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TROJAN

Discover the Truth of Material

2025

Grinding & Polishing Application Guide

Professional Metallographic Equipment, Consumables, and Application Solutions

Grinding

The purpose of grinding is to remove the deeper deformation layer on the specimen's surface, preparing it for the subsequent polishing steps. To quickly flatten the specimen and remove the cutting damage layer, finer abrasive particles should be selected for the initial grinding. Each step should use sandpaper with a grit size that is half of the previous step. Each grinding process removes the existing deformation layer while introducing a new, thinner deformation layer. As the abrasive grit size increases, the depth of damage decreases, but the material removal rate also drops. For a given abrasive size, softer materials tend to experience deeper damage compared to harder ones.Proper cooling and lubrication should be maintained during the grinding process, with water commonly used as the coolant.

Grinding Equipment

Alpha-610 Automatic Grinder and Polisher(Φ250/350mm)

Controlled material removal：±50μm

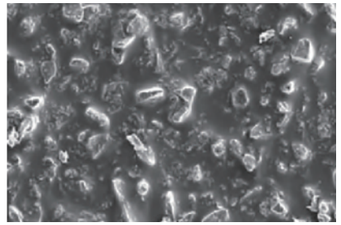
Alpha-212 Manual Grinder and Polisher(Φ250/350mm)

Alpha-335G floor-standing grinding machine(Φ350mm)

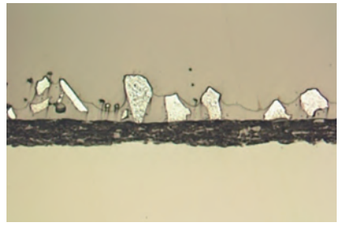
Controlled material removal：±0.1mm

Abrasive Paper

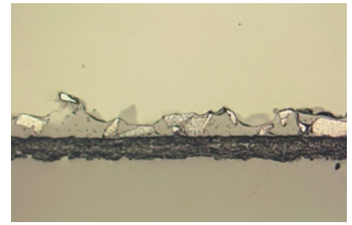
The metallographic abrasive paper is made with carefully selected, uniform-grit, and high-performance hard abrasive particles. The metallographic abrasive paper, produced using an electrostatic coating process, features uniform abrasive particle distribution, sharp cutting edges, and exceptional durability. This results in faster material removal, shallower deformation layers, and is particularly effective on hard or high-hardness materials. All coarse and fine grinding steps support wet grinding, effectively eliminating issues such as smearing and excessive dust generation often associated with dry grinding using conventional metallographic abrasive papers.



SiC particles SEM 50×



Unused abrasive paper（P120）50×



Used abrasive paper 50×

Grain Size Chart for Metallographic Abrasive Papers

Grain Size (μm)	260	200	125	80	68	52	40	35	26	22	15	10	5
ANSI/UAMA(US)	#60	#80	#120	#180	#220	#240	#280	#320	#360	#400	#600	#800	#1200
FEPA P(Europe)	P60	P80	P120	P180	P240	P280	P360	P400	P600	P800	P1200	P2400	P4000

MET-F Metallographic Grinding Film

- Designed specifically for grinding ferrous and other black metals.
- Offers exceptional wear resistance with a lifespan more than three times that of standard SiC abrasive paper.
- Resistant to cracking and features a self-adhesive function, eliminating the need for clamping rings or backing adhesive, making it easy and quick to use.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
120	03.18.110	03.18.210	03.18.310	100pcs
180	03.18.120	03.18.220	03.18.320	100pcs
240	03.18.130	03.18.230	03.18.330	100pcs
320	03.18.140	03.18.240	03.18.340	100pcs
400	03.18.150	03.18.250	03.18.350	100pcs
600	03.18.160	03.18.260	03.18.360	100pcs
1200	03.18.170	03.18.270	03.18.370	100pcs

MET-S Silicon Carbide Abrasive Paper (Plain Back)

- Made with high-hardness silicon carbide as the abrasive.
- Suitable for grinding metal materials, electronic materials, and plastic samples.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
60	03.03.101	03.03.401	03.03.701	50pcs
80	03.03.102	03.03.402	03.03.702	50pcs
120	03.03.103	03.03.403	03.03.703	50pcs
180	03.03.104	03.03.404	03.03.704	100pcs
400	03.03.107	03.03.407	03.03.707	100pcs
800	03.03.109	03.03.409	03.03.709	100pcs
1200	03.03.111	03.03.411	03.03.711	100pcs
2000	03.03.113	03.03.413	03.03.713	100pcs
2500	03.03.114	03.03.414	03.03.714	100pcs
2400	03.03.115	03.03.415	03.03.715	100pcs
4000	03.03.116	03.03.416	03.03.716	100pcs

MET-SP Silicon Carbide Abrasive Paper (PSA)

- Made with high-hardness silicon carbide as the abrasive.
- The back is coated with an adhesive layer for direct attachment to working platen, ensuring better flatness.
- Suitable for grinding metal materials, electronic materials, and plastic samples.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
60	03.04.201	03.04.501	03.04.801	50pcs
80	03.04.202	03.04.502	03.04.802	50pcs
120	03.04.203	03.04.503	03.04.803	50pcs
180	03.04.204	03.04.504	03.04.804	100pcs
400	03.04.207	03.04.507	03.04.807	100pcs
800	03.04.209	03.04.509	03.04.809	100pcs
1200	03.04.211	03.04.511	03.04.811	100pcs
2000	03.04.213	03.04.513	03.04.813	100pcs
2500	03.04.214	03.04.514	03.04.814	100pcs
2400	03.04.215	03.04.515	03.04.815	100pcs
4000	03.04.216	03.04.516	03.04.816	100pcs

