially on soft cloths, clearly reduce the flatness of the specimen.

The active surface of the polishing cloth is the first selection criterion, all other parameters depend on the composition of the layers. The insulating layer prevents the cloth from being soaked, so that the working surface does not separate from the adhesive. This is the foundation for a long life span.

The adhesive layer guarantees optimum adhesion of the compound layers. Its consistency determines hardness and polishing characteristics of the cloth.

Another important factor is the carrier. It is a fundamental component and responsible for stiffness, flatness and elasticity of the polishing cloth.



TYPES

Depending on the type, all cloths can be fitted easily in a variety of exchange systems and also removed quickly – crease free, residue free and without a great deal of time.

- with self-adhesive backing
- with a flexible metallic carrier for direct adaption for magnetic systems
- with special plastic backing for the X LAM System

TOUCH LAM in comparison

Type	Properties				Application
	Removal	Flatness	Fine polish	Final polish	
TOUCH LAM					
2TT1	•	•			Pre-polishing of tough-strong materials
2TT2	•	•			Pre-polishing of tough-strong materials, high removal
2TS1		•	•		Fine polish of all materials, final polish of hard materials
2TS4		•			Intermediate polish of all materials, final polish of hard materials
2TS5		•	•		Polishing/Final polishing of semi-hard to hard materials
2TS8		•	•		Polishing/Final polishing of semi-hard to hard materials
3TL1			•		Final polishing of semi-hard to hard materials
3FV1			•	•	Final polishing of soft, semi-hard to hard materials
4FV1				•	Final polishing of soft, semi-hard to hard materials
4MP1				•	Chemical/mechanical polishing of sensitive materials

TOUCH LAM® Polishing Cloths

Properties and application fields

TOUCH LAM 2TT1

Hard cloth made of woven, synthetic “Taffeta” fibres, for good removal rates and flatness. The application field is predominantly the pre-polishing. Works off deformations quickly and simply – in particular with tough-strong materials such as, e.g. titanium. For combination with BioDiamant blue, green and yellow.

TOUCH LAM 2TT2

Very hard polishing cloth, woven from synthetic “Taffeta” fibres. For very high removal behaviour and flatness with very long durability. To be used with diamond suspension 6–16 µm.

TOUCH LAM 2TS1

Cloth made of natural satin-woven fibres, for high removal rate and an excellent edge sharpness. To polish almost all materials, particularly for thin layers of varying hardness in combination with BioDiamant green, yellow, orange, red or MM 140.

TOUCH LAM 2TS4

Cloth made of natural satin-woven fibres, for high flatness and edge sharpness on specimens with various hardness or with coated materials. For combination with BioDiamant yellow, orange, red or MM 140.

TOUCH LAM 2TS5

Flexible, semi-hard cloth of natural fibres, consisting of a salmon-colored satin fibre. The combination of soft thread and flat surface offers fine polishing results with good edge sharpness. Suitable for the preparation of almost the complete material range in combination with the BioDiamant Liquids yellow (6 µm), orange (3 µm) and red (1 µm).

TOUCH LAM 2TS8

With its flat surface and the soft natural fibre thread, the orange-colored polishing cloth 2TS8 offers a precise fine polish with very good edge sharpness with use of the BioDiamant Liquids in yellow, orange, red or MM 140. With multi-stage polishes with the 1 µm suspension it also represents the perfect supplement for the polishing cloth 2TS1 with the orange or yellow BioDiamant Liquid. The color code of the polishing cloths and suspensions reliably excludes the danger of confusion.

TOUCH LAM 3TL1

Robust all-round wool cloth for semi-hard to hard routine specimens. Can also be used to polish non-mounted specimens. For combination with BioDiamant yellow, orange and red.

TOUCH LAM 3FV1

Flocked, semi-hard synthetic fibre cloth. For the final polishing of hard, embedded specimens. For combination with BioDiamant orange, red or MM 140.

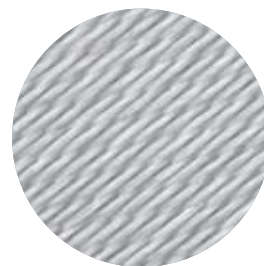
TOUCH LAM 4FV1

Flocked, semi-hard synthetic fibre cloth. For the final polishing of hard, embedded specimens. Can also be used as universal polishing cloth for undemanding specimens. For combination with BioDiamant orange, red or MM 140.

