metkon
Technology behind Specimen

CONSUMABLES

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QUARTER CENTURY OF
EXPERIENCE


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Contents

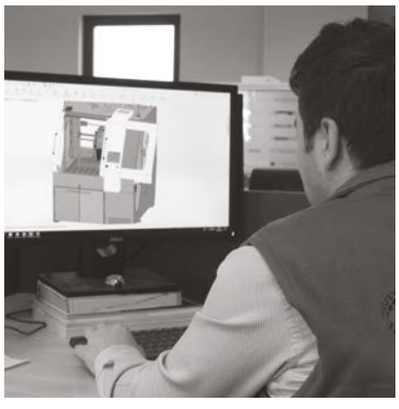
About Metkon

Consumables

PRODUCTION

Founded in 1993 as a 3-man-enterprise, METKON today employs over 120 people. Customers around the world have trusted METKON to deliver technologically advanced solutions. Our state-of-the-art Engineering and Product Development center includes teams of engineers working together to create and test ideas that will be incorporated into instruments designed to meet customer needs.

At our in-house manufacturing facility, quality drives production. From sheet metal parts to complex mechanical assemblies, METKON produces most of the components needed in our products, allowing strict control over the entire manufacturing process in accordance with the quality standards of ISO-9001. As a final check before shipping, instruments are thoroughly tested to assure quality and functionality.



QUALITY POLICY

Being an ISO 9001-2000 certified firm, our Quality Policy is that all products and services meet the requirements of our customers.

Our objective is to justify your trust in our firm by providing quality products and services that are comprehensive and available to you when and wherever you need it.

METKON's Quality Policy is based on three fundemantal principles:

- Quality is defined as conformance to requirements.
- Total Quality Management is our business philosophy.
- The benchmark for quality comprises our performance goals which are continuously measured.

CONSUMABLES FOR CUTTING

Sample preparation starts with cutting and good cutting means a good start

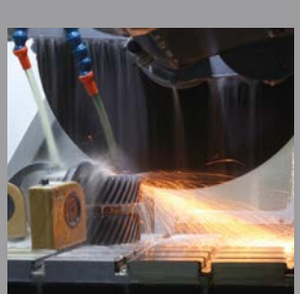
Selecting the right cut-off wheel ensures freedom from burn and distortion and is the best way to save time and consumables. Correct cutting produce specimens which are in perfect condition for the next preparation steps.

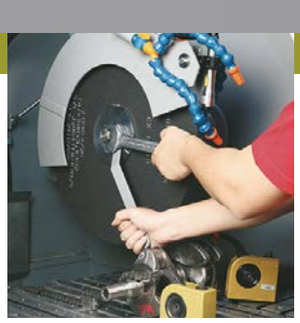
ABRASIVE CUT-OFF WHEELS

The most commonly used abrasives for the cutting of different materials are SiC and Al_2O_3

Silicon carbide is suitable for non-ferrous metals whereas aluminum oxide is preferred for ferrous metals. Hard wheels are used for cutting soft materials while soft wheels are recomended for cutting harder materials.

Metkon TRENO type wheels are used to obtain superior cut surfaces. Metkon CUTO series wheels are suitable for routine laboratory applications requiring a balance between wheel life and performance.





TRENO+ Plus

Series Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Abrasive Type	Recommended for Cutting	Quantities Per Pack
19-019/S	TRENO-Ti	250	32	1.6	SiC	Titanium and Very Ductile Materials	10
19-020/S	TRENO-NF	250	32	1.6	SiC	Non-ferrous materials	10
19-021/S	TRENO-H	250	32	1.6	Al_2O_3	Soft Steels and ferrous materials <23 HRC	10
19-022/S	TRENO-M	250	32	1.6	Al_2O_3	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-023/S	TRENO-S	250	32	1.6	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	10
19-024/S	TRENO-SS	250	32	1.6	Al_2O_3	Very Hard Steels and ferrous materials >55-70 HRC	10
19-040/S	TRENO-NF	300	32	2	SiC	Non-ferrous materials	10
19-041/S	TRENO-H	300	32	2	Al_2O_3	Soft Steels and ferrous materials <23 HRC	10
19-042/S	TRENO-M	300	32	2	Al_2O_3	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-043/S	TRENO-S	300	32	2	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	10
19-044/S	TRENO-SS	300	32	2	Al_2O_3	Very Hard Steels and ferrous materials >55-70 HRC	10
19-060/S	TRENO-NF	350	32	2.5	SiC	Non-ferrous materials	10
19-062/S	TRENO-M	350	32	2.5	Al_2O_3	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-063/S	TRENO-S	350	32	2.5	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	10
19-064/S	TRENO-SS	350	32	2.5	Al_2O_3	Very Hard Steels and ferrous materials >55-70 HRC	10
19-070/S	TRENO-NF	400	32	3	SiC	Non-ferrous materials	10
19-072/S	TRENO-M	400	32	3	Al_2O_3	Medium Hard Steels and ferrous materials >20-35HRC<	10
19-073/S	TRENO-S	400	32	3	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	10
19-074/S	TRENO-SS	400	32	3	Al_2O_3	Very Hard Steels and ferrous materials >55-70 HRC	10
19-090/S	TRENO-NF	500	32	3.6	SiC	Non-ferrous materials	10
19-092/S	TRENO-M	500	32	3.6	Al_2O_3	Medium Hard Steels and ferrous materials >20-35 HRC<	10
19-093/S	TRENO-S	500	32	3.6	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	10
19-097/S	TRENO-M	600	32	5	Al_2O_3	Medium Hard Steels and ferrous materials > 20-35 HRC <	5
19-098/S	TRENO-S	600	32	5	Al_2O_3	Hard Steels and ferrous materials >35-55 HRC	5

TRENO-DUR

Extremely Long Life Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-026	TRENO-DUR	250	32	1.5	Extremely Low Consumption Rate with Optimum Surface Quality for High Volume Cutting Operations, Cut-Check Applications, etc...	10

TRENO-F

Fiber Reinforced Long Life & Durable Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-027	TRENO-F	250	32	2.0	Medium & Hard Steels, Fiber Reinforced	10
19-028	TRENO-F	300	32	2.2	Medium & Hard Steels, Fiber Reinforced	10

TRENO-T

Ultra Thin Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-031	TRENO-HT	250	32	1.0	Soft Steel and ferrous materials >20-35 HRC<	10
19-032	TRENO-MT	250	32	1.0	Medium Hard Steels and ferrous materials >38-58HRC<	10

CUTO

Series Abrasive Cut-off Wheels for use with METACUT & SERVOCUT

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
19-022/A	CUTO-M	250	32	1.5	Medium Hard Steels and ferrous materials >23-50 HRC<	10
19-023/A	CUTO-S	250	32	1.5	Hard Steels and ferrous materials>50-60 HRC	10
19-042/A	CUTO-M	300	32	2	Medium Hard Steels and ferrous materials >23-50 HRC<	10
19-043/A	CUTO-S	300	32	2	Hard Steels and ferrous materials>50-60 HRC	10

TRENO-P

Abrasive Cutting Discs for use with MICRACUT Precision Cutters

Order No	Code	Diameter mm.	Arbor mm.	Thickness mm.	Recommended for Cutting	Quantities Per Pack
18-150/S	TRENO-HP	150	12.7	0.8	Non-ferrous materials & stainless steels	10
18-151/S	TRENO-MP	150	12.7	0.8	Medium Hard & hardened Steels & ferrous materials>35-55 HRC<	10
18-200/S	TRENO-HP	200	12.7	1	Non-ferrous materials & stainless steels	10
18-201/S	TRENO-MP	200	12.7	1	Medium Hard & hardened Steels & ferrous materials>35-55 HRC<	10

*All cut-off wheels are resin bonded.

DIAMOND CUT-OFF WHEELS

Metal bonded wheels are used for cutting brittle materials, such as ceramics or minerals, while resin bonded wheels are used for more ductile materials, such as sintered carbides or composites containing predominantly hard phases.

Several factors are important for choosing the appropriate wafering blade.These include: diamond concentration (low and high), diamond bond (metal plate), diamond size (fine or medium), blade diameter and blade thickness. The diamond concentration is important because it directly affects the load which is applied during cutting. For example, brittle materials such as ceramics require higher effective loads to section, whereas ductile materials such as metals require more cutting points.The result is that low concentration blades are recommended for sectioning hard brittle materials such as ceramics and high concentration blades are recommended for ductile materials containing a large fraction of metal or plastic.