MET-M Aluminum Oxide Abrasive Paper (Plain Back)

- Made with aluminum oxide as the abrasive,offering moderate hardness and high durability.
- Suitable for grinding metal materials, electronic materials, and plastic samples.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
60	03.01.101	03.01.401	03.01.701	50pcs
120	03.01.103	03.01.403	03.01.703	50pcs
180	03.01.104	03.01.404	03.01.704	100pcs
240	03.01.104-1	03.01.404-1	03.01.704-1	100pcs
320	03.01.105	03.01.405	03.01.705	100pcs
400	03.01.106	03.01.406	03.01.706	100pcs
800	03.01.108	03.01.408	03.01.708	100pcs
1200	03.01.110	03.01.410	03.01.710	100pcs

MET-MP Aluminum Oxide Abrasive Paper (PSA)

- Made with aluminum oxide as the abrasive,offering moderate hardness and high durability.
- Coated with an adhesive layer for direct attachment to the working platen, ensuring better flatness.
- Suitable for grinding metal materials, electronic materials, and plastic samples.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
60	03.02.401	03.02.501	03.02.801	50pcs
120	03.02.403	03.02.503	03.02.803	50pcs
180	03.02.404	03.02.504	03.02.804	100pcs
240	03.02.404-1	03.02.504-1	03.02.804-1	100pcs
320	03.02.405	03.02.505	03.02.805	100pcs
400	03.02.406	03.02.506	03.02.806	100pcs
800	03.02.408	03.02.508	03.02.808	100pcs
1200	03.02.410	03.02.510	03.02.810	100pcs

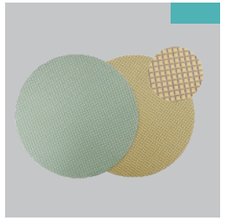
Grinding disc

DiaNi Electroplated Diamond Grinding Disc

- Nickel – based diamond grinding disc, with extremely low elasticity and a high grinding rate.
- Same grinding speed for hard and soft materials ensures the flatness of the sample surface.
- Applicable to materials with high hardness.

FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
80	04.21.110S	04.21.210S	04.21.310S	1pc
120	04.21.120S	04.21.220S	04.21.320S	1pc
200	04.21.125S	04.21.225S	04.21.325S	1pc
400	04.21.130S	04.21.230S	04.21.330S	1pc
800	04.21.140S	04.21.240S	04.21.340S	1pc
1200	04.21.150S	04.21.250S	04.21.350S	1pc

DiaRe Resin-Bonded Diamond Grinding Disc



- Resin-based,low elasticity, excellent grindingsurface.
- Same grinding speed for hard and soft materials, ensuring the flatness of the sample surface.
- Suitable for materials with high hardness and brittleness.

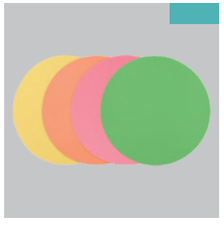
FEPA(Grit)	8in[200mm]	10in[250mm]	12in[300mm]	Package
120	04.22.120S	04.22.220S	04.22.320S	1pc
200	04.22.125S	04.22.225S	04.22.325S	1pc
400	04.22.130S	04.22.230S	04.22.330S	1pc
800	04.22.140S	04.22.240S	04.22.340S	1pc
1500	04.22.150S	04.22.250S	04.22.350S	1pc
3000	04.22.160S	04.22.260S	04.22.360S	1pc
5000	04.22.170S	04.22.270S	04.22.370S	1pc

POS/POH Fine Grinding Disc

- Used for fine grinding with diamond suspension or spray.
- Replace multiple grinding steps and save grinding time.
- Extremely long service life and a high material removal rate.
- Same grinding speed for both hard and soft materials, ensuring a flat surface of the sample.
- POH: >150 HV hard material.
- POS: 40 – 1500 HV soft to hard material.

Description	Micron	POS	POH	Package
8in[200mm]	9μm	04.09.110	04.09.130	1pc
10in[250mm]	9μm	04.09.115	04.09.135	1pc
12in[300mm]	9μm	04.09.120	04.09.140	1pc
14in[350mm]	9μm	04.09.125	04.09.145	1pc

PF Diamond Grinding Film



- Diamond particles are evenly distributed, with excellent sharpness and consistent grinding force on hard and soft materials, ensuring sample flatness.
- Commonly used for unencapsulated cross – section grinding.
- Applied in transmission electron microscopy polishing, backside polishing, and focused ion beam sample thinning.

Micron	8in[200mm]	10in[250mm]	12in[300mm]	Package
1μm	14.01.461-3	14.01.475-1	14.01.484-1	5pcs
3μm	14.01.462-1	14.01.476-1	14.01.485-1	5pcs
6μm	14.01.463-1	14.01.478-1	14.01.486-1	5pcs
9μm	14.01.464-1	14.01.477-1	14.01.483-1	5pcs
15μm	14.01.465-1	14.01.479-1	14.01.487-1	5pcs
30μm	14.01.466-1	14.01.481-1	14.01.488-1	5pcs

Polishing

Polishing involves evenly distributing the polishing medium onto the polishing cloth of the grinding and polishing machine,and then placing the sample onto the rotating cloth for polishing. The goal is to remove scratches from the grinding process andthe deformation layer on the sample surface, resulting in a scratch-free mirror finish, making it suitable for microscopic structure analysis under a metallographic microscope.