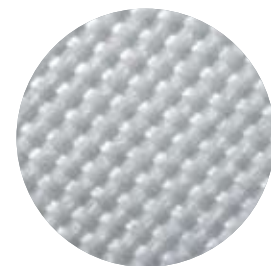
TOUCH LAM 4MP1

The chemically stable cloth of microporous polyurethane foam can be used with all oxide polishing agents and shows no edge rounding even with longer polishing times for difficult preparations. Etching polishing agents are also possible.

Too many polishing steps and long polishing times reduce the flatness of a specimen considerably. It is therefore especially important to match the cloths carefully to the polishing steps.



Natural fibres



Synthetic fibres



Flock



Foamed

TOUCH LAM® Polishing Cloths

Delivery units

TOUCH LAM 2TT1

SA	66055540	Ø 200 mm	66055541	Ø 250 mm	66055542	Ø 300 mm
MG	66055543	Ø 200 mm	66055545	Ø 250 mm	66055546	Ø 300 mm
X LAM	66055549	Ø 200 mm	66055550	Ø 250 mm	66055551	Ø 300 mm

TOUCH LAM 2TT2

SA	66070157	Ø 200 mm	66070158	Ø 250 mm	66070159	Ø 300 mm
MG	66070160	Ø 200 mm	66070161	Ø 250 mm	66070162	Ø 300 mm
X LAM	66070163	Ø 200 mm	66070164	Ø 250 mm	66070165	Ø 300 mm

TOUCH LAM 2TS1

SA	66055554	Ø 200 mm	66055556	Ø 250 mm	66055557	Ø 300 mm
MG	66055561	Ø 200 mm	66055562	Ø 250 mm	66055563	Ø 300 mm
X LAM	66055566	Ø 200 mm	66055567	Ø 250 mm	66055568	Ø 300 mm

TOUCH LAM 2TS4

SA	66055570	Ø 200 mm	66055572	Ø 250 mm	66055573	Ø 300 mm
MG	66055577	Ø 200 mm	66055578	Ø 250 mm	66055579	Ø 300 mm
X LAM	66055581	Ø 200 mm	66055582	Ø 250 mm	66055583	Ø 300 mm

TOUCH LAM 2TS5

SA	66058388	Ø 200 mm	66058389	Ø 250 mm	66058391	Ø 300 mm
MG	66060413	Ø 200 mm	66060414	Ø 250 mm	66060415	Ø 300 mm
X LAM	66060416	Ø 200 mm	66060417	Ø 250 mm	66060418	Ø 300 mm

TOUCH LAM 2TS8

SA	66061231	Ø 200 mm	66061232	Ø 250 mm	66061233	Ø 300 mm
MG	66061237	Ø 200 mm	66061238	Ø 250 mm	66061236	Ø 300 mm
X LAM	66061234	Ø 200 mm	66061235	Ø 250 mm	66061239	Ø 300 mm

TOUCH LAM 3TL1

SA	66055593	Ø 200 mm	66055594	Ø 250 mm	66055595	Ø 300 mm
MG	66055596	Ø 200 mm	66055597	Ø 250 mm	66055598	Ø 300 mm
X LAM	66055599	Ø 200 mm	66055600	Ø 250 mm	66055601	Ø 300 mm

TOUCH LAM 3FV1

SA	66055602	Ø 200 mm	66055603	Ø 250 mm	66055604	Ø 300 mm
MG	66055605	Ø 200 mm	66055606	Ø 250 mm	66055607	Ø 300 mm
X LAM	66055608	Ø 200 mm	66055609	Ø 250 mm	66055610	Ø 300 mm

TOUCH LAM 4FV1

SA	66055612	Ø 200 mm	66055613	Ø 250 mm	66055614	Ø 300 mm
MG	66055616	Ø 200 mm	66055617	Ø 250 mm	66055618	Ø 300 mm
X LAM	66055620	Ø 200 mm	66055621	Ø 250 mm	66055622	Ø 300 mm

TOUCH LAM 4MP1

SA	66055623	Ø 200 mm	66055624	Ø 250 mm	66055625	Ø 300 mm
MG	66055626	Ø 200 mm	66055627	Ø 250 mm	66055628	Ø 300 mm
X LAM	66055629	Ø 200 mm	66055630	Ø 250 mm	66055631	Ø 300 mm

Quantity per delivery unit: 5 pcs.
Special grades and diameters upon enquiry!