DIMOS

Diamond Cutting Discs for use with SERVOCUT & METACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer's Dep. (X)mm.	Diamond Size/ Concentration	Grain Size: (Mesh)	Recommended for Cutting
19-250	254	Metal bonded	32	1.52	10	Coarse/High	60/80	For general usage
19-251	254	Resin bonded	32	1.52	6.35	Medium/High	100	For hard, delicate or brittle materials
19-300	305	Metal bonded	32	2.08	10	Coarse/High	60/80	For general usage
19-301	305	Resin bonded	32	1.65	6.35	Medium/High	100	For hard, delicate or brittle materials
19-400	406	Metal bonded	32	2.00	10	Coarse/High	60/80	For general usage
19-401	406	Resin bonded	32	2.41	6.35	Medium/High	100	For hard, delicate or brittle materials

DIMOS

Diamond Cutting Wheels for use with MICRACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer'sDep. (X)mm.	Diamond Size/ Concentration	Grain Size: (Mesh)	Recommended for Cutting
19-100	101.1	Metal bonded	12.7	0.35	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-125	127	Metal bonded	12.7	0.4	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-130	127	Metal bonded	12.7	0.4	4	Fine/Low	220	• For use with hard brittle materials structural ceramics, boron carbide, boron nitride and silicon carbide.
19-126	127	Resin bonded	12.7	0.5	5	Medium/High	150	• Hard, delicate materials or brittle materials(cannot be used at low speeds. High speed only 950 RPM's or higher.)
19-150	152	Metal bonded	12.7	0.5	4	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-157	152	Metal bonded	12.7	0.5	4	Fine/Low	220	• For use with hard brittle materials structural ceramics, carbide, boron nitride and silicon carbide.
19-151	152	Resin bonded	12.7	0.5	5	Medium/High	150	• For hard, delicate materials or brittle materials (cannot be used at low speeds. High speed only 950 RPM's or higher.)
19-200	203	Metal bonded	12.7	0.81	5	Medium/High	150	• For general use with ferrous and non-ferrous alloys; copper, aluminium, metal matrix composites, PCB boards, thermal spray coatings and titanium alloy.
19-205	203	Metal bonded	12.7	0.81	5	Fine/High	220	• For use with hard brittle materials structural ceramics, carbide, boron nitride and silicon carbide
19-201	203	Resin bonded	12.7	0.88	5	Medium/High	150	• For hard, delicate materials or brittle materials (cannot be used at low speeds. High speed only 950 RPM's or higher.)

CBN

CBN Cutting Discs for use with MICRACUT

Order No	Diameter mm.	Bond	Arbor mm.	Thickness mm.	Diamond Layer's Dep. (X)mm.	Diamond Size/ Concentration	Grain Size: (Mesh)	Recommended for Cutting
19-127	125	Metal bonded	12.7	0.4	5	Medium/high	150	Hard metals, iron, steel, lead and titanium, ferrous materials
19-152	150	Metal bonded	12.7	0.5	5	Medium/high	150	Hard metals, iron, steel, lead and titanium, ferrous materials
19-202	200	Metal bonded	12.7	0.9	5	Medium/high	120	Hard metals, iron, steel, lead and titanium, ferrous materials

COOLING FLUIDS

Order No	Code	Description	Type	Quantity	For use with
19-902	METCOOL	Nature Friendly Soluble Oil	Water-based	5 lt.	METACUT & SERVOCUT
19-905	METCOOL II	Nature Friendly Soluble Oil	Water-based	1 lt.	MICRACUT 152/202
19-906	METCOOL NF	Nature Friendly Soluble Oil Perfect corrosion protection for reactive metals like copper, brass, cobalt, aluminum, tungsten carbide, etc...	Water-based	5 lt.	METACUT & SERVOCUT

*Recommended mix ratio is 3% Metcool to 97% water.

CONSUMABLES FOR MOUNTING

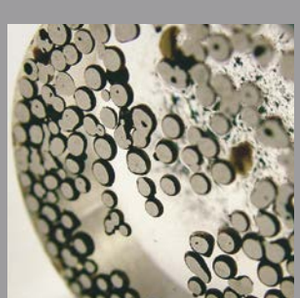
After cutting the specimen the next step is mounting. The aim of mounting is to handle small or odd shaped specimens and to protect fragile materials, thin layers or coating during preparation as well as to provide good edge retention.

Mounting produces speciemens with uniform size so that it is easier to handle in automatic holders for further preparation steps.

HOT MOUNTING

The most important properties of a hot mounting compound are; Hardness, Shrinkage and Viscosity.

The Hardness of the compound should match the hardness of the specimen in order to avoid uneven abrasion during grinding.
If the shrinkage during curing is large, a gap between the specimen and the mount will occur and edge will not be adequately protected.
Viscosity is important to reach to all areas.



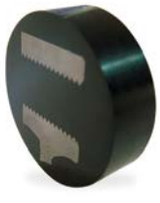
HOT MOUNTING RESINS

Order No	Code	Hot Mounting Resins	Quantity	Color	Comments
29-001	BAK-B	Black Phenolic Powder	1 kg		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-001/10	BAK-B	Black Phenolic Powder	10 kgs		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-001/20	BAK-B	Black Phenolic Powder	20 kgs		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-002	BAK-R	Red Phenolic Powder	1 kg		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-002/10	BAK-R	Red Phenolic Powder	10 kgs		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-002/20	BAK-R	Red Phenolic Powder	20 kgs		Standart examination of all materals Low shrinkage Heating: upto 180 C
29-010	NET	Transparent Acrylic Powder	1 kg		Standart examination of all materals. Perfectly transparent
29-010/10	NET	Transparent Acrylic Powder	10 kgs		Standart examination of all materals. Perfectly transparent
29-011	EPO	Epoxy, Hard	1 kg		Examination of edges surface. Hard with very low shrinkage
29-011/10	EPO	Epoxy, Hard	10 kgs		Examination of edges surface. Hard with very low shrinkage
29-012	DAP	Diallyphtalat	1 kg		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-012/10	DAP	Diallyphtalat	10 kgs		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-014	DAP ECO	Diallyphtalat	1 kg		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-014/10	DAP ECO	Diallyphtalat	10 kgs		Examination of edges surface. (Coating, deposits, thermal, treatment)
29-013	CON	Conductive Bakelite powder	0.5 kg		SEM examination of all materials
29-099	SMOOTH	Mould Release Spray Can	400 ml		-

29-001 BAK-B

29-002 BAK-R

29-010 NET



29-011 EPO

29-012 DAP

29-013 CON

COLD MOUNTING

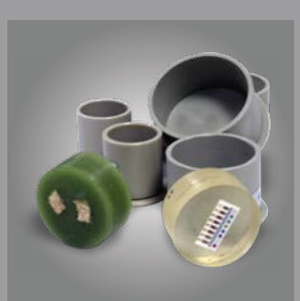
Cold mounting is preferred for samples which are sensitive to damage from heat and pressure (like coatings, PCB, etc.) Cold mounting resins are easy to use.

DMT Acrylic cold mounting resins

- Very fast cure time
- It requires mixing in the ratio 2:1, powder to liquid.The mix is then poured into a mould and allowed to set.

EPOCOLD Epoxy cold mounting resins

- Better results in good edge protection.
- Low shrinkage and moderate hardness.



COLD MOUNTING

Mounting Materials	Curing Time	Compounds	Mixing Ratio Volume	Mixing Time	Peak Temperature	Color
EPOCOLD	8 Hour	Two Liquids	Resin: 5 Part; Hardener: 1 Part	3 Min.	40-60°C	Clear, Transparent
DMT 20	10 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	4-5 Min.	80-87°C	Semi Transparent
DMT 35	5 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	2-3 Min.	75-80°C	Light Green, Black
DMT CON	18 Min.	Powder/Liquid	Resin: 1 Part; Hardener: 1 Part	5 Min.	100-106°C	Black
DMT ACE	6 Min.	Powder/Liquid	Resin: 2 Part; Hardener: 1 Part	6 Min.	82-88°C	Green, Transparent

DMT

Acrylic Cold Mounting Resins

Order No	Code	Cold Mounting Resins	Type	Quantity
29-501	DMT 35	Powder	Acrylic	1000 gr
29-502	DMT 35	Fluid	Acrylic	500 ml
29-511	DMT 20	Powder (Transparent)	Acrylic	1000 gr
29-512	DMT 20	Fluid (Transparent)	Acrylic	500 ml
29-513	DMT CON	Powder	Acrylic	500 gr
29-514	DMT CON	Fluid	Acrylic	500 ml
29-515	DMT ACE	Powder	Acrylic	1000 gr
29-516	DMT ACE	Fluid	Acrylic	500 ml

EPOCOLD

Epoxy Cold Mounting Resins

Order No	Code	Cold Mounting Resins
29-506	EPOCOLD -H	Epoxy Hardener (200 gr)
29-505	EPOCOLD -R	Epoxy Resin (2x500 gr)

ACCESSORIES

Order No	Descriptions Fluid
29-551	Spatulas, (100 pcs)
29-552	Mixing Beakers, (10 pcs)
29-553-01	Embedding Form, ø 25 mm (5 pcs)
29-554-01	Embedding Form, ø 30 mm (5 pcs)
29-555-01	Embedding Form, ø 40 mm (5 pcs)
29-556-01	Embedding Form, ø 50 mm (5 pcs)
29-601	Stainless steel clips (100 pcs)
29-602	Plastic clips (100 pcs)
29-603	Plastic multi-clips for 5 specimens (50 pcs)

EPOCOLD

DMT 20

DMT 35

DMT ACE

DMT CON

CONSUMABLES FOR GRINDING & POLISHING

In order to obtain scratch free surfaces without deformation, successive material removal by abrasives is necessary. Grinding is the next stage after sectioning. Grinding is divided into two processes: Planar grinding and Fine grinding. The purpose of planar grinding is to obtain a level surface and to remove scale, burrs or surface irregulation from the specimen.