Polishing Equipment

Alpha-335P grinding and polishing machine(Φ300/350mm)

Alpha-660 Dual-Disc Automatic Grinder and Polisher(Φ250/300mm)

SemiPOL High Precision Quantitative Grinding Machine(Φ200/250mm)

Controlled material removal：：±2μm

VP-430 Vibratory Polisher(Φ300mm)

Dosing system

Various dispensing configurations are available for delivering all types of diamond suspensions. The system ensures automatic dosing at fixed intervals and predefined flow rates, enhancing both productivity and preparation consistency.

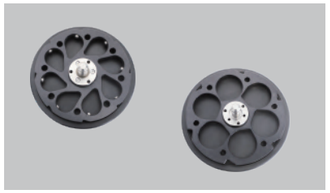
ADS-1 Automatic Dosing Unit
13.20.170

ADS-4 Automatic Dosing Unit
13.20.175

ADS-4S Automatic Dosing Unit
13.20.176

ADS-8 Automatic Dosing Unit
13.20.180

Grinding Accessories



Alpha-610 Specimen holder & levelling plate-Tear drop

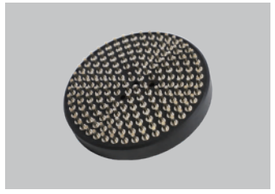
25.03.550	25.4mm(Nine)
25.03.570	32mm(Nine)
25.03.580	40mm(Six)
25.03.590	50mm(Six)

Alpha-610 Specimen holder for Individual Force

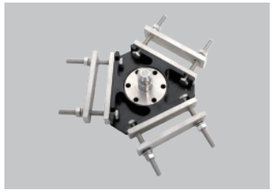
25.03.500	25.4mm(Six)
25.03.510	30mm(Six)
25.03.520	32mm(Six)
25.03.530	40mm(Six)
25.03.540	50mm(Six)

Working wheel (taper fit)

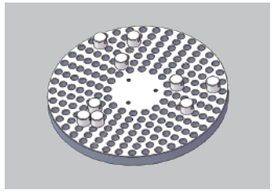
25.03.071	8"(200mm)
25.03.081	10"(250mm)
25.03.091	12"(300mm)



Universal fixture
Sample holder diameter：160mm
Maximum sample size：120x30mm
Maximum sample height：30mm
25.03.800 610-100

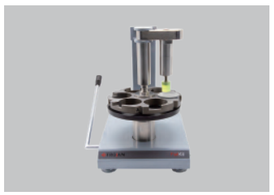


Irregular fixture
Sample holder diameter：160mm
Maximum sample size：50x50mm
Maximum sample height：50mm
25.03.810 610-101

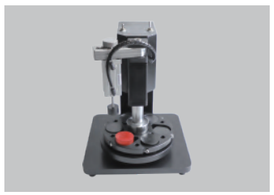


Locking fixture
Sample holder diameter：160mm
Maximum sample size：120x30mm
Maximum sample height：30mm
25.03.820 610-102

Side locking fixture
Sample holder diameter：160mm or 180mm
Maximum sample size：50x30mm
Maximum sample height：5mm
25.03.830 610-103
25.03.840 610-104

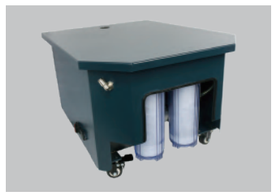


FLAT Levelling device
Sample holder diameter：160mm or 180mm
Sample diameter：25-50
Maximum sample height：40mm
Sample exposure height：3 or 5mm
15.02.004 FLAT-1



Pneumatic flattening device
Sample holder diameter：160mm or 180mm
Sample diameter：25-50
Maximum sample height：40mm
Sample exposure height：3 or 6mm
15.02.010 SF-1

Air Compressor
Capacity：24L
Exhaust Pressure:：0.8Mpa
13.90.350

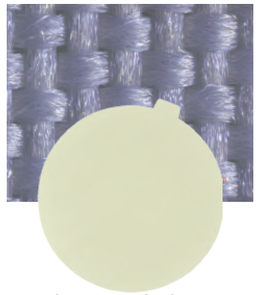


Recirculating water tank
Capacity：45L
Exhaust Pressure:：5L/Min
25.01.040 Filtank60

Polishing Cloth

Coarse Polishing

NL White Chemical Fiber Polishing Cloth (PSA)

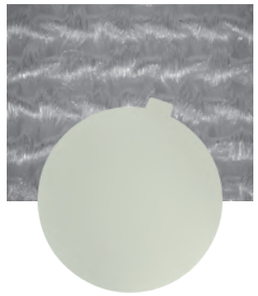


White chemical fiber, suitable for coarse polishing of ferrous metals.
Recommended for use with 6-15μm diamond polishing suspension or spray.

8in [200mm]	05.06.610	10pcs
10in [250mm]	05.06.620	10pcs
12in [300mm]	05.06.630	10pcs

Medium Polishing

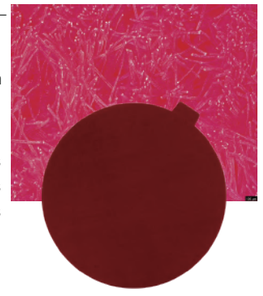
GF White Synthetin Silk Polishing Cloth (PSA)



White rayon, suitable for intermediate or coarse polishing of ferrous metals.
Recommended for use with 3-9μm diamond polishing suspension or spray.