BioDiamant Liquids

Biodegradable & safe to use

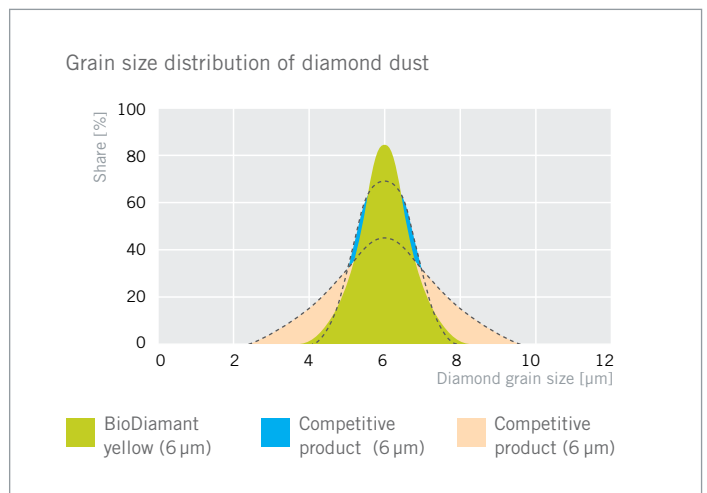
BioDiamant Liquids are diamond grinding agents, which comply with our high-quality standards in terms of diamond grain quality, grain size distribution, but also with our high health and safety and environmental standards.



Kulzer “All-in-One“ Diamond suspensions are used without any additional lubricants, delivering continuous, reproducible quality and providing significant savings for consumption. This ensures that the same amount of diamonds is sprayed on throughout the process and partial dilution of the suspension is avoided. To guarantee the high quality of the grinding agents, all individual components such as lubricant, consistency and shape and size of the diamond particles are perfectly matched. Grain size distribution within tight tolerances has a major influence on quality.

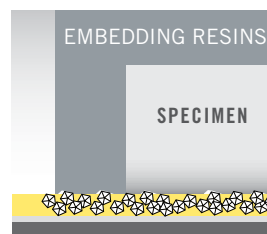
BioDiamant grinding agents fulfil all these criteria.

Apart from the color coded liquids, the special types MM140 are also available as unpigmented version and the diamond stick as diamond paste. All BioDiamant liquids are well suited for application with automatic dosing systems or manual pump dispenser.

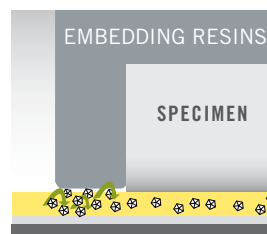


BioDiamant ADVANTAGES

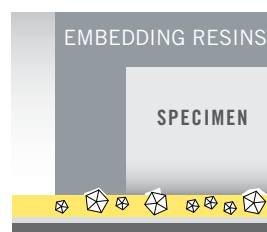
- higher performance than conventional diamond suspensions
- safe to use
- tight tolerances of the grain sizes
- high concentrations of diamond particles
- optimum lubrication effect of the water-based carrier liquid
- economical in use
- optimal for automatic or manual processing
- All-in-One



- Even grain distribution & optimal dosage
- even removal
 - short preparation times
 - low surface deformation depth
 - even deformation
 - contact with working disk
 - adequate lubrication/cooling



- Poor dosage
- aquaplaning effect
 - edge rounding
 - long preparation times



- Uneven grain sizes or grain distribution
- reduction of polishing quality
 - long preparation times

Why BioDiamant?

The development and manufacture of biodegradable products is gaining more and more importance, last but not least due to environmental policy requirements. It is often wrongly assumed that biodegradable products pose no risk to human health. In fact, organic molecules can well be biodegradable and still highly toxic to humans.

Many formulations for abrasive agents contain additives which guarantee high product efficiency.

Some of these additives (e.g. glycol ether, to improve miscibility of water and oil-based substances) have good biodegradable properties but contain toxic risks and harmful substances. Used even in small amounts they are extremely detrimental to human health.

The safe formulation of BioDiamant products has successfully replaced glycol ethers. This development avoids dangerous health risks caused by inhalation or contact with skin.