To remove deformation from fine grinding and obtain a surface that is highly reflective, the specimens must be polished before they can be examined under the microscope. Polishing is a complex activity in which factors such as quality and suitability for the cloth, abrasive, polishing pressure, polishing speed and duration need to be taken into account. The quality of the surface obtained after the final polishing depends on all these factors and the finish of the surface on completion of each of the previous stages.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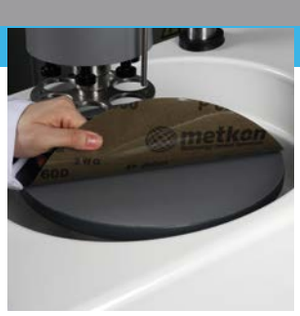
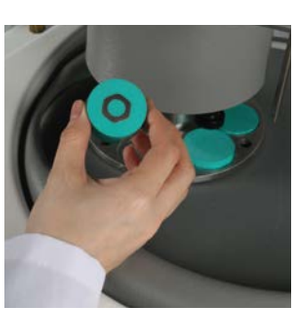
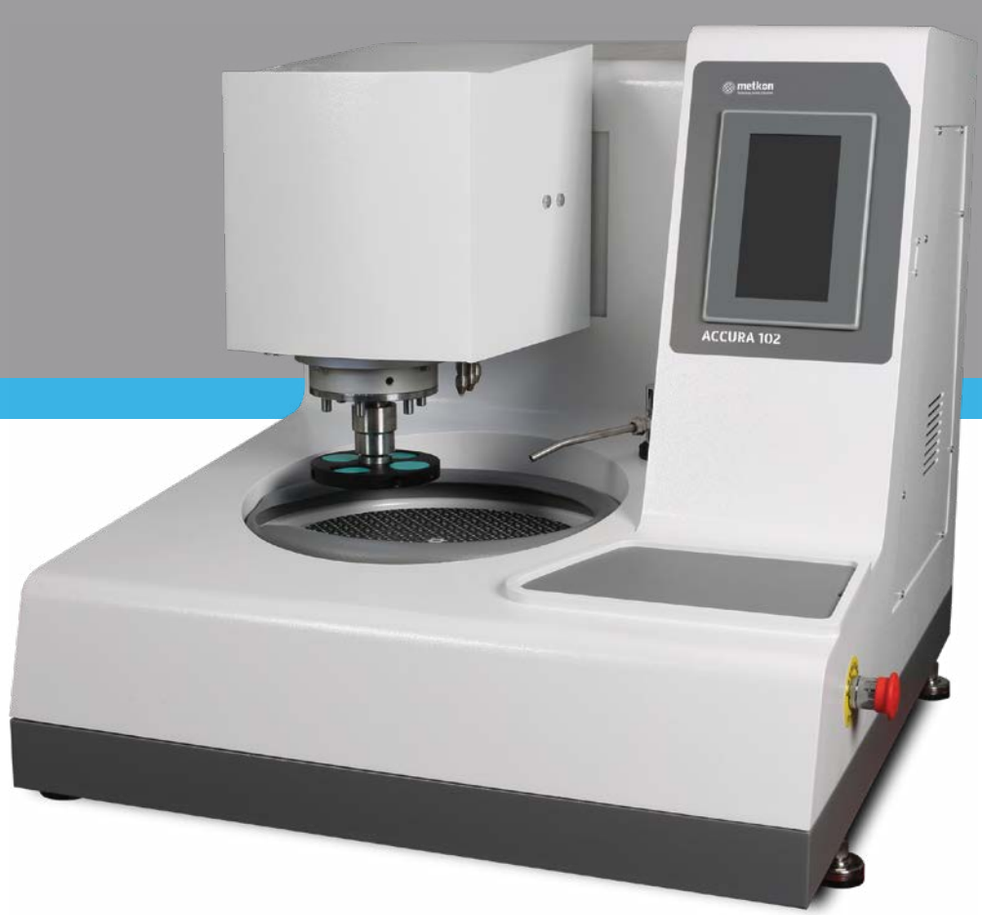
PAPER GRINDING DISCS

PLAIN BACK

Coarse paper discs (up to 120 grit) are used for planar grinding. Fine grinding removes the deformations resulting from coarse grinding to make the surface ready for polishing which is the final stage. Metkon paper grinding discs are available as "Plain back" and "Foil Back" for CATCHY System.







SiC PAPER GRINDING DISCS

Plain Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
38-020-60	DEMPAX	Plain Back	200	60	2x50
38-020-120	DEMPAX	Plain Back	200	120	100
38-020-180	DEMPAX	Plain Back	200	180	100
38-020-240	DEMPAX	Plain Back	200	240	100
38-020-320	DEMPAX	Plain Back	200	320	100
38-020-400	DEMPAX	Plain Back	200	400	100
38-020-600	DEMPAX	Plain Back	200	600	100
38-020-800	DEMPAX	Plain Back	200	800	100
38-020-1000	DEMPAX	Plain Back	200	1000	100
38-020-1200	DEMPAX	Plain Back	200	1200	100
38-020-2500	DEMPAX	Plain Back	200	2500	100
38-020-4000	DEMPAX	Plain Back	200	4000	100
38-020-S	DEMPAX	Plain Back	200	Mix(120-2500)	100
38-040-60	DEMPAX	Plain Back	250	60	2x50
38-040-120	DEMPAX	Plain Back	250	120	100
38-040-180	DEMPAX	Plain Back	250	180	100
38-040-240	DEMPAX	Plain Back	250	240	100
38-040-320	DEMPAX	Plain Back	250	320	100
38-040-400	DEMPAX	Plain Back	250	400	100
38-040-600	DEMPAX	Plain Back	250	600	100
38-040-800	DEMPAX	Plain Back	250	800	100
38-040-1000	DEMPAX	Plain Back	250	1000	100
38-040-1200	DEMPAX	Plain Back	250	1200	100
38-040-2500	DEMPAX	Plain Back	250	2500	100
38-040-4000	DEMPAX	Plain Back	250	4000	100
38-040-S	DEMPAX	Plain Back	250	Mix(120-2500)	100
38-050-060	DEMPAX	Plain Back	300	60	2x50
38-050-120	DEMPAX	Plain Back	300	120	100
38-050-180	DEMPAX	Plain Back	300	180	100
38-050-240	DEMPAX	Plain Back	300	240	100
38-050-320	DEMPAX	Plain Back	300	320	100
38-050-400	DEMPAX	Plain Back	300	400	100
38-050-600	DEMPAX	Plain Back	300	600	100
38-050-800	DEMPAX	Plain Back	300	800	100
38-050-1000	DEMPAX	Plain Back	300	1000	100
38-050-1200	DEMPAX	Plain Back	300	1200	100
38-050-2500	DEMPAX	Plain Back	300	2500	100
38-050-4000	DEMPAX	Plain Back	300	4000	100
38-050-S	DEMPAX	Plain Back	300	Mix(120-2500)	100
48-040-120	DEMPAX ECO	Plain Back	250	120	100
48-040-180	DEMPAX ECO	Plain Back	250	180	100
48-040-240	DEMPAX ECO	Plain Back	250	240	100
48-040-320	DEMPAX ECO	Plain Back	250	320	100
48-040-600	DEMPAX ECO	Plain Back	250	600	100
48-040-1000	DEMPAX ECO	Plain Back	250	1000	100
48-040-1200	DEMPAX ECO	Plain Back	250	1200	100

METKON CATCHY SYSTEM

CATCHY system has a high friction foil which makes the new SiC Foil back grinding papers stick very well and at the same time very easy to remove again.

Traditional PSA back and self adhesive grinding papers are difficult to apply, difficult to remove. The Foil back papers are removed easily, without leaving any trace of adhesive.

Water does not affect the shape of the foil at all. So it does not curl as traditional SiC Paper and stays flat and ready for immediate or later re-use

SiC PAPER GRINDING DISCS

Foil Back, CATCHY SYSTEM

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
38-020-60F	DEMPAX-F	Foil Back	200	60	2x50
38-020-120F	DEMPAX-F	Foil Back	200	120	100
38-020-180F	DEMPAX-F	Foil Back	200	180	100
38-020-240F	DEMPAX-F	Foil Back	200	240	100
38-020-320F	DEMPAX-F	Foil Back	200	320	100
38-020-400F	DEMPAX-F	Foil Back	200	400	100
38-020-600F	DEMPAX-F	Foil Back	200	600	100
38-020-800F	DEMPAX-F	Foil Back	200	800	100
38-020-1000F	DEMPAX-F	Foil Back	200	1000	100
38-020-1200F	DEMPAX-F	Foil Back	200	1200	100
38-020-2500F	DEMPAX-F	Foil Back	200	2500	100
38-020-4000F	DEMPAX-F	Foil Back	200	4000	100
38-020-SF	DEMPAX-F	Foil Back	200	Mix(120-2500)	100
38-040-60F	DEMPAX-F	Foil Back	250	60	2x50
38-040-120F	DEMPAX-F	Foil Back	250	120	100
38-040-180F	DEMPAX-F	Foil Back	250	180	100
38-040-240F	DEMPAX-F	Foil Back	250	240	100
38-040-320F	DEMPAX-F	Foil Back	250	320	100
38-040-400F	DEMPAX-F	Foil Back	250	400	100
38-040-600F	DEMPAX-F	Foil Back	250	600	100
38-040-800F	DEMPAX-F	Foil Back	250	800	100
38-040-1000F	DEMPAX-F	Foil Back	250	1000	100
38-040-1200F	DEMPAX-F	Foil Back	250	1200	100
38-040-2500F	DEMPAX-F	Foil Back	250	2500	100
38-040-4000F	DEMPAX-F	Foil Back	250	4000	100
38-040-SF	DEMPAX-F	Foil Back	250	Mix(120-2500)	100
38-050-060F	DEMPAX-F	Foil Back	300	60	2x50
38-050-120F	DEMPAX-F	Foil Back	300	120	100
38-050-180F	DEMPAX-F	Foil Back	300	180	100
38-050-240F	DEMPAX-F	Foil Back	300	240	100
38-050-320F	DEMPAX-F	Foil Back	300	320	100
38-050-400F	DEMPAX-F	Foil Back	300	400	100
38-050-600F	DEMPAX-F	Foil Back	300	600	100
38-050-800F	DEMPAX-F	Foil Back	300	800	100
38-050-1000F	DEMPAX-F	Foil Back	300	1000	100
38-050-1200F	DEMPAX-F	Foil Back	300	1200	100
38-050-2500F	DEMPAX-F	Foil Back	300	2500	100
38-050-4000F	DEMPAX-F	Foil Back	300	4000	100
38-050-SF	DEMPAX-F	Foil Bac	300	Mix(120-2500)	100

CATCHY FIX PLATE

Order No	Code	Description
CFP	39-083-200	Ø 200 mm, Catchy Fix Plate (1 pc)
CFP	39-083-250	Ø 250 mm, Catchy Fix Plate (1 pc)
CFP	39-083-300	Ø 300 mm, Catchy Fix Plate (1 pc)

Planar Grinding Stones for FORCIPLAN 352/VELOX 102 (1 Pc)

Order No	Code	Description	Equipment
PGS-NF	80-350	Ø350 mm, Planar Grinding Stone, 120 grit, for non-ferrous materials	FORCIPLAN 352
PGS-M	80-351	Ø350 mm, Planar Grinding Stone, 120 grit, for medium hard steels & cast irons	FORCIPLAN 352
PGS-H	80-352	Ø350 mm, Planar Grinding Stone, 120 grit, for hard steels & cast irons	FORCIPLAN 352
PGS-NF	80-300	Ø300 mm, Planar Grinding Stone, 120 grit, for non-ferrous materials	VELOX 102
PGS-M	80-301	Ø300 mm, Planar Grinding Stone, 120 grit, for medium hard steels & cast irons	VELOX 102
PGS-H	80-302	Ø300 mm, Planar Grinding Stone, 120 grit, for hard steels & cast irons	VELOX 102

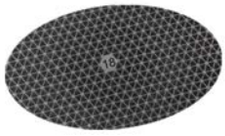
METKON MAGNETIC SYSTEM

Magnetic Preparation with METKON Magnetic System is simply and advanced way to grind and polish specimens. It reduces your operating costs and increases specimen quality. Place your SMF Special Magnetic Foil, which is self-adhesive for once and permanently on your existing working wheel (Aluminum or PVC).

Place the Cloth (or MAGNETO) on the TMP Thin Metal Plate which you can than use as a magnetic unit to put on and remove from your disc. After the grinding or polishing operation you may remove it (non-destructively) and then place it again whenever you need. Without any material destruction!

QUICK MAGNETIC SYSTEM for MAGNETO

MAGNETO
Diamond
Grinding Disc



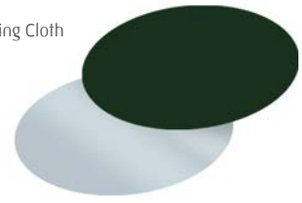
SMF Special Magnetic Foil

Existing Machine Wheel
(Alum. or PVC)

QUICK MAGNETIC SYSTEM for PSA POLISHING CLOTH

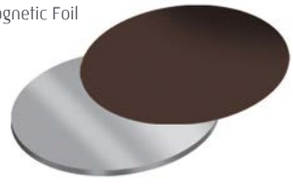
PSA Polishing Cloth

TMP Thin Metal Plate



SMF Special Magnetic Foil

Existing Machine Wheel
(Alum. or PVC)



ABRASIVE GRADE SYSTEM

FEPA P (Europe)	P60	P120	P180	P240	P320	P400	P600	P800	P1000	P1200	P2000	P4000
ANSI/CAMI (US)	60	120	180	240	280	320	360	400	500	600	1000	1200
Gain size (Average)	250µ	125µ	82µ	60µ	46µ	35µ	26µ	22µ	18µ	15µ	10µ	5µ

*All Metkon grinding papers are classified according to FEPA Standarts.

*The above Abrasive Grading Chart is a general overwiev only.

MAGNETIC SYSTEM

Order No	Code	Magnetic System Accessories
39-003-200	SMF	Special Magnetic Foil, Ø200
39-003-250	SMF	Special Magnetic Foil, Ø250
39-003-300	SMF	Special Magnetic Foil, Ø300
39-003-350	SMF	Special Magnetic Foil, Ø350
39-093-200	TMP	Thin Metal Plate, Ø200 (5 pcs)
39-093-250	TMP	Thin Metal Plate, Ø250 (5 pcs)
39-093-300	TMP	Thin Metal Plate, Ø300 (5 pcs)
39-093-350	TMP	Thin Metal Plate, Ø350 (5 pcs)

MAGNETO DIAMOND GRINDING DISCS

(Total Grinding Time 2 Minutes!)

MAGNETO Diamond Grinding Discs for planar grinding, fine grinding and extra fine grinding offer wonderful advantages:

- Only water is needed (No additional diamond suspensions or lubricant).
- The same disc can be used for grinding hard as well as soft materials.
- Very clean working environment.
- Very high edge sharpness and scratch free surface.
- Excellent planarity and flatness.
- Very short preparation time.

MAGNETO

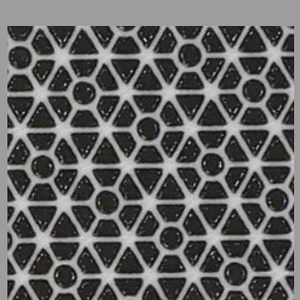
MAGNETO Diamond Fine Grinding Disc

Order No	Code	Diameter	Grit Size	Recommended for
38-020-125	MAGNETO 125	200	125	Planar Grinding
38-040-125	MAGNETO 125	250	125	Planar Grinding
38-050-125	MAGNETO 125	300	125	Planar Grinding
38-020-075	MAGNETO 75	200	75	Planar Grinding
38-040-075	MAGNETO 75	250	75	Planar Grinding
38-050-075	MAGNETO 75	300	75	Planar Grinding
38-060-075	MAGNETO 75	350	75	Planar Grinding
38-020-054	MAGNETO 54	200	54	Planar Grinding
38-040-054	MAGNETO 54	250	54	Planar Grinding
38-050-054	MAGNETO 54	300	54	Planar Grinding
38-060-054	MAGNETO 54	350	54	Planar Grinding
38-020-018	MAGNETO 18	200	18	Fine Grinding
38-040-018	MAGNETO 18	250	18	Fine Grinding
38-050-018	MAGNETO 18	300	18	Fine Grinding
38-060-018	MAGNETO 18	350	18	Fine Grinding
38-020-006	MAGNETO 6	200	6	Extra Fine Grinding
38-040-006	MAGNETO 6	250	6	Extra Fine Grinding
38-050-006	MAGNETO 6	300	6	Extra Fine Grinding
38-020-003	MAGNETO 3	200	3	Extra Fine Grinding
38-040-003	MAGNETO 3	250	3	Extra Fine Grinding
38-050-003	MAGNETO 3	300	3	Extra Fine Grinding

MAGNETO-S SILICON CARBIDE GRINDING DISCS

MAGNETO-S Silicon Carbide Grinding Discs are developed to provide excellent specimen surfaces. It can be used for any material that SiC papers are used. It is the most modern and the best alternative of SiC papers with many advantages:

- Very cost effective. One MAGNETO-S is equal to 100 pcs of SiC grinding papers. (depending on the sample hardness and size)
- Only water is needed (No additional diamond suspensions or lubricant).
- Suitable for both ferrous and non-ferrous materials
- Very clean working environment.
- Very high edge sharpness and scratch free surface.
- Excellent planarity and flatness.
- Superior specimen surfaces.



MAGNETO-S

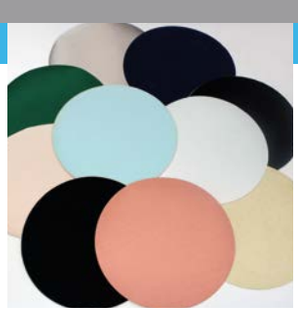
MAGNETO-S Silicon Carbide Grinding Disc

Order No	Code	Diameter	Grit Size	Recommended for
38-021-120	MAGNETO-S-120	200	120	Planar Grinding
38-041-120	MAGNETO-S-120	250	120	Planar Grinding
38-051-120	MAGNETO-S-120	300	120	Planar Grinding
38-021-220	MAGNETO-S-220	200	220	Planar Grinding
38-041-220	MAGNETO-S-220	250	220	Planar Grinding
38-051-220	MAGNETO-S-220	300	220	Planar Grinding
38-021-500	MAGNETO-S-500	200	500	Fine Grinding
38-041-500	MAGNETO-S-500	250	500	Fine Grinding
38-051-500	MAGNETO-S-500	300	500	Fine Grinding
38-021-800	MAGNETO-S-800	200	800	Fine Grinding
38-041-800	MAGNETO-S-800	250	800	Fine Grinding
38-051-800	MAGNETO-S-800	300	800	Fine Grinding
38-021-1200	MAGNETO-S-1200	200	1200	Extra Fine Grinding
38-041-1200	MAGNETO-S-1200	250	1200	Extra Fine Grinding
38-051-1200	MAGNETO-S-1200	300	1200	Extra Fine Grinding

POLISHING CLOTHS

There are three types of polishing cloths; Woven, Non-Woven and Flocked.

- Woven cloths offer 'hard surface' polishing properties and guarantee flat pre-polishing, without deterioration of the edges.
- Non-woven cloths, are used on very hard materials for high precision surface finishing such as glass, quartz, sapphire and semi-conductors.
- The Flocked cloths, guarantee a super-polished finish. The polishing duration must be as short as possible, to avoid inclusions from being extracted.



POLISHING CLOTHS

Self Adhesive Back

Order No	Code	Type	Composition	Grain Size (Mesh)	Recommended for Cutting	Color
39-005-	NOWO	NonWoven	Semihard, PSA nonwoven impregnated and water-proof	Diamond 9-1 µm	Fine polishing of singlesrystal; glass corindon, quartz; ceramic, rocks; etc.	
39-013-	METAPO-P	Woven	Fine Woven Cloth mounted on a Composite (metal/plastic) semi rigid PSA backing. High wear resistance.	Diamond 9-6 µm	Coarse polishing of hard and semihard metallographic sections and different metarials. Good flatness.	
39-033-	METAPO-B	Woven	Fine woven synhetic satin cloth munted on a composite (mela/plastic)semi rigid PSA backing.	Diamond 3-1 µm	Final polishing of hard and semi-hard metallographic sections and different materials. Good edge retention on surface treated materials.	
39-043-	METAPO-V	Woven	Fine Woven Cloth mounted on a Composite (metal/plastic) semi rigid PSA backing. High wear resistance.	Diamond 1-0,1 µm Fine Alum	Final Polishing with extra smooth abrasion; good flatness optiocal finish of hard materials.	
39-015-	FEDO-6J	Flocked	Synhetic fibre flock to a PVC backing.	Diamond 6 µm	Rough polishing of most materials.	
39-025-	FEDO-3	Flocked	Soft synhetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 3 µm	Intermediate polishing of most materials.	
39-066-	FEDO-1S	Flocked	Soft synhetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 1 µm	Fine polishing of most materials.	
39-067-	FEDO-1M	Flocked	Soft synhetic flock bound to a woven cotton PSA backing. To be used with water based suspensions and lubricants only.	Diamond 1 µm	Fine polishing of most materials.	
39-055-	FEDO-1N	Flocked	Very soft low nap felt bound to a PSA backing. To be used with water-based suspensione and lubricants only.	Diamond 0,25 µm	Fine polishing of most materials.	
39-075-	ALSO	Flocked	Extra soft and supple cloth, PSA backed excellent chemical resistance.	Diamond 0,25 µm Fine Alum	Optical polishing of glass, single crystals, semi-conductors and soft metals.	
39-095-	WOOL	Woven	%100 wool cloth, PSA backed.	Diamond 6-3 µm	For polishing optics and metals.	
39-085-	COLLO	Chemo-Textile	Recomended cloth for Chemo-mechanical polishing operations. PSA backed.	Colloidal silica	For use with a chemical mechanical polishing precess with colloidal silica suspension. Espacially for non ferrous materials as well as Aluminium, Brass; etc.	
39-090-	PETRI	Chemo-Textile	The medium chemo-textile cloth for smoothing and polishing operation.	Diamond 6-1 µm Fine Alum.	For petrography: Rocks, minerals, ceramics; etc.	

POLISHING CLOTHS

Order No	Code	Diameter	Color	Type	Quantity / Pack
39-005-200	NOWO	200		Self Adhesive Back	10
39-013-200	METAPO-P	200		Self Adhesive Back	10
39-033-200	METAPO-B	200		Self Adhesive Back	10
39-043-200	METAPO-V	200		Self Adhesive Back	10
39-015-200	FEDO-6J	200		Self Adhesive Back	10
39-025-200	FEDO-3	200		Self Adhesive Back	10
39-066-200	FEDO-1S	200		Self Adhesive Back	10
39-067-200	FEDO-1M	200		Self Adhesive Back	10
39-055-200	FEDO-1N	200		Self Adhesive Back	10
39-075-200	ALSO	200		Self Adhesive Back	10
39-095-200	WOOL	200		Self Adhesive Back	10
39-085-200	COLLO	200		Self Adhesive Back	10
39-090-200	PETRI	200		Self Adhesive Back	10
39-200-SPC	MIX	200		Self Adhesive Back	5
39-005-250	NOWO	250		Self Adhesive Back	10
39-013-250	METAPO-P	250		Self Adhesive Back	10
39-033-250	METAPO-B	250		Self Adhesive Back	10
39-043-250	METAPO-V	250		Self Adhesive Back	10
39-015-250	FEDO-6J	250		Self Adhesive Back	10
39-025-250	FEDO-3	250		Self Adhesive Back	10
39-066-250	FEDO-1S	250		Self Adhesive Back	10
39-067-250	FEDO-1M	250		Self Adhesive Back	10
39-055-250	FEDO-1N	250		Self Adhesive Back	10
39-075-250	ALSO	250		Self Adhesive Back	10
39-095-250	WOOL	250		Self Adhesive Back	10
39-085-250	COLLO	250		Self Adhesive Back	10
39-090-250	PETRI	250		Self Adhesive Back	10
39-200-SPC	MIX	250		Self Adhesive Back	5
39-005-300	NOWO	300		Self Adhesive Back	10
39-013-300	METAPO-P	300		Self Adhesive Back	10
39-033-300	METAPO-B	300		Self Adhesive Back	10
39-043-300	METAPO-V	300		Self Adhesive Back	10
39-015-300	FEDO-6J	300		Self Adhesive Back	10
39-025-300	FEDO-3	300		Self Adhesive Back	10
39-066-300	FEDO-1S	300		Self Adhesive Back	10
39-067-300	FEDO-1M	300		Self Adhesive Back	10
39-055-300	FEDO-1N	300		Self Adhesive Back	10
39-075-300	ALSO	300		Self Adhesive Back	10
39-095-300	WOOL	300		Self Adhesive Back	10
39-085-300	COLLO	300		Self Adhesive Back	10
39-090-300	PETRI	300		Self Adhesive Back	10
39-200-SPC	MIX	300		Self Adhesive Back	5
39-013-350	METAPO-P	350		Self Adhesive Back	10
39-033-350	METAPO-B	350		Self Adhesive Back	10
39-015-350	FEDO-6J	350		Self Adhesive Back	10
39-025-350	FEDO-3	350		Self Adhesive Back	10
39-066-350	FEDO-1S	350		Self Adhesive Back	10
39-055-350	FEDO-1N	350		Self Adhesive Back	10
39-085-350	COLLO	350		Self Adhesive Back	10
39-350-SPC	MIX	350		Self Adhesive Back	5

DIAMOND PRODUCTS

Diamond, due to its exceptional hardness and cutting capacity, has become the first choice abrasive in metallographic polishing.

Diamonds for metallographic grinding and polishing are available in two different crystalline shapes: Polycrystalline (P) and Monocrystalline (M). Polycrystalline diamonds provide vast numbers of small cutting edges. In the metallographic preparation process these edges result in high material removal, while producing only a shallow scratch depth.

Monocrystalline diamonds are more block-shaped and provide few cutting edges. These diamonds give high material removal with a more variable scratch pattern. For high requirements, the (P)-type diamonds are chosen. The (M) type diamonds are best suited for all-purpose polishing.

METKON offers diamond products in three forms; diamond paste, diamond suspension and two in one products; a perfect mixture of diamond suspension & lubricant.

DIAMOND PASTES

Monocrystalline

Order No	Code	Type	Diamond Mic.	Quantity
39-301-M	DIAPAT-M	Water-Based	0,25 Micron	10 gr. syringe
39-311-M	DIAPAT-M	Water-Based	1 Micron	10 gr. syringe
39-321-M	DIAPAT-M	Water-Based	3 Micron	10 gr. syringe
39-331-M	DIAPAT-M	Water-Based	6 Micron	10 gr. syringe
39-341-M	DIAPAT-M	Water-Based	9 Micron	10 gr. syringe

DIAMOND PASTES

Polycrystalline

Order No	Code	Type	Diamond Mic.	Quantity
39-301-P	DIAPAT-P	Water-Based	0,25 Micron	10 gr. syringe
39-311-P	DIAPAT-P	Water-Based	1 Micron	10 gr. syringe
39-321-P	DIAPAT-P	Water-Based	3 Micron	10 gr. syringe
39-331-P	DIAPAT-P	Water-Based	6 Micron	10 gr. syringe
39-341-P	DIAPAT-P	Water-Based	9 Micron	10 gr. syringe

DIAMOND SUSPENSIONS

Monocrystalline

	Code	Type	Diamond Mic.	Quantity
39-400-M	DIAPAT-M	Water-Based	0,25 Micron	250 ml. pump bottle
39-410-M	DIAPAT-M	Water-Based	1 Micron	250 ml. pump bottle
39-420-M	DIAPAT-M	Water-Based	3 Micron	250 ml. pump bottle
39-430-M	DIAPAT-M	Water-Based	6 Micron	250 ml. pump bottle
39-440-M	DIAPAT-M	Water-Based	9 Micron	250 ml. pump bottle
39-411-M	DIAPAT-M	Water-Based	1 Micron	1 lt. bottle
39-421-M	DIAPAT-M	Water-Based	3 Micron	1 lt. bottle
39-431-M	DIAPAT-M	Water-Based	6 Micron	1 lt. bottle
39-415-M	DIAPAT-M	Water-Based	1 Micron	5 lt. bottle
39-425-M	DIAPAT-M	Water-Based	3 Micron	5 lt. bottle
39-435-M	DIAPAT-M	Water-Based	6 Micron	5 lt. bottle

DIAMOND SUSPENSIONS

Polycrystalline

	Code	Type	Diamond Mic.	Quantity
39-400-P	DIAPAT-P	Water-Based	0,25 Micron	250 ml. pump bottle
39-410-P	DIAPAT-P	Water-Based	1 Micron	250 ml. pump bottle
39-420-P	DIAPAT-P	Water-Based	3 Micron	250 ml. pump bottle
39-430-P	DIAPAT-P	Water-Based	6 Micron	250 ml. pump bottle
39-440-P	DIAPAT-P	Water-Based	9 Micron	250 ml. pump bottle
39-411-P	DIAPAT-P	Water-Based	1 Micron	1 lt. bottle
39-421-P	DIAPAT-P	Water-Based	3 Micron	1 lt. bottle
39-431-P	DIAPAT-P	Water-Based	6 Micron	1 lt. bottle

DIAMOND 2 IN 1 PRODUCT

Monocrystalline

	Code	Type	Diamond Mic.	Quantity
39-510-M	DUOPAT-M	Water-Based	1 Micron	500 ml. bottle with sprayer
39-520-M	DUOPAT-M	Water-Based	3 Micron	500 ml. bottle with sprayer
39-530-M	DUOPAT-M	Water-Based	6 Micron	500 ml. bottle with sprayer
39-540-M	DUOPAT-M	Water-Based	9 Micron	500 ml. bottle with sprayer
39-511-M	DUOPAT-M	Water-Based	1 Micron	2.5 lt. bottle
39-521-M	DUOPAT-M	Water-Based	3 Micron	2.5 lt. bottle
39-531-M	DUOPAT-M	Water-Based	6 Micron	2.5 lt. bottle
39-541-M	DUOPAT-M	Water-Based	9 Micron	2.5 lt. bottle

DIAMOND 2 IN 1 PRODUCT

Polycrystalline

	Code	Type	Diamond Mic.	Quantity
39-510-P	DUOPAT-P	Water-Based	1 Micron	500 ml. bottle with sprayer
39-520-P	DUOPAT-P	Water-Based	3 Micron	500 ml. bottle with sprayer
39-530-P	DUOPAT-P	Water-Based	6 Micron	500 ml. bottle with sprayer
39-540-P	DUOPAT-P	Water-Based	9 Micron	500 ml. bottle with sprayer

DIAMOND LUBRICANT

	Code	Type	Quantity
39-502	DIAPAT	Water-Based	1.0 lt. bottle

ALUMINA & COLLOIDAL SILICA

ALU-MIK is a deagglomerated alumina polishing powder and it produces a fine surface quickly due to the lack of aggregates. ALU-MIK alumina suspensions have been developed to give the operator easy to use pre-prepared polishing media. It requires no dilution with water and can be dispensed with COL-K(NC)

Colloidal silica suspension is able to produce the ultimate in high quality mirror polishes on polishing machine. A part abrasive, part chemical polishing action makes colloidal silica well suited to polishing difficult materials such as Aluminium, Stelitte and Cobalt Chrome. automating dispensing units, like DOSIMAT.

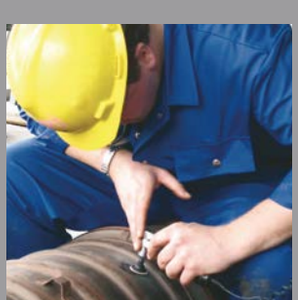
ALUMINA & COLLOIDAL SILICA

Suspensions & Powders

Order No	Code	Alumina Product
39-200	ALU-MIK	Alumina Suspansion 0.05 Mic. 1.0 lt. bottle
39-210	ALU-MIK	Alumina Suspansion 0.3 Mic. 1.0 lt. bottle
39-220	ALU-MIK	Alumina Suspansion 1.0 Mic. 1.0 lt. bottle
39-100	ALU-MIK	Alumina Powder 0.05 Mic. 500 gr.
39-110	ALU-MIK	Alumina Powder 0.3 Mic. 500 gr.
39-120	ALU-MIK	Alumina Powder 1.0 Mic. 500 gr.
39-600	COL-K(NC)	Colloidal Silica (1 lt.) Bottle

PORTABLE METALLOGRAPHY

In-situ/Field metallography is widely used for microstructure analysis on large parts (samples) that cannot be easily carried or where destructive preparation is permissible such as storage tanks, piping system, power plants, etc. In-situ Metallography allows for quick on-site evaluation of a component. There are numerous advantages in using in-situ/field metallography.



PAPER GRINDING DISCS

Self-Adhesive Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
90 20	DEMPAX-P	Self-Adhesive Back	30	80	250
90 21	DEMPAX-P	Self-Adhesive Back	30	120	250
90 22	DEMPAX-P	Self-Adhesive Back	30	320	250
90 23	DEMPAX-P	Self-Adhesive Back	30	500	250
90 24	DEMPAX-P	Self-Adhesive Back	30	800	250
90 25	DEMPAX-P	Self-Adhesive Back	30	1200	250

POLISHING CLOTHS

Self-Adhesive Back

Order No	Code	Type	Diameter	Grit Size	Quantity / Pack
90 36	PORTO	Self-Adhesive Back	30	0.25-1-3	50
90 27	RADO	Self-Adhesive Back	30	6-9	50

DIAMOND PASTES

Monocrystalline

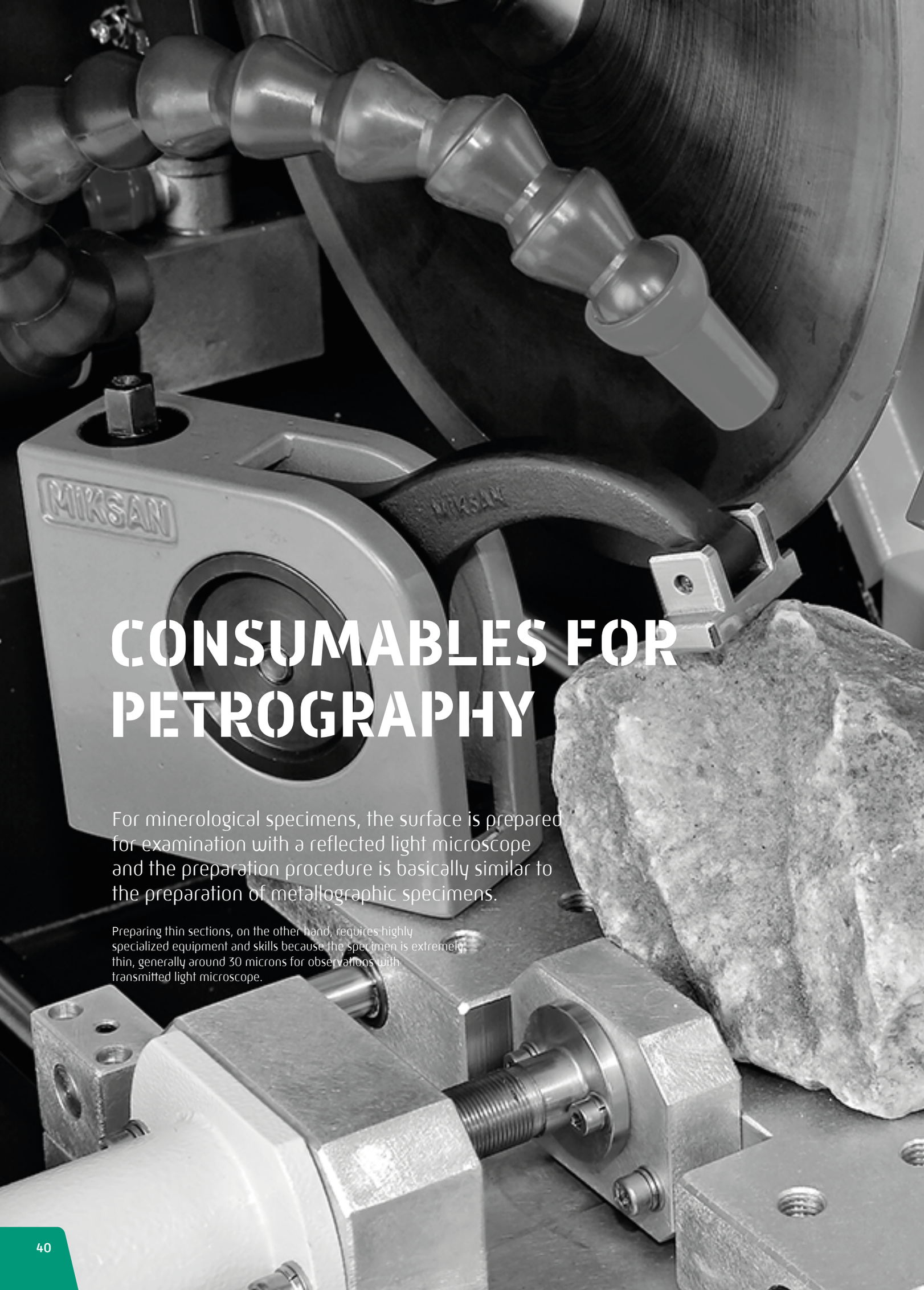
Order No	Code	Type	Diameter	Quantity / Pack
39-301-M	DIAPAT-M	Water-Based	0.25 µ	10 gr. Syringe
39-311-M	DIAPAT-M	Water-Based	1 µ	10 gr. Syringe
39-321-M	DIAPAT-M	Water-Based	3 µ	10 gr. Syringe
39-331-M	DIAPAT-M	Water-Based	6 µ	10 gr. Syringe
39-341-M	DIAPAT-M	Water-Based	9 µ	10 gr. Syringe

DIAMOND LUBRICANT

Order No	Code	Type	Quantity
39-502	DIAPAT	Water-Based	1.0 lt. bottle

REPLICA SET & ETCHING

Order No	Description
90 28	Cotton rolls (100 pcs) for electrolytic etching
90 40	Replica foil 35 microns thick, to be used with acetone
90 41	Microscope slide glasses



CONSUMABLES FOR PETROGRAPHY

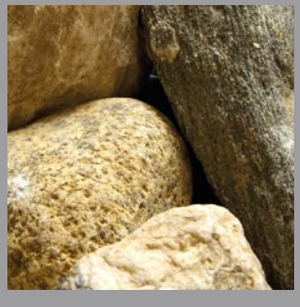
For minerological specimens, the surface is prepared for examination with a reflected light microscope and the preparation procedure is basically similar to the preparation of metallographic specimens.

Preparing thin sections, on the other hand, requires highly specialized equipment and skills because the specimen is extremely thin, generally around 30 microns for observations with transmitted light microscope.


MIKSAN
MIKSAN

PETROGRAPHY

THIN SECTIONING



SILCA

Silicon Carbide Powder for Lapping

Order No	Code	Grit Size	Quantity
40-0120	SILCA	120	500 gr.
40-0320	SILCA	320	500 gr.
40-0400	SILCA	400	500 gr.
40-0600	SILCA	600	500 gr.
40-1000	SILCA	1000	500 gr.

DIMOS

Diamond Cut-off Wheels for GEOFORM 102 & GEOCUT 302

Order No	Code	Type	Dia. mm	Arbor mm	Description	Quantity	App.
19-203	DIMOS	Continuous Blade	200	12.7	Rock, minerals, ceramics, glass, etc.	1	GEOFORM 102
19-252	DIMOS	Continuous Blade	250	32	For Hard Petrographic Applications	1	GEOFORM 102 / GEOCUT 302
19-302	DIMOS	Continuous Blade	300	32	For Hard Petrographic Applications	1	GEOCUT 302

CUPO

Diamond Cup Grinding Wheels for Thin Sectioning (GEOFORM 102)

Order No	Code	Description	Quantity
19-155	CUPO	Ø175 Diamond cup grinding wheel, 65 mic	1
19-156	CUPO	Ø175 Diamond cup grinding wheel, 35 mic	1

ACCESSORIES

For Thin Sectioning

Order No	Description
40 40	Special Box for Slides
40 41	Standart Slides 27x46x1.27, 144 pcs.

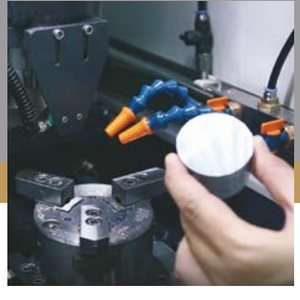
CONSUMABLES FOR SPECTROSCOPIC SAMPLE PREPARATION

Sample preparation of metals and materials have become more and more important because of the rapid development and improvement of both software as well as OES and XRF-devices during the past few years that shifts the detection limit for trace analyses

It is crucial to have the sample properly prepared. The sample needs to be both representative, homogeneous and with an even surface in order to eliminate factors that can influence the results.

SPECTROSCOPY

SPECTROSCOPIC SAMPLE PREPARATION



DEMPAX

Paper Grinding Disc for SPECTRAL 250 & 350

Order No	Code	Type	Diameter	Grit Size	Quantity /Pack
37-040-060-22	DEMPAX-S	Corundum	250	60	20
37-065-060-40	DEMPAX-S	Corundum	350	60	20
36-040-060-22	DEMPAX-SZ	Zirconium oxide	250	60	20
36-065-060-40	DEMPAX-SZ	Zirconium oxide	350	60	20

GRINDING STONES

for SPECTRAL PG 52/AG 102

Order No	Code	Description	Grit Size	Quantity / Pack
80-150	GSW 60	AL_2O_3 Grinding Stone for medium hard steels	60	1
80-151	GSR 60	AL_2O_3 Grinding Stone for cast iron and hard steels	60	1
80-155	GSW 36	AL_2O_3 Grinding Stone for medium hard steels	36	1
80-156	GSR 36	AL_2O_3 Grinding Stone for cast iron and hard steels	36	1

TIPO

Milling Tips for SPECTRAL MM 102

Order No	Code	Description	Quantity / Pack
80-204	TIPO	Milling tips for non-ferrous materials	(1 set = 10 pcs.)
80-205	TIPO	Milling tips for cast irons	(1 set = 10 pcs.)
80-206	TIPO	Milling tips for medium hard and hard steels materials	(1 set = 10 pcs.)
80-207	TIPO	Ceramic Milling tips for cast iron & steel materials (GR 1838 &GR 1839)	(1 set=10 pcs.)

MICROLOGUES

METKON MICROLOGUE contains a number of case histories describing various sample preparation methods and the results obtained by applying these methods. It contains the conclusions of an extensive and intense work that has been conducted at METKON Application Lab. If you are interested in any MICROLOGUE Method, please download files below.

We invite the input of our customers and colleagues in industry and Academia regarding new and interesting sample preparation challenges. For further information, please contact METKON Application Lab.

APPLICATION NOTES

You can find special preparation methods regarding your specific applications including step by step information on cutting, mounting and grinding & polishing. All Application Notes are prepared by our experienced metallographers.

If you want to have proper method for your application and could not find in our Application Notes, please click here to send us your request to prepare us a special Application Note for your application.

metkon
Technology behind Specimen

MICROLOGUES SYSTEM

Micrologue No 001
Material AISI 1050 Steel

Sample Preparation Processes

Cutting : SERVOCUT 302-AA Abrasive cutting machine with TRENO-M abrasive wheels [19-042]

Mounting : ECOPRESS 102 Automatic mounting machine with EPO Epoxy powder [29-011]

Grinding&Polishing : FORCIPOL 102 + FORCIMAT 52 grinding and polishing system with [33 33] sample holder (6 x Ø40mm)

	Surface	Abrasive	Lubricant	Force per Sample, (N)	Time (Min.)	Disc speed Rotation(rpm)	Head Speed Rotation(rpm)
Grinding Step 1	**MAGNETO 54** [38-040-54]	**54µ** Diamond	Water	25N	1 min.	300 CCW	100 CW
Final Grinding	**MAGNETO 18** [38-040-018]	**18µ** Diamond	Water	25N	2 min.	300 CCW	100 CW
Polishing Step 1	**FEDO-6J** [39-015-250]	**DIAPAT-M 6µ** [39-430-M]	**DIAPAT** [39-502]	30N	2 min.	300 CCW	75 CW
Polishing Step 2	**FEDO-3** [39-025-250]	**DIAPAT-M 3µ** [39-420-M]	**DIAPAT** [39-502]	30N	2 min.	300 CCW	75 CW
inal Polishing	**FEDO-1S** [39-066-250]	**DIAPAT-M 1µ** [39-410-M]	**DIAPAT** [39-502]	30N	2 min.	250 CCW	50 CW

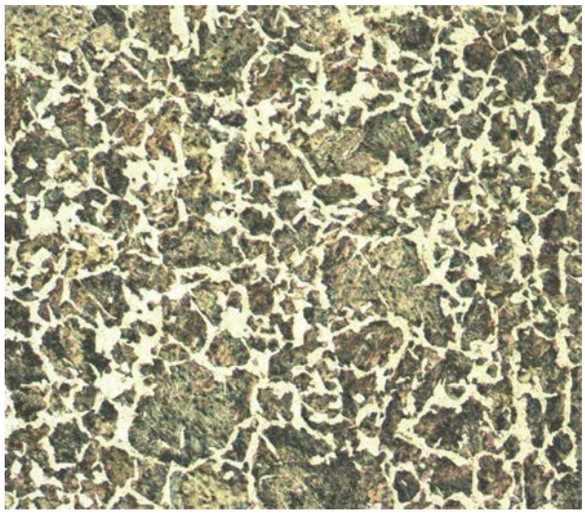
Etching : 2% Nital solution

Result

AISI 1050 steels are used to make which require high strength parts; as gears, crusher and backhoe parts of land andconstruction of the coal industry, traction hooks, gears, picks, bolts, spindles and shafts .

Element Weight(%)	C	Si	Mn	P	S
	0,50	0,20	0,80	0,04	0,05

According to microstructre analysis; pearlite (dark island) and ferrite (light backround) phases can be detected easily.



AISI 1050 - 100x Magnification

APPLICATION NOTE

MET-024 Preperation Of Welded Steel Sample

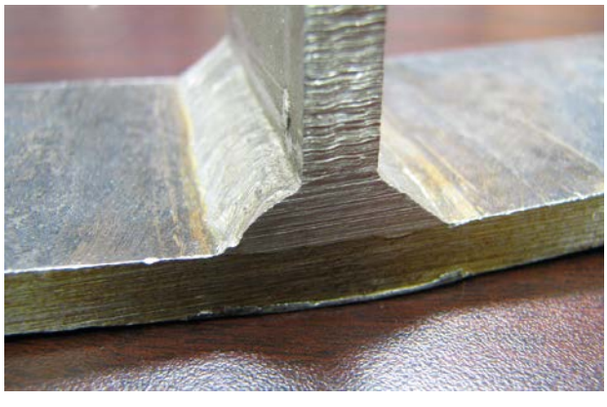
Sample Preparation Processes

Welding is a fabrication or sculptural process that joins materials, usually metals or thermoplastics, by causing coalescence. This is often done by melting the work pieces and adding a filler material to form a pool of molten material (the weld pool) that cools to become a strong joint, with pressure sometimes used in conjunction with heat, or by itself, to produce the weld. This is in contrast with soldering and brazing, which involve melting a lower-melting-point material between the work pieces to form a bond between them, without melting the work pieces.

Welds can be geometrically prepared in many different ways. The five basic types of weld joints are the butt joint, lap joint, corner joint, edge joint, and T-joint. Other variations exist as well—for example, double-V preparation joints are characterized by the two pieces of material each tapering to a single center point at one-half their height.

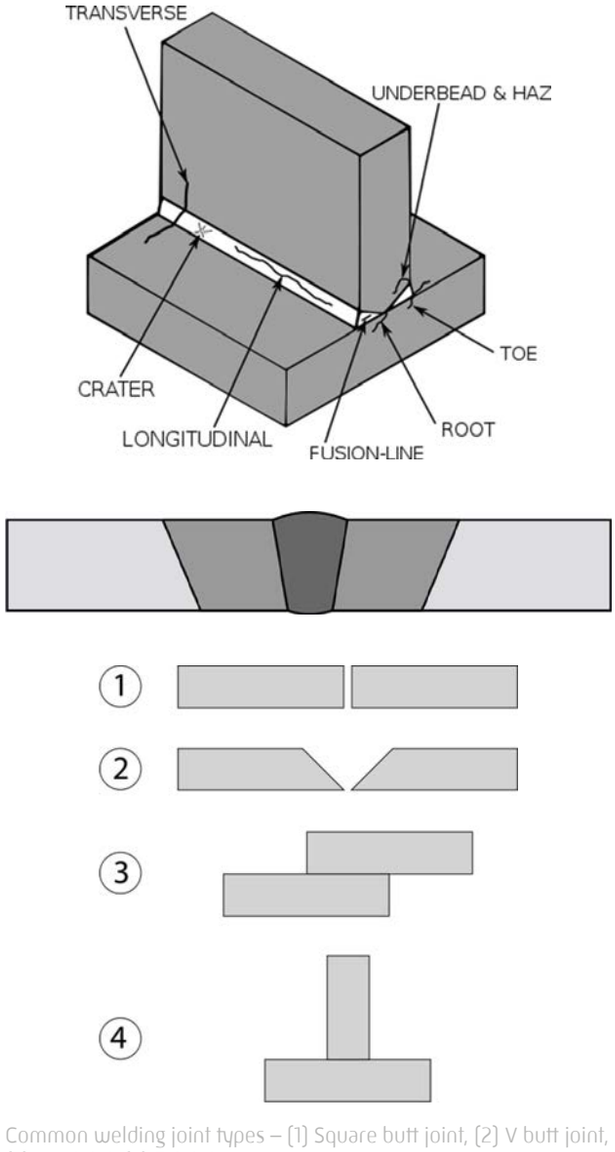
Single-U and double-U preparation joints are also fairly common—instead of having straight edges like the single-V and double-V preparation joints, they are curved, forming the shape of a U. Lap joints are also commonly more than two pieces thick—depending on the process used and the thickness of the material, many pieces can be welded together in a lap joint geometry.

After welding, a number of distinct regions can be identified in the weld area. The weld itself is called the fusion zone—more specifically, it is where the filler metal was laid during the welding process. The properties of the fusion zone depend primarily on the filler metal used, and its compatibility with the base materials. It is surrounded by the heat-affected zone, the area that had its microstructure and properties altered by the weld. These properties depend on the base material's behavior when subjected to heat. The metal in this area is often weaker than both the base material and the fusion zone, and is also where residual stresses are found.



The cross-section of a welded butt joint, with the darkest gray representing the weld or fusion zone, the medium gray the heat-affected zone, and the lightest gray the base material.

In this application, chromium welded steel samples were used which they shown in the picture below.



Common welding joint types – (1) Square butt joint, (2) V butt joint, (3) Lap joint, (4) T-joint

Application Requirements

METKON chop cutting machines METACUT series are designed for wet cutting of large and small, regularly or irregularly shaped work pieces of metallic, ceramic or composite materials.

METACUT 302 has the capacity to cut solid sections up to 115 mm in diameter. The side access port permits the sectioning of extra-long work pieces, as well.

The machine is equipped with a powerful motor, driving the cut-off wheel towards the work piece. The bottom part of the machine is a large robust alloy base casting. The cutting table is provided with T-Slots increasing the versatility so that different clamping sets can be mounted. The quick-clamping devices are removable to permit the installation of conventional clamping tools to hold larger or more intricate work pieces.

METACUT 302

	Order Code	Description
Equipment Used	10 05	METACUT 302 Abrasive Cutter
Attachment	GR 0013	Quick Clamping Vise Assembly, Left
Cutting Fluid	19-902	METCOOL, Nature Friendly Soluble Oil, 5 lt
Cutting Disc	19-022	TRENO-M, Ø250 mm, for Medium Hard Steels

FORCIPOL 202 + FORCIMAT 52

	Order Code	Description
Equipment Used	36 22-250 30 12	FORCIPOL 202, Grinding & Polishing Machine FORCIMAT 52, Automatic Specimen Mover
Operational Accessories	31 21	PVC Wheel, 250 mm
Operational Accessories	31 65	Splash Guard, 250 mm
Operational Accessories	31 24	Paper ring, 250 mm

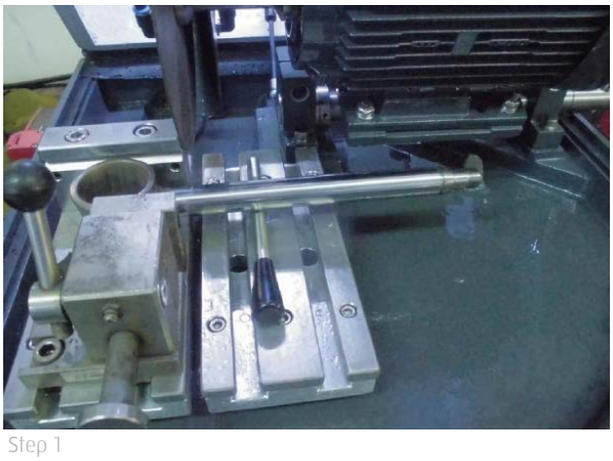
The FORCIPOL Series of grinding and polishing machines offer practical and economical solutions to your metallographic sample preparation needs. FORCIMAT is a microprocessor controlled sample mover designed to be used with FORCIPOL grinder / polishers. It is ideal for medium size labs where consistent results are desired. FORCIPOL 202 having two discs and variable speed range between 50 and 600 rpm.

FORCIPOL 202 is the most universal grinder/polisher, especially for labs having wide variety of materials. FORCIPOL instruments are designed to modular configuration for manual, semi-automatic and programmable automatic equipment. When only manual preparation is required, FORCIPOL Control Unit can be fitted on the FORCIPOL grinder / polisher. If automatic operation is required in the future, one of the FORCIMAT automatic heads can be installed at any time.

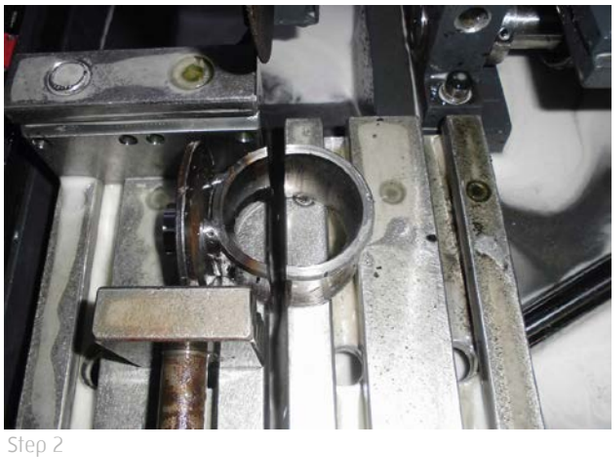
Sample Preparation Processes

The sample is clamped as it shown in the below photo with the quick acting clamping vise (GR 0013).

Three cutting steps were required to obtain a small pieces of specimen.



Step 1



Step 2

Step 3

Step 4

After cutting operation the samples were grinded and polished with FORCIPOL 202+FORCIMAT 52. Two different grinding operations were done to compare differences between SiC grinding paper and MAGNETO Diamond Grinding Disc.

MAGNETO Diamond Grinding Disc provided better edge retention and shorter preparation time.

After polishing operation, the sample etched 3% Nital solution and heat-affected zone can be observed.

Grinded with SiC Paper

Grinded with MAGNETO Diamond Grinding Disc

Paramaters used for SiC grinding paper:

	Grinding Step 1	Grinding Step 2	Grinding Step 3	Polishing Step 1	Polishing Step 2
Surface	DEMPAX [38-040-400]	DEMPAX [38-040-800]	DEMPAX [38-040-1200]	FEDO-3 [39-025-250]	FEDO-1S [39-066-250]
Abrasive	400 Grit SiC	800 grit SiC	1200 Grit SiC	3 micron Diamond	1 micron Diamond
Lubricant	Water	Water	Water	DIAPAT [39-502]	DIAPAT [39-502]
Force per sample(N)	20 N	25 N	25 N	20 N	15 N
Time (min.)	2 Min.	2 Min.	2 Min.	2 Min.	2 Min.
Disc Speed (rpm)	250 CCW	250 CCW	250 CCW	200 CCW	200 CCW

Paramaters used for MAGNETO diamond grinding disc:

	Grinding Step 1	Grinding Step 2	Polishing Step 1	Polishing Step 2
Surface	MAGNETO 54 [38-040-054]	MAGNETO 18 [38-040-018]	FEDO-3 [39-025-250]	FEDO-1S [39-066-250]
Abrasive	54 micron Diamond	18 micron Diamond	3 micron Diamond	1 micron Diamond
Lubricant	Water	Water	DIAPAT [39-502]	DIAPAT [39-502]
Force per sample(N)	20 N	25 N	20 N	15 N
Time (min.)	1 Min.	2 Min.	2 Min.	2 Min.
Disc Speed (rpm)	300	300	200	200

Result

As a result the chromium steel samples were subjected to the following operations;

Cutting → Grinding → Polishing → Etching

After the macro analysis the samples examined in IMM 901 Metallurgical Microscope (Order No: 60 01).
Welding area, heat-affected zone and base material microstructure can be seen above images.

Welding Zone → Microstructre variation from the welding zone into the base material → Base Material

NOTE

NOTE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