8in [200mm]	05.10.010	10pcs
10in [250mm]	05.10.020	10pcs
12in [300mm]	05.10.030	10pcs

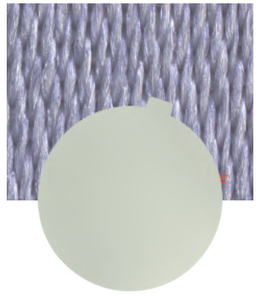
SR Red Synthetic Fibric Polishing Cloth (PSA)



Suitable for fine or final polishing of most materials.
Recommended for use with 0.3-3.0μm aluminum oxide or diamond polishing suspension.

8in [200mm]	05.02.150	10pcs
10in [250mm]	05.02.160	10pcs
12in [300mm]	05.02.170	10pcs

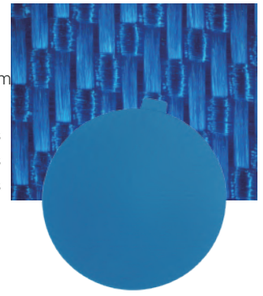
SC White Silk Polishing Cloth (PSA)



Suitable for fine polishing of cemented carbide and ferrous metals.
Recommended for use with 0.5-6μm diamond polishing suspension.

8in [200mm]	05.05.510	10pcs
10in [250mm]	05.05.520	10pcs
12in [300mm]	05.05.530	10pcs

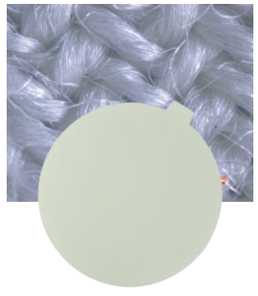
CS Blue Synthetin Silk Polishing Cloth (PSA)



Suitable for intermediate and fine polishing of ferrous metals, non-ferrous metals, coatings, and plastics.
Recommended for use with 0.5-6.0μm diamond polishing suspension.

8in [200mm]	05.12.110	10pcs
10in [250mm]	05.12.120	10pcs
12in [300mm]	05.12.130	10pcs

YS White Fiber Polishing Cloth (PSA)

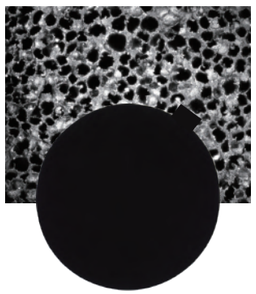


Suitable for fine or intermediate polishing of copper, aluminum, tin, and softer ferrous metals.
Recommended for use with 1-6μm diamond polishing suspension or diamond spray.

8in [200mm]	05.07.710	10pcs
10in [250mm]	05.07.720	10pcs
12in [300mm]	05.07.730	10pcs

Fine Polishing

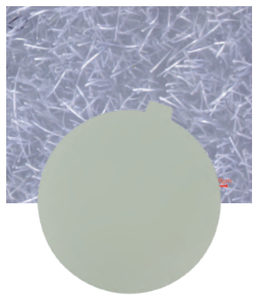
ZN Black Polyurethane Polishing Cloth (PSA)



Suitable for final polishing of most materials.
Recommended for use with 0.02–1μm silica or aluminum oxide polishing suspension.

8in [200mm] 05.01.110 10pcs
10in [250mm] 05.01.120 10pcs
12in [300mm] 05.01.130 10pcs

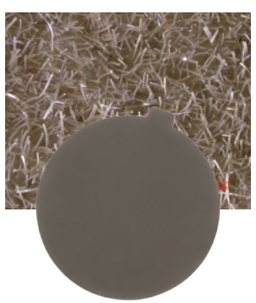
ET White Synthetic Velvet Polishing Cloth (PSA)



Suitable for fine polishing of soft materials such as copper,tin, resin, PCB, SMT, and semiconductors.
Recommended for use with 0.05–3.0μm aluminum oxide polishing suspension or aluminum oxide polishing powder.

8in [200mm] 05.03.210 10pcs
10in [250mm] 05.03.220 10pcs
12in [300mm] 05.03.230 10pcs

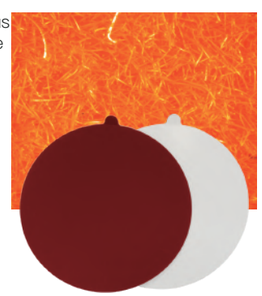
YR Brown Synthetic Rayon Polishing Cloth (PSA)



Suitable for fine polishing of ferrous and non–ferrous metals, composite materials,polymers, cast iron, ceramics, carbides,and PCBs.
Recommended for use with 0.05–3.0μm diamond polishing suspension, aluminum oxide polishing suspension.

8in [200mm] 05.04.310 10pcs
10in [250mm] 05.04.320 10pcs
12in [300mm] 05.04.330 10pcs

Final Red Final Precision Polishing Cloth(PSA)



Suitable for precision polishing of electronic components, especially for preparing materials for SEM or TEM analysis.
Recommended for use with 0.05μm silica or 0.05μm aluminum oxide polishing suspension.

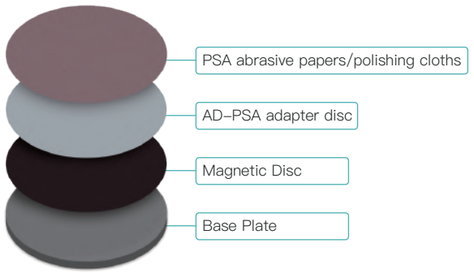
8in [200mm] 05.13.110 10pcs
10in [250mm] 05.13.120 10pcs
12in [300mm] 05.13.130 10pcs

Adapter System

AD–PSA Adapter Disc

The adapter discs with a special coating allow for easy removal of PSA abrasive papers/polishing cloths without leaving any residue.