All input materials of the BioDiamant products therefore correspond to the European standards 1999/45/EC and 2000/59/EC. We have therefore reached the goal of providing the user with high-performance products without environmental or health risks.

This development is documented with the name: BioDiamant.

Superfinish

Final polishing solution containing high purity aluminium oxides. Ultra-fine particles guarantee an excellent polishing result. Simple to use and especially suitable for final polishing of soft materials. Superfinish is available in 2 grain sizes (*Superfinish 1 = 0.25 µm and Superfinish 2 = 0.05 µm*).

Delivery units

◉ BioDiamant Liquids

66031402	BioDiamant Liquid blue	12 µm	1 x 250 ml spray bottle
66031403	BioDiamant Liquid green	9 µm	1 x 250 ml spray bottle
66031404	BioDiamant Liquid yellow	6 µm	1 x 250 ml spray bottle
66031382	BioDiamant Liquid orange	3 µm	1 x 250 ml spray bottle
66031383	BioDiamant Liquid red	1 µm	1 x 250 ml spray bottle

◉ BioDiamant Liquid MM and Diamond paste

66031386	BioDiamant Liquid MM 140	1 µm	1 x 250 ml spray bottle
64708736	Diamant paste MM 140 A	1 µm	1 x 10 g stick

◉ Final Liquid and Superfinish

66006892	Final Liquid	0.05 µm	1 x 500 ml PE bottle
66046713	Superfinish 1	0.25 µm	1 x 1,000 ml PE bottle
66046714	Superfinish 2	0.05 µm	1 x 1,000 ml PE bottle



Exchange systems FIX LAM / FIX LAM-M, FAS / FAS-M Adapter Systems

Advantages of adapter systems

- Fast exchange of grinding and polishing cloths as well as diamond grinding disks and SiC-Papers.
- Through the coating, the special surfaces facilitate a fast exchange of all grinding and polishing media in nearly unlimited cycles without leaving adhesive residue.
- Environmentally friendly and cost effective as there is no need for cleaning agents or cleaning time.

FIX LAM / FIX LAM-M

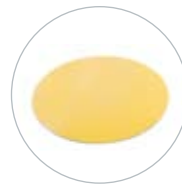
FIX LAM is a special double-sided adhesive film to fix non-self-adhesive SiC-Papers to carrier disks or FAS and FAS-M disks. FIX LAM is a good alternative to costly, self-adhesive SiC-Paper. Also available as version with metallic back (FIX LAM-M) for magnetic carriers.

FAS / FAS-M

The FAS Disk is a special non-adhesive disk, suitable for all adhesive systems. The FAS-M offers the same surface properties and can be used for all magnetic systems. Thus, self-adhesive disks and especially SiC-Papers can be easily integrated in a magnetic system.

FIX LAM / FIX LAM-M

- Surface self-adhesive, fixes SiC paper, rear side self-adhesive or with metal back



self-adhesive back



metallic back

FAS / FAS-M Disk

- Surface with special coating, back metallic or self-adhesive

FAS / FIX LAM

► FAS Disk

64713115	Ø 200 mm
64713117	Ø 250 mm
64713118	Ø 300 mm

► FAS-M Disk

64714612	Ø 200 mm
64714613	Ø 250 mm
64714614	Ø 300 mm

Delivery unit FAS Disk: 1 pcs.

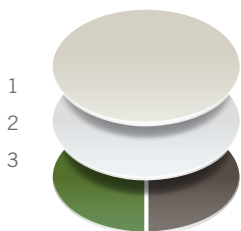
► FIX LAM Disk

64713122	Ø 200 mm
64713124	Ø 250 mm
64713125	Ø 300 mm

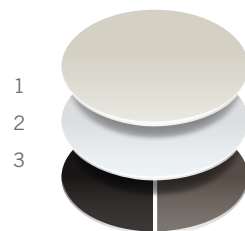
► FIX LAM-M Disk

66056007	Ø 200 mm
66056008	Ø 250 mm
66056009	Ø 300 mm

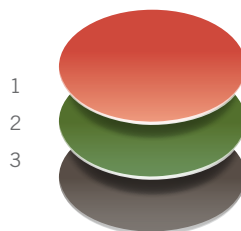
Delivery unit FIX LAM: 5 pcs.



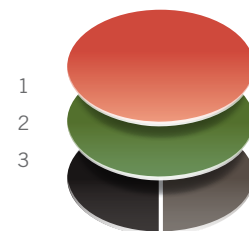
1. SiC-Paper without adhesive back
2. FIX LAM
3. FAS-/FAS-M Disk or carrier disk (not magnetic)



1. SiC-Paper without adhesive back
2. FIX LAM-M
3. MS-Disk or magnetic carrier disk



1. SiC-Paper self-adhesive, grinding or polishing disk with adhesive back
2. FAS Disk
3. Carrier disk (not magnetic)

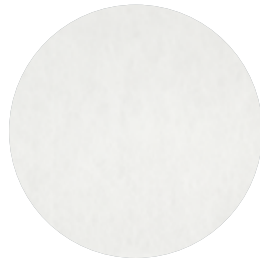


1. SiC-Paper self-adhesive, grinding or polishing disk with adhesive back
2. FAS-M Disk
3. MS-Disk or magnetic carrier disk

Exchange systems MS DISK / X LAM3 / X LAM3-M As simple as it is ingenious

Magnetique Support Disk

- Rear self-adhesive, surface magnetic



X LAM3-M

- Image above: Microstructure of the X LAM Disk

X LAM3 and X LAM3-M

The X LAM3-Disk has a micro-structured surface which fixes all X LAM cloths or smooth surfaces with a suction effect.

With their smooth synthetic material backing, the polishing cloths may be attached securely and easily to the X LAM 3 carrier disk just like SiC-abrasive films, the non-self-adhesive SiC-Paper or also grinding disks with smooth metal back, e.g. the CAMEO DISK PLATINIUM, resp. CAMEO DISK SILVER/GOLD.

To make use of the advantages of the X LAM3 system with magnetic systems, simply use the X LAM3-M Disk. This is specially designed for magnetic systems.

MAGNETIQUE SUPPORT DISK (MS-DISK)

The self-adhesive Magnetique Support Disk turns its aluminium carrier disk into a magnetic exchange system. The MS-Disk is glued to the carrier disk and you can use all advantages of the magnetic system.

With the exchange system, various adaptations can be combined with one another and therefore prepare the next preparation steps simply and quickly.

X LAM3 and X LAM3-M

▶ X LAM3

66061595	Ø 200 mm
66061596	Ø 250 mm
66061597	Ø 300 mm

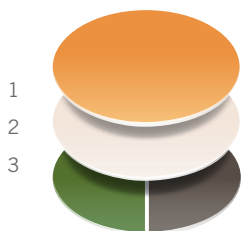
▶ X LAM3-M

66061591	Ø 200 mm
66061592	Ø 250 mm
66061593	Ø 300 mm

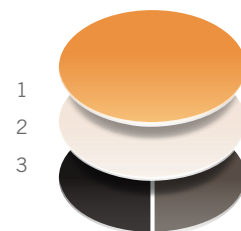
▶ MS-Disk

66005892	Ø 200 mm
66005894	Ø 250 mm
66005895	Ø 300 mm

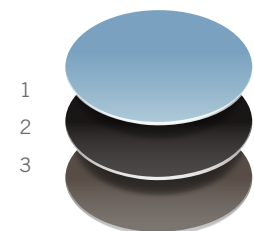
Delivery unit X LAM3 / MS Disk: 1 pcs.



1. SiC-Paper self-adhesive, grinding or polishing disk with smooth back
2. X Lam3
3. FAS-/FAS-M disk or carrier disk (not magnetic)



1. SiC-Paper self-adhesive, grinding or polishing disk with smooth back
2. X Lam3-M
3. MS-Disk or magnetic carrier disk



1. Grinding or polishing disk with metal back
2. MS-Disk
3. Carrier disk (not magnetic)

Manual specimen holder

Aid for target preparation of specimens



The manual specimen holder is an important aid for target preparation of specimens. It prevents excessive material removal and keeps microscopic monitoring requirements to a minimum.

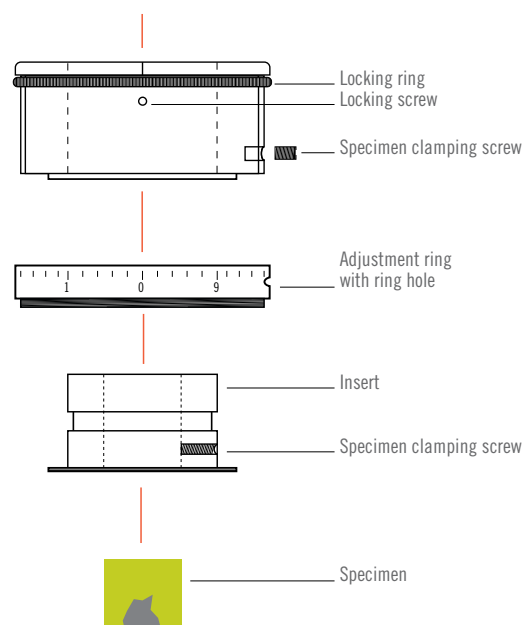
The manual specimen holder is designed for sharpening as well as thin section grinding (*holder or insert H*). Thin sections may be fixed on to the specimen holder with a special wax or a drop of water or oil.

A pre-defined material removal rate can be achieved using the fine adjustment ring with a Vernier scale on the manual specimen holder. (*Distance between 2 graduations of the scale = 0.02 mm*). A locking ring prevents alteration of the specified dimension during the abrasion process.

The ultra-hard ceramics ring prevents undesirable excessive abrasion and ensures material removal to the desired level. This helps less skilled operators to achieve optimum target preparation in metallography, mineralogy and histology.

The manual specimen holder is available for many common specimen diameters (*40 mm = standard, 32 mm, 30 mm, 25 mm = special*).

By means of different inserts (*32 mm, 30 mm, 25 mm, thin section grinding*) the standard manual specimen holder (*40 mm*) can be used in a wide range of applications.



A special manual specimen holder with recesses in the format 26 x 48 mm is offered for processing of thin sections on slides in the „Giessener Format“.

Aids for target preparation

Manual specimen holder

66031156	Manual specimen M,	Ø 30 mm
66031155	Manual specimen M,	Ø 40 mm
66031158	Manual specimen holder H for thin section grinding	Ø 40 mm
64708789	Manual specimen holder thin sections	26 x 48 mm
Quantity per delivery unit: 1 pcs.		

Inserts for manual specimen holder M Ø 40 mm

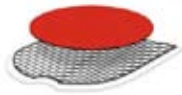
66031159	Insert	Ø 25 mm
66031160	Insert	Ø 30 mm
66031161	Insert	Ø 32 mm
66031157	Insert H	
Quantity per delivery unit: 1 pcs.		

Storage and Aids

BOX LAM® 300 AND BOX LAM®

BOX LAM 300

The storage system for disks and cloths up to Ø 300 mm. Ten sliding shelves offer storage not just for disks but also for specimens which can be placed in foam templates (*accessories*).



Plexiglas base, especially suited for storage of adhesive disks.



Foam template for storage and protection of specimens.



Smooth, white PVC base to store work disks.



BOX LAM 300

BOX LAM

BOX LAM Storage Box for disks and cloths up to Ø 300 mm. The six non-stick coated drawers are closed by a cover which protects the drawers from becoming dirty and a tray is available to store accessories. Dimensions: 330 x 340 x 440 mm



BOX LAM

BOOSTER LIQUID

The Booster Liquid is a specially developed lubricant for use on the CAMEO DISK PLATINIUM and Technodisc Diamond grinding disks during grinding. This booster retains the optimal grip of the diamond grinding disks throughout the full service life and at the same time acts as buffer with sensitive specimens.

Ready for immediate use, this lubricant guarantees constant efficiency and avoids the use of a grinding stone.



APPLICATION ADVANTAGES BOOSTER LIQUID

- improves the performance of diamond disks
- keeps efficiency constant in time
- reduces water consumption
- universal application, can be used for all types of materials
- ready to use

Delivery units

▶ BOX LAM

66056022 BOX LAM 300 Storage system
64713595 BOX LAM Storage system

▶ Booster Liquid

66064605 Booster Liquid, 5 litres

It's the result that counts Preparations

Kulzer grinding and polishing products enable very gentle, non-deformative and artefact-free material removal.

An optimally prepared specimen reveals the true structure authentically. Non-homogeneous structures are presented with consistently high quality, brittle edge layers are processed without cracking and soft material components are not washed out or smudged. Only optimum preparation of specimens guarantees accurate analysis of structure.

Specimen material:
Steel above 45 HRC
and cast iron
Mounted in:
Hot mounting resin
Technotherm 2000 or
cold mounting resin
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 1 or 2 - depending on the quality of the separating cut	Water	until flat
Grinding II	CAMEO DISK PLATINIUM 2	Water	1 to 3 minutes
Grinding III	CAMEO DISK PLATINIUM 3	Water	1 to 3 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	3 minutes
Polishing II	4FV1	BioDiamant Liquid red	1 minute

Alternatively

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 1 or 2 - depending on the quality of the separating cut	Water	until flat
Grinding II	CAMEO DISK SILVER	BioDiamant Liquid blue or green	3 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	1 to 3 minutes
Polishing II	4FV1	BioDiamant Liquid red	1 minute

Specimen material:
Nitrided layers on steel
Mounted in:
Hot mounting resin
Technotherm 2000 or
cold mounting resin
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	SiC-Paper 180 grain size	Water	until flat
Grinding II	CAMEO DISK PLATINIUM 2	BioDiamant Liquid green	3 to 5 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	3 to 5 minutes
Polishing II	4FV1	BioDiamant Liquid MM 140	1 to 2 minutes

Alternatively

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 2	Water	1 minute
Grinding II	CAMEO DISK PLATINIUM 4	Water	2 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	3 to 5 minutes
Polishing II	4FV1	BioDiamant Liquid MM 140	1 to 2 minutes

Specimen material:
Spray coating on steel
Mounted in:
Hot mounting resin
Technotherm 2000 or
cold mounting resin
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 1	Water	until flat
Grinding II	CAMEO DISK PLATINIUM 2	Water	1 to 2 minutes
Grinding III	CAMEO DISK PLATINIUM 3	Water	1 minute
Grinding IV	CAMEO DISK PLATINIUM 4	Water	1 minute
Polishing I	2TS1	BioDiamant Liquid yellow	3 to 5 minutes
Polishing II	2TS8	BioDiamant Liquid MM 140	2 minutes
Polishing III	4FV1	BioDiamant Liquid MM 140	1 minute



Specimen material: Spray coating on steel Mounted in: Cold mounting resin Technovit 4000 or cold mounting resin Technovit 4002 IQ	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	CAMEO DISK PLATINIUM 1	Water	
	Grinding II	CAMEO DISK SILVER	BioDiamant Liquid blue	5 minutes
	Polishing I	2TS1	BioDiamant Liquid yellow	2 to 3 minutes
	Polishing II	2TS8	BioDiamant Liquid red	5 minutes

Specimen material: Assembled printed circuit board with chip Mounted in: Cold mounting resin Technovit 4006 SE or light curing mounting resin Technovit 2000 LC	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	SiC-Paper 320 grain size	Water	until flat
	Grinding II	SiC-Paper 600 grain size	Water	1 minute
	Grinding III	SiC-Paper 2500 grain size	Water	1/2 minute
	Polishing I	2TS1	BioDiamant Liquid MM 140	3 to 5 minutes
	Polishing II	4FV1	BioDiamant Liquid MM 140	1/2 to 1 minute

Specimen material: Bare printed circuit board Mounted in: Cold mounting resin Technovit 4006 SE or light curing mounting resin Technovit 2000 LC	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	SiC-Paper 180 grain size	Water	until flat
	Grinding II	SiC-Paper 320 grain size	Water	1 minute
	Grinding III	SiC-Paper 600 grain size	Water	1 minute
	Grinding IV	SiC-Paper 1200 grain size	Water	1 minute
	Polishing I	2TS5	BioDiamant Liquid MM 140	2 to 3 minutes
	Polishing II	4FV1	BioDiamant Liquid MM 140 or red	1 minute

Specimen material: Aluminium and alloys Mounted in: Cold mounting resin Technovit 4071, Technovit 4002 IQ, Technovit 4006 SE or light curing mounting resin Technovit 2000 LC	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	SiC-Paper 180 grain size	Water	until flat
	Grinding II	SiC-Paper 320 grain size	Water	1 minute
	Grinding III	SiC-Paper 600 grain size	Water	1 minute
	Grinding IV	SiC-Paper 1200 grain size	Water	1 minute
	Grinding V	SiC-Paper 2500 grain size	Water	1 minute
	Polishing I	2TS8	BioDiamant Liquid MM 140	3 to 6 minutes
	Polishing II	4FV1	BioDiamant Liquid MM 140	1 to 2 minutes

Specimen material: Titanium and titanium alloy Mounted in: Cold mounting resin Technovit 4006 SE	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	SiC-Paper 180 grain size	Water	until flat
	Grinding II	SiC-Paper 320 grain size	Water	1 minute
	Grinding III	SiC-Paper 600 grain size	Water	1 minute
	Grinding IV	SiC-Paper 1200 grain size	Water	1 minute
	Polishing I	2TT1	BioDiamant Liquid green	3 to 5 minutes
	Polishing II	4FV1, 4MP1	BioDiamant Final Liquid	1 to 5 minutes

Specimen material: Ceramic Mounted in: Cold mounting resin Technovit EPOX	Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
	Grinding I	Diamond grinding disk 40 µm	Water	until flat
	Grinding II	CAMEO DISK GOLD	BioDiamant Liquid green	3 to 5 minutes
	Polishing I	2TS1	BioDiamant Liquid yellow	10 to 20 minutes
	Polishing II	2TS8	BioDiamant Liquid MM 140	5 minutes
	Polishing III	4FV1	BioDiamant Liquid MM 140	2 minutes

Specimen material:
Glass body soldered into steel shell
Mounted in:
Cold mounting resin
Technovit 4071 or
Technovit EPOX

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	Diamond grinding disk 20 µm or CAMEO DISK PLATINIUM 2	Water	until flat
Grinding II	CAMEO DISK GOLD	BioDiamant Liquid green	3 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	3 minutes
Polishing II	2TS4	BioDiamant Liquid MM 140	2 minutes
Polishing III	4FV1	BioDiamant Liquid Final Liquid	1 minuten

Specimen material:
CFRP
Mounted in:
Cold mounting resin
Technovit 4000 or
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	Diamond grinding disk 20 µm or SiC-Paper bis 2500 grain size	Water	
Polishing I	2TS1	BioDiamant Liquid MM 140	5 to 10 minutes
Polishing II	2TS8	BioDiamant Liquid MM 140	5 minutes

Specimen material:
Printed circuit board with VIAS
Mounted in:
Cold mounting resin
Technovit 4006 SE

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	SiC-Paper 1200 grain size	Water	
Polishing I	2TS4	BioDiamant Liquid yellow	3 minutes
Polishing II	4FV1	BioDiamant Liquid red	1 minute

Specimen material:
Carbide
Mounted in:
Hot mounting resin
Technotherm 2000 or
cold mounting resin
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 1 or 2	Water	until flat
Grinding II	CAMEO DISK SILVER	BioDiamant Liquid blue	2 to 5 minutes
Polishing I	2TS1	BioDiamant Liquid yellow	2 to 4 minutes
Polishing II	4FV4	BioDiamant Liquid red	2 to 4 minutes

Specimen material:
Sandwich metal steel, bronze, aluminium, unetched
Mounted in:
Cold mounting resin
Technovit 4002 IQ

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	SiC-Paper 180 grain size		
Grinding II	SiC-Paper 1200 grain size		
Polishing I	2TS1	BioDiamant Liquid yellow	3 minutes
Polishing II	2TS5	BioDiamant Liquid MM 140	4 minutes
Polishing III	4FV1	BioDiamant Liquid red	1 minute

Specimen material:
Connection wire, tin-plated
Mounted in:
Cold mounting resin
Technovit 4006 SE

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	SiC-Paper 320 grain size		
Grinding II	SiC-Paper 600 grain size		
Grinding III	SiC-Paper 1200 grain size		
Polishing I	2TS1	BioDiamant Liquid yellow	3 minutes
Polishing II	2TS8	BioDiamant Liquid MM 140	2 minutes
Polishing III	4MP1	BioDiamant Fiinal Liquid	1 minute

Specimen material:
Carbide
Mounted in:
Cold mounting resin
Technovit 4002 IQ
Technovit 4071

Work stage	Grinding/Polishing Cloth	Grinding/Polishing Agent	Processing time
Grinding I	CAMEO DISK PLATINIUM 2	Water	until flat
Grinding II	CAMEO DISK GOLD	BioDiamant Liquid green	3 to 5 minutes
Polishing I	2TS4	BioDiamant Liquid yellow	3 to 4 minutes
Polishing II	2TS4	BioDiamant Liquid red	5 minutes



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