microtec

Microabrasives for CR-Finishing® solutions
microtec
Microabrasives
for CR-Finishing® solutions
sia Abrasives
CR-Finishing® Solutions
sia Abrasives products

Rollers
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Vehicles
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Watches
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Metallurgy
Page 11

Fibre optics
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Global partner
Developed and manufactured using Swiss technology and represented in over 80 countries: sia Abrasives sells complete abrasive systems for all kinds of surfaces and has 1400 employees worldwide.

World’s most modern abrasives plant
Setting the pace for the next generations of abrasives: A modular manufacturing process enables “just-in-time” production of innovative abrasives in the technically advanced “Maker 5” plant.

Fit for the future
Maker 5 is designed to enable it to be adjusted to suit new requirements at any time.

Visit us online:
- Convenient product search
- Clear comparison of products
- Access at any time, from anywhere

www.sia-abrasives.com
As a leading international manufacturer of high-quality abrasives with over 140 years of experience, we are familiar with the process steps of our customers and can provide the right abrasive solution for every material.

**Types of abrasives**

**Coated abrasives**
- Classic coated abrasives and abrasive systems
- For advanced surface treatment of all types of material

**Foam abrasives**
- Foam sanding pads in the largest possible range of shapes and grades
- For precision treatment of wood, primer fillers, paints and varnishes

**Non-woven abrasives**
- Non-woven products for preparation and cleaning tasks and for structuring
- Especially for use on metal

**Bonded abrasives**
- Precision cutting discs for optimum cutting performance and efficient grinding discs
- For a wide variety of metalworking applications

Over 60,000 abrasive products in a variety of abrasive formats, sizes and specifications for all materials, applications and requirements.
CR-Finishing® solutions

Technology for surface treatment

CR-Finishing® (Constant Result Finishing)

CR-Finishing® is a quality concept aimed at ensuring an efficient process which produces functional surfaces first time. Our microtec products have been designed specifically to suit application procedures, workpieces and materials.

Advantages

− Constant and precise surface structure
− Excellent cutting results
− High material removal rates and finishing performance
− High cost efficiency thanks to reduced process and retooling times
− Defined and reproducible surface roughness

Contact roller

− Made from plastic or metal
− Continuous film feed
− Oscillating contact roller

Centerless

− Through- and in-feed process
− Continuous film feed
− Belt oscillation

Pressure shoe

− Single or multi jaw principle
− Cycled film feed
− Hard or soft pressure shoe
− Oscillating workpiece

Functional surfaces

Automotive industry: Cross-cut for crankshafts and camshafts
Printing industry: Defined surface roughness for copper rollers
Roller industry: Cross-cut to a mirror finish

Visual surfaces

Watches/jewellery industry
Structure of microabrasives

Grit selection

**Excellent finish quality thanks to unique grit calibration**
A particularly extensive grit selection guarantees consistent, reproducible machining results. The microtec standard is more precise than the FEPA-P standard. The CR-Finishing® grit therefore guarantees a consistent, first-class surface structure conforming to defined requirements.

The benefits for you:
Perfect contact line thanks to homogeneous grit size

The risk:
Needle grits can cause scratches

Adhesive

**Based on synthetic resin**
A special binder system bonds the grit precisely onto the backing material. This ensures constant finishing rates while also permitting the use of modern cooling lubricants, such as emulsions or water (also spray cooling).

Backing

**Polyester films as backing material**
Due to their precision and quality, polyester films are especially suited as a backing material for precision finishing tools. Since conventional sanding belts made of cloth or paper are compressible, they cannot ensure a constant processing action. This results in undesirable and inaccurate roughness depth values which prevent a consistent and reproducible surface from being achieved.

Coating

**Electrostatically coated**

- Grit tips face upwards
- Higher cutting power than slurry coated abrasives

**Slurry coated**

- Multiple layers of grit embedded in a binder
- Smoother surface than electrostatically coated products of same grit size
All values were obtained using the specified parameters and to a large extent depend on the workpieces and settings used.

### Application

| Copper rollers                  | 5230 | 5930 | 5960 | 5752 |
| Chrome/hard chrome rollers     |      |      |      |      |
| Zinc rollers                   |      |      |      |      |
| Hardened steel rollers         |      |      |      |      |
| Coated rollers (plasma ceramic/tungsten carbides) |      |      |      |      |
| Rubber and plastic rollers     |      |      |      |      |
| Teflon rollers                 |      |      |      |      |

### Perfect surfaces thanks to finishing process

In the roller production process, a perfect surface finish is a major factor when it comes to achieving concentricity, roundness, cylindricity and surface quality. To obtain constant and reproducible technical surfaces, sia Abrasives can supply state-of-the-art products which deliver consistent quality. This range of co-ordinated products makes for high cost efficiency in the roller finishing process.