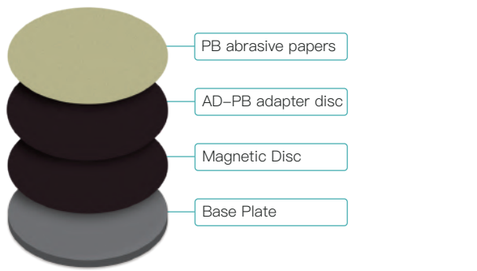
200mm 04.08.410 1pc
250mm 04.08.413 1pc
300mm 04.08.420 1pc



AD–PB Adapter Disc

Suitable for PB abrasive papers or diamond grinding discs, featuring a reusable adhesive layer on the surface, allowing for easy attachment or removal of PB abrasive papers.

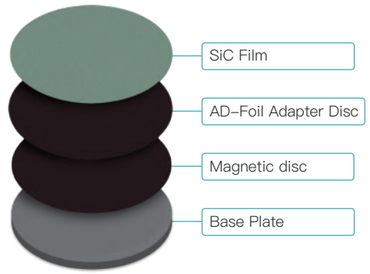
200mm 04.08.310 1pc
250mm 04.08.320 1pc
300mm 04.08.330 1pc



AD–Foil Adapter Disc

Suitable for SiC film or diamond grinding film,washable and reusable.

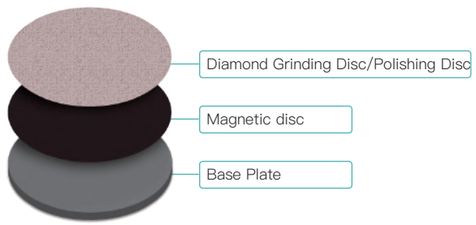
200mm 04.08.422 1pc
250mm 04.08.430 1pc
300mm 04.08.432 1pc



Magnetic disc

The magnetic soft disc securely attaches to the base plate of the grinding machine, firmly holding the adapter disc in place.

200mm 04.08.010 1pc
250mm 04.08.020 1pc
300mm 04.08.030 1pc



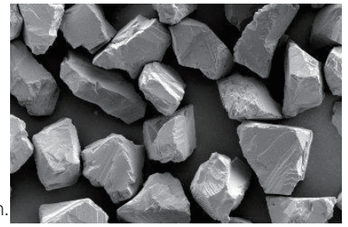
Polishing Suspension

Diamond Polishing Suspension

Diamond has high hardness and polishing speed, making it suitable for polishing and preparation of most materials. The commonly used particle size range of diamond polishing suspension in metallographic polishing is from 0.25 μm to 15 μm. Depending on the sample material, water–based, oil–based, and ethanol–based options are available.

MD–WT Monocrystalline Diamond Polishing Suspension

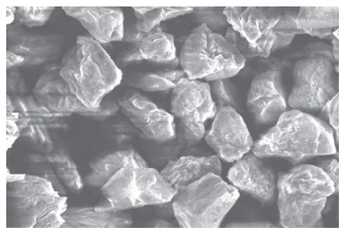
- Contains diamond micropowder and polishing additives.
- Diamond micropowder remains evenly suspended and does not settle over time.
- MD–WT is a monocrystalline diamond polishing suspension with fast polishing speed,reasonable price, and broad application.



Monocrystalline diamond micropowder, characterized by uniform particle size and fast polishing speed.

PD–WT Polycrystalline Diamond Polishing Suspension

- Water–based, suitable for polishing most materials.
- Compatible with manual application or automatic drip systems.
- Can be used with polishing lubricants for improved results.
- Non–toxic, environmentally friendly formula.
- PD–WT is a polycrystalline diamond polishing slurry, offering good surface finish with low consumption.



Polycrystalline diamond particles have multiple edges on their surfaces, which are prone to breakage, forming new edges. This results in a faster polishing rate, smaller scratches, and reduced polishing deformation.

Size	Monocrystalline(500ml)	Polycrystalline(500ml)
0.25μm	06.01.110–1	06.02.210
0.5μm	06.01.120–1	06.02.220
1μm	06.01.130–1	06.02.230
3μm	06.01.140–1	06.02.240
6μm	06.01.150–1	06.02.250
9μm	06.01.160–1	06.02.260

SP–D Monocrystalline Diamond Spray

- Easy to use, providing fast polishing results.
- Suitable for polishing steel and other ferrous metals.

Order NO:	Description	Package
06.03.115	0.5μm	350ml
06.03.320	1μm	350ml
06.03.325	2.5μm	350ml
06.03.330	3.5μm	350ml
06.03.335	5μm	350ml
06.03.340	10μm	350ml

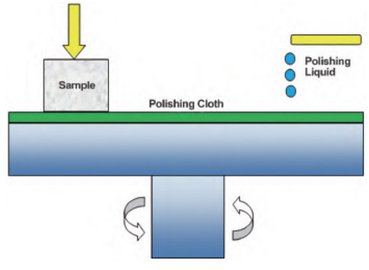
Monocrystalline/Polycrystalline Diamond Polishing Paste

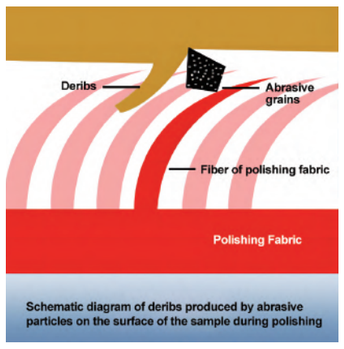
- Easy to use and store.
- High concentration and viscosity, use with lubricant.
- Non–toxic and environmentally friendly.

For soft metals such as tin, lead, aluminum, and indium, diamond microparticles can easily embed into the metal surface when using diamond polishing paste or slurry. Therefore, diamond abrasives are not recommended. It is advised to use alumina polishing suspension instead.

Size	Monocrystalline(5g)	Polycrystalline(10g)
1μm	06.10.030 (Gray)	06.10.110 (Black)
3μm	06.10.040 (Gray)	06.10.130 (Black)
6μm	06.10.050 (Gray)	06.10.160 (Black)
9μm	06.10.060 (Gray)	06.10.190 (Black)

Polishing removes fine scratches on the sample surface after grinding, resulting in a smooth, mirror–like finish. The mechanism of polishing is essentially the same as grinding. Common polishing methods include mechanical polishing, electro polishing, and chemical polishing, with mechanical polishing being the most commonly used. Abrasive particles adhere to the polishing cloth fibers, forming numerous sharp blades that remove the surface deformation layer of the metal as they rotate.





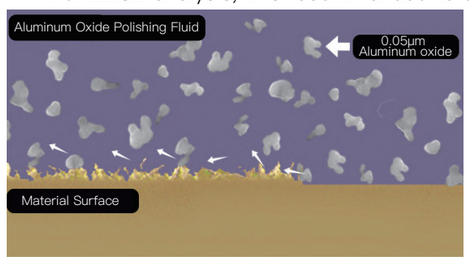
Schematic diagram of deribs produced by abrasive particles on the surface of the sample during polishing

Precision Polishing Suspension

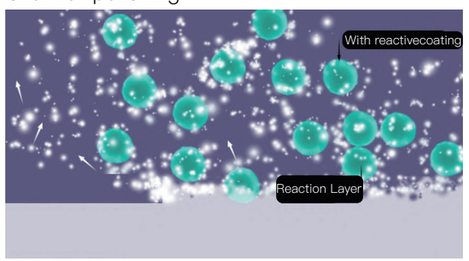
For routine metallographic analysis, polishing with 1μm diamond polishing suspension is generally sufficient. However, when using high–magnification microscopes, polarized light, differential interference, or EBSD analysis, a very thin surface deformation layer often remains, which can affect the accuracy of these experiments. Therefore, further polishing with precision polishing suspension is necessary to remove this deformation layer.

During precision polishing, the polishing cloth should first be thoroughly wetted with pure water, and then polishing suspension should be added,ensuring a sufficient amount of polishing liquid is continuously added throughout the process. During polishing, the speed of the polishing disc should be controlled to avoid excessive speed, and the polishing force should not be too high. After the polishing step, the polishing cloth can be rinsed with clean water and intermittently polished for 30–60 seconds.

For EBSD analysis, it is recommended to use a vibratory polisher for polishing.

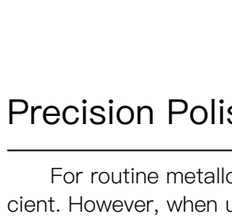


Alumina removes the surface deformation layer of he materialthrough pure mechanical polishing.



SiO_2 particles react chemically with the reaction layer on the sample surface, polishing through an abrasive corrosion process.

AO–W Alumina Polishing Suspension



- Water–based alumina suspension.
- Suitable for polishing soft metals such as copper, tin,or plastic materials like PCB, SMT, and semiconductors.
- Available in 0.05μm, 0.3μm, and 1μm grades.

Ordering Information

Order NO:	Description	Package
06.04.210	0.05μm	500ml
06.04.220	0.3μm	500ml
06.04.230	1μm	500ml

Super Alumina Polishing Suspension

- Non–agglomerated, gel alumina suspension.
- Ideal for polishing minerals, ferrous metals, carbides,precious metals, printed circuit board electronic components, and polymers, providing excellent results.
- Particle size: 0.05μm, pH value approximately 9.

Ordering Information

Order NO:	Description	Package
06.04.410	0.05μm	500ml
06.04.414	0.05μm	1.9L

Super Alumina Polishing Powder

- High–quality non–agglomerated alumina powder.
- Providing excellent surface finish.
- Suitable for PCBs, semiconductors, and most minerals and metals.
- Uniform particle sizes available in 0.05μm and 3μm.

Ordering Information

Order NO:	Description	Package
06.14.010	0.05μm	1LB
06.13.020	0.3μm	1LB

AO-P Alumina Polishing Powder

- Agglomerated Alumina Polishing Powder.
- Offers a high removal rate.
- Suitable for pure lead, pure magnesium, as well as lead alloys and magnesium alloys.
- Uniform particle sizes, available in 0.05μm, 0.3μm, and 1μm.

Ordering Information

Order NO:	Description	Package
06.13.011	0.05μm	500g
06.13.021	0.3μm	500g
06.13.031	1μm	500g

SO-T401Non-Crystallizing Colloidal Silica Suspension

- Non-crystallizing formulation.
- Fine 0.05μm Amorphous Colloidal Silica Polishing Suspension PH ~10.5.
- Gently removes material without deformation through chemical mechanical polishing.
- Used for final polishing of materials such as iron, steel, and titanium.

Ordering Information

Order NO:	Description	Package
06.05.310	50nm	500ml
06.05.320	50nm	1000ml
06.05.350	50nm	1.9L

SO-A439 Non-Crystallizing Colloidal Silica Suspension

- Non-crystallizing formulation.
- Fine 0.05μm Silica Suspension, PH ~10.2.
- Provides excellent surface finish through chemical mechanical polishing.
- Used for final polishing of materials such as tin,aluminum,semiconductor,PCB and others.

Ordering Information

Order NO:	Description	Package
06.07.310	50nm	500ml
06.07.320	50nm	1000ml
06.07.322	50nm	1.9L

SO-A539 Colloidal Silica Polishing Suspension

- Fine 0.05μm Silica Suspension, PH ~10.2.
- Provides excellent surface finish through chemical mechanical polishing.
- Used for final polishing of materials such as refractory metals, minerals and ceramics.

Ordering Information

Order NO:	Description	Package
06.07.522	50nm	500ml
06.07.520	50nm	1000ml
06.07.524	50nm	1.9L

PL-W Polishing Lubricant

- Water-soluble, designed for coarse, fine, and ultra-fine polishing of non-water-sensitive materials when paired with polishing liquids.Reduces friction during polishing, prolonging the lifespan of polishing cloths.
- Optimized for use with diamond polishing suspension, diamond sprays, and diamond pastes. Helps prevent thermal damage during polishing, ensuring removal rate and improving the performance and lifespan of polishing cloths.

Ordering Information

Order NO:	Description	Package
06.09.510	Liquid	500ml
06.09.520	Liquid	1000ml

PL-WB Water-free Blue Low-viscosity Polishing Lubricant

- Alcohol-soluble formula, suitable for water-sensitive materials in coarse, fine, and ultra-fine polishing processes. Reduces polishing cloth abrasion, extends service life of polishing cloths, and ensures thorough cleaning ease.
- Optimized for use with diamond polishing suspension, diamond sprays, and diamond polishing pastes. It prevents thermal damage during while ensures high material removal rates, enhances the performance and longevity of the polishing cloth.

Ordering Information

Order NO:	Description	Package
06.09.630	Liquid	5000ml
06.09.640	Liquid	500ml
06.09.650	Liquid	1000ml

Application Table

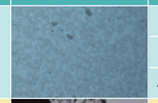
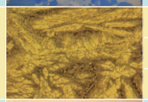
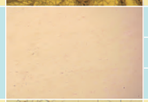
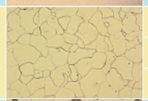
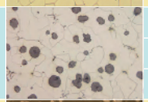
Model	Coarse Polishing		Intermediate Polishing				Final Polishing			
	NL-CP	GF-JP	SC-JP	YS-JP	CS-JP	SR-JP	ET-JP	YR-JP	Final-Red	ZN-ZP
Recommended Grit	6~15μm	3~9μm	1~6μm	1~6μm	1~6μm	0.3~3μm	0.05~1μm	0.05~1μm	0.05~1μm	0.05~0.3μm
Alumina Polishing Suspension	–	–	–	★	★	★★	★★	★★	★★	★★
Silica Polishing Suspension	–	–	–	–	–	–	★	★	★★	★★
Diamond Polishing Suspension	★★	★★	★★	★★	★★	★★	★	★	–	–
Ceramics	★★	★	★★	–	★	★	★	★	–	★★
Hard Metals	★★	★★	★★	★	★★	★★	★	–	–	★★
Steel	★★	★★	★★	★★	★★	★★	★	★	★	★★
Composite Materials	–	★	★★	★	★	★	★★	★★	★★	★★
Minerals	★★	★	★	★	★★	★	★	★	–	★
Coating	–	★★	★	★	★★	★★	★★	★★	–	★★
Gray Cast Iron	★★	★★	★★	★★	★★	★★	★	★	–	★★
Copper Alloys	–	★	★	★★	★★	★★	★★	★★	★★	★★
Aluminum Alloys	–	★	★	★★	★★	★★	★★	★★	★★	★★
Soft Metals	–	★	★	★★	★★	★★	★★	★★	★★	★★
Non-ferrous Materials	–	★	★★	★★	★	★	★	★	–	★★
Electronic Materials	–	★★	★	–	★	★★	★★	★★	★★	★★
Plastics	–	–	★	–	★	★★	★★	★★	★	★★

★★ Excellent ★ Good

Recommended Method

Due to varying demands and applications, the polishing methods for each material differ. The following table presents the polishing methods recommended by TROJAN based on years of experience, which can yield excellent polishing results. For more detailed information and polishing techniques, please contact our company by phone or email us at sales@trojanchina.com, or visit our website at www.trojanworld.com.

Material Application

Material	Picture	Consumables	Coarse Grinding	Final Polishin	Polishing Step1	Polishing Step2	Polishing Step3
Ceramics		Grinding	DiaRe grinding disc P400	**POH disc	GF–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmSO–T401	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Metal Thermal Spray Coatings		Grinding	DiaRe grinding disc P400	*POS disc	SC–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Hard Metal		Grinding	DiaRe grinding disc P400	*POH disc	CS–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Printed Circuit Board		Grinding	SiC Paper P400	SiC Paper P1200、P2500	SC–JP polishing cloth	SC–JP polishing cloth	ZN–ZP polishing cloth
		Grit	/	/	3μm PD–WT	1μm PD–WT	Super2
		Abrasive/Cooling	Water	/	Diamond Suspension	Diamond Suspension	Alumina Suspension
Microelectronics Silicon		Grinding	SiC Paper P400	SiC Paper P1200、P2500	SC–JP polishing cloth	SC–JP polishing cloth	ZN–ZP polishing cloth
		Grit	/	/	3μm PD–WT	1μm PD–WT	Super2
		Abrasive/Cooling	Water	/	Diamond Suspension	Diamond Suspension	Alumina Suspension
Microelectronic Materials		Grinding	SiC Paper P400	SiC Paper P1200、P2500	SC–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	/	3μm PD–WT	Super2	/
		Abrasive/Cooling	Water	/	Diamond Suspension	Alumina Suspension	/
Aluminum Alloy		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Nickel–based Superalloy		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Titanium Alloy		Grinding	SiC Paper P400	*POS disc	YS–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Copper and its Alloys		Grinding	SiC Paper P400	*POS disc	YS–JP polishing cloth	ET–JP polishing cloth	ZN–ZP polishing cloth
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–W	0.05μmAO–439
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Alumina Suspension	Silica Suspension
Hard Steel		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ZN–ZP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Soft Steel		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ET–JP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Cast Iron		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ET–JP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/
Polymer Matrix Composites		Grinding	SiC Paper P400	*POS disc	SC–JP polishing cloth	ET–JP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–W	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Alumina Suspension	/
Rock		Grinding	DiaRe grinding disc P400	**POS disc	GF–JP polishing cloth	ET–JP polishing cloth	/
		Grit	/	9μm PD–WT	3μm PD–WT	0.05μmAO–439	/
		Abrasive/Cooling	Water	Diamond Suspension	Diamond Suspension	Silica Suspension	/

*Can be replaced with P800, P1200, 2000, or 2500 silicon carbide sandpaper.

**Can be replaced with DiaRe P800 or P1500 diamond grinding discs.

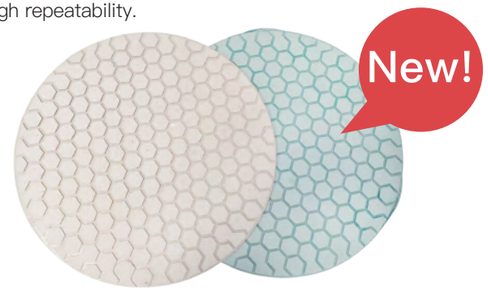
New Products

High–Quality and High–Efficiency Alternative for Metallographic Precision Grinding

POS and POH fine grinding discs offer an efficient alternative for metallographic precision grinding. With just one step, they replace multiple grinding stages, such as P320 to P2000 abrasive papers. After initial grinding with diamond grinding discs or coarse abrasive paper, the POS/POH fine grinding discs, combined with 3μm to 15μm diamond polishing suspension, achieve a perfect surface finish in a single polishing step, skipping several intermediate processes.
Compared to traditional abrasive papers, POS and POH fine grinding discs offer higher and more stable material removal rates, longer lifespan, and require less frequent replacement. This significantly reduces sample preparation time, making them the ideal choice for high–volume production and samples with high repeatability.

POH：Suitable for materials with a hardness greater than 150HV.

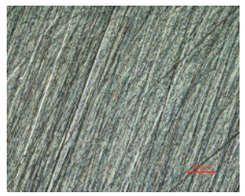
POS：Suitable for materials with a hardness range of 40–1500HV.



- Higher grinding efficiency, avoiding time wasted on frequently changing sandpaper;
- Lower elasticity, resulting in higher flatness;
- High–quality and highly reliable experimental reproducibility;
- Reduce grinding steps and save grinding time.

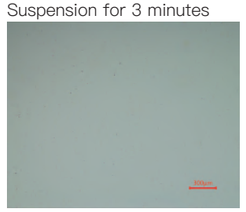
HRC60 Alloy Structural Steel

P320 abrasive paper for 1min



POS disc with 9μm Diamond Polishing Suspension for 3 minutes

SC–JP Polishing Cloth with PD–WT 3μm Polycrystalline Diamond Polishing Suspension for 3 minutes

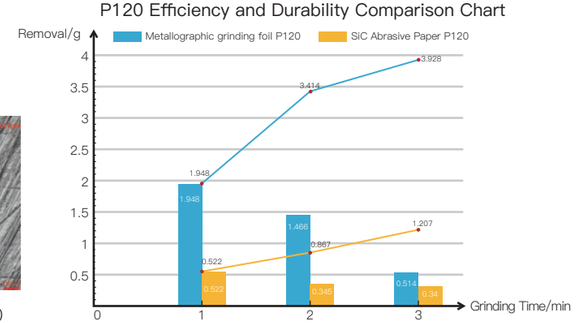


MET–F Metallographic Grinding Film

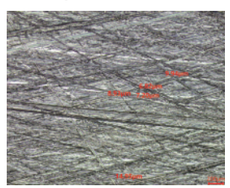
The MET–F metallographic grinding film features a specially blended abrasive for superior grinding performance. Compared to conventional silicon abrasive papers, it excels in grinding precision, durability, and operational stability, surpassing industry standards and providing an exceptional user experience.

- Exceptional grinding speed, significantly enhances work efficiency;
- Significantly extended lifetime — over three times longer than conventional SiC papers.
- PET–based backing, combining high strength with low elasticity.
- Excellent flatness and resistance to cracking during grinding.

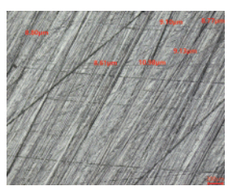
P120 Efficiency and Durability Comparison Chart



Comparison:



Metallographic grinding film P120



SiC Abrasive Paper P120