



# **microtec**

**Microabrasives for CR-Finishing® solutions**



## **sia Abrasives – Your key to a perfect surface**

Many materials hide a secret. They keep their real beauty hidden. Only a professional finish can reveal what is inside. sia Abrasives has devoted itself to achieving perfectly finished surfaces for more than 135 years.

“Finished by sia Abrasives” – the final touch makes all the difference to a wide variety of materials: wood acquires its expressive colour, striking colour contrasts with astounding grain, leather captivates with its subtle nuances, contact lenses ensure the very best acuity of vision, metal glows at the peak of its perfection, marble develops its variety of effects, both robust and filigree, and plastics or the most sophisticated of coatings become the embodiment of functionality and aesthetic appeal.

Thanks to high-quality sia products, we are able to advise you expertly at any time with our proven finishing solutions for your individual applications.

**[www.sia-abrasives.com](http://www.sia-abrasives.com)**



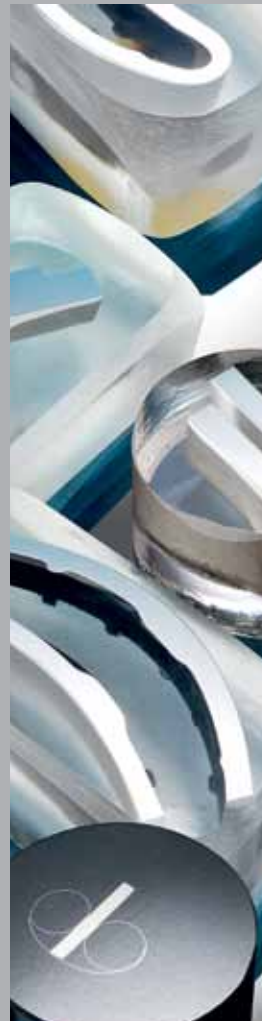
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# microtec

**sia Abrasives**  
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## Top-quality products from Switzerland



### Company

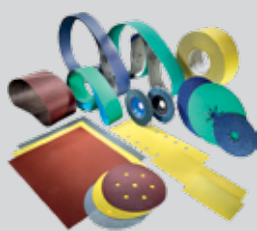
sia Abrasives is based in Frauenfeld, Switzerland, and is one of the world's top three suppliers of innovative abrasives. It develops, manufactures and markets complete abrasive systems, customised to specific requirements and applications, for the treatment of every type of surface. Sanding has become a surface treatment technology.

sia Abrasives employs about 1,310 people worldwide and is represented through local partners in more than 80 countries.

### Top-quality products from Switzerland

Our careful choice of premium materials, the latest production and manufacturing