What is achieved by the finishing process:
- Defined surface roughness
- Maximum useful life
- Cross-cut or high gloss polished

**5230 microtec**

This slurry coated diamond finishing product with a 75 µm (3 mil) polyester film backing and resin-over-resin bonding is ideally suited to machining very hard surfaces, such as plasma ceramics or tungsten carbide coatings. Diamond abrasives are always used together with a coolant (emulsion).

**5930 microtec**

This slurry coated aluminium oxide finishing product with 75 µm (3 mil) polyester film backing and resin-over-resin bonding is particularly suited to machining different materials, such as copper or chrome. It is normally used together with a coolant (emulsion).

**5960 microtec**

This electrostatically coated aluminium oxide finishing product with 75 µm (3 mil) polyester film backing and resin-over-resin bonding is suitable for applications which demand higher cutting power. Optimal results are achieved when a coolant (emulsion) is used.

**5752 microtec**

This electrostatically coated silicon carbide finishing product with 125 µm (5 mil) polyester film backing and resin-over-resin bonding and anti-slip coating is specifically designed for the surface finishing of rubber, plastic and Teflon rollers.
Surface roughness according to use

**Hard chrome roller**

- Dimensions: Ø 34 mm x 250 mm length
- Cutting speed: 12 cm/min
- Rotation speed: 550 rpm
- Axial feed: 2.5 m/min
- Transitions: 2 x 2
- Contact roller: Rubber, 65ShA
- Oscillation: 30 Hz
- Contact pressure: 4 bar

**Copper roller**

- Dimensions: Ø 40 mm x 250 mm length
- Cutting speed: 12 cm/min
- Rotation speed: 550 rpm
- Axial feed: 2.5 m/min
- Transitions: 2 x 2
- Contact roller: Rubber, 65ShA
- Oscillation: 30 Hz
- Contact pressure: 3 bar

**Tungsten roller**

- Dimensions: Ø 40 mm x 250 mm length
- Cutting speed: 6.5 cm/min
- Rotation speed: 550 rpm
- Axial feed: 2.5 m/min
- Transitions: 2 x 2
- Contact roller: Rubber, 65ShA
- Oscillation: 30 Hz
- Contact pressure: 3.5 bar

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**Guide value (Ra)**

- **5960 microtec – electrostatically coated**
- **5930 microtec – slurry coated**

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**Guide value (Ra)**

- **5960 microtec – electrostatically coated**
- **5930 microtec – slurry coated**

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**Guide value (Ra)**

- **5230 microtec – slurry coated**

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**Grit range**

- 60µm
- 45µm
- 30µm
- 20µm
- 16µm
- 12µm
- 9µm
- 5µm
- 3µm
- 1µm

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**Grit range**

- 60µm
- 40µm
- 30µm
- 20µm
- 15µm
- 9µm
- 5µm
- 3µm
- 1µm

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**Grit range**

- 60µm
- 40µm
- 30µm
- 20µm
- 16µm
- 12µm
- 9µm
- 5µm
- 3µm
- 1µm
High load and endurance strength
Reproducible surfaces permit defined tolerances. This is essential for the production of precision components in the machine and vehicle manufacturing industries. Finishing is the key to the production of consistent and reproducible technical surfaces. The co-ordinated products from sia Abrasives deliver the consistent quality needed to achieve high cost efficiency in the production process.

What is achieved by the finishing process:
– Defined surface roughness
– Higher contact ratio thanks to cross-cut

**5930 microtec**
This slurry coated aluminium oxide finishing product with 75 µm (3 mil) polyester film backing and resin-over-resin bonding is only suitable for contact roller or centerless applications; coolant (oil) is always used.

**5960 microtec**
This electrostatically coated aluminium oxide finishing product with 75 µm (3 mil) polyester film backing and resin-over-resin bonding is only suitable for contact roller or centerless applications which demand higher cutting power than the 5930 can deliver. Coolant (oil) is always used in this application.

**5962 microtec**
This electrostatically coated aluminium oxide finishing product with 125 µm (5 mil) polyester film backing and resin-over-resin bonding with anti-slip coating is, among other things, particularly suited to automatic applications involving the use of a clamping shoe for machining crankshafts, camshafts, etc. Coolant (oil) is always used in this application.
**Application**

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<tr>
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<th>5230</th>
<th>5930</th>
<th>5962</th>
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</thead>
<tbody>
<tr>
<td>Watch cases and bracelets</td>
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</table>

**Create an emotional impact with perfect surface finishes**

Perfect visual finishes are an absolute must in the watch and jewellery industry. The most suitable finishing product depends on the desired final result and the material to be worked. To ensure a perfect finish, sia Abrasives delivers the right products for any application.

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**Application**

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<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Test specimens, etc.</td>
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</tbody>
</table>

**Production technology**

Finishing of test specimens is key in the research and development of technology for the production of complex alloys and innovative materials. The choice of finishing product depends to a great extent on the quality of the test specimen. With the co-ordinated products from the sia Abrasives range, you can meet all metallurgical requirements with respect to surface finish.
Fibre optics

Application | 5230 | 5330
---|---|---
Ceramic/fibreglass terminations | | |

sia Abrasives fibre optic polishing system
The polishing process is an important stage in the production of ferrule terminations. For this purpose, sia Abrasives supplies suitable products which offer consistent quality. High cost efficiency is achieved in ferrule production by co-ordinating the individual work steps. The following application recommendations apply to the most widely used polishing machines. Our high-performance polishing system will help you to produce high-quality terminations which meet international standards.

What is achieved by the polishing process:
— Improved optical performance
— Maximum light transmission in the termination

5230 microtec
This diamond abrasive with a 75 µm (3 mil) polyester film backing is very well suited to machining ceramic ferrules with fibreglass cores.

5330 microtec
This specially developed silicon dioxide grit coated on a 75 µm (3 mil) polyester film backing is used in the final stage of polishing.

*For a Material Safety Data Sheet, please visit www.sia-abrasives.com
Application recommendation

Our sia Abrasives applications engineers recommend the following machining sequence for fibre optic terminations. These polishing steps show the stages of ferrule machining necessary to obtain a perfect finish. The recommendation may differ from existing processes and is dependent on the polishing equipment and the associated parameters.

<table>
<thead>
<tr>
<th>Manual removal of the core and epoxy resin</th>
<th>1st stage of polishing</th>
<th>2nd stage of polishing</th>
<th>3rd stage of polishing</th>
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<tbody>
<tr>
<td>1727 siawat (P1200)*</td>
<td>5230 microtec (9 µm)</td>
<td>5230 microtec (1 µm)</td>
<td>5330 microtec (0.01 µm)</td>
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<tr>
<td></td>
<td>Result (9 µm)</td>
<td>Result (1 µm)</td>
<td>Result (0.01 µm)</td>
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</table>

* Refer to special product information
## Slurry coated products

<table>
<thead>
<tr>
<th>Colour</th>
<th>µm</th>
<th>FEPA P*</th>
<th>Film thickness</th>
<th>Coating</th>
<th>Grit type</th>
<th>Conversion forms</th>
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<tbody>
<tr>
<td><strong>5230 microtec</strong></td>
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<tr>
<td>Silver</td>
<td>80</td>
<td>180</td>
<td>75 µm (3 mil)</td>
<td>Slurry coated</td>
<td>Diamond</td>
<td>Rolls (5–200 mm) x (15–300 m) 230 x 280 mm Sheets Discs Ø 25–490 mm (0.5–30 µm) Ø 25–230 mm (all grits)</td>
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<tr>
<td>Silver</td>
<td>60</td>
<td>240</td>
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<td>Light green</td>
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<td>75 µm (3 mil)</td>
<td>Slurry coated</td>
<td>Silicon oxide</td>
<td>Discs Ø 25–450 mm</td>
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<tr>
<td><strong>5930 microtec</strong></td>
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<tr>
<td>Colourless</td>
<td>40</td>
<td>360</td>
<td>75 µm (3 mil)</td>
<td>Slurry coated</td>
<td>Aluminium oxide</td>
<td>Rolls (5–200 mm) x (15–300 m) 230 x 280 mm Sheets Discs Ø 25–490 mm</td>
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## Electrostatically coated products

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<thead>
<tr>
<th>Colour</th>
<th>µm</th>
<th>FEPA P⁺</th>
<th>Film thickness</th>
<th>Coating</th>
<th>Grit type</th>
<th>Conversion forms</th>
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<td>Grey Printed with anti-slip coating</td>
<td>60</td>
<td>240</td>
<td>125 µm (5 mil)</td>
<td>Electrostatic</td>
<td>Silicon carbide</td>
<td>Rolls Sheets Discs Belts (5–200 mm) x (15–300 m) 230 x 280 mm Ø 50–490 mm On request</td>
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<td>Transparent Printed</td>
<td>60</td>
<td>240</td>
<td>75 µm (3 mil)</td>
<td>Electrostatic</td>
<td>Aluminium oxide</td>
<td>Rolls Sheets PSA sheets Discs PSA discs Belts (5–200 mm) x (15–300 m) 230 x 280 mm Ø 50–490 mm On request</td>
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<td>Transparent Printed with anti-slip coating</td>
<td>100</td>
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<td>125 µm (5 mil)</td>
<td>Electrostatic</td>
<td>Aluminium oxide</td>
<td>Rolls Sheets Discs Belts (5–200 mm) x (15–300 m) 230 x 280 mm Ø 50–490 mm On request (preferred series for belts)</td>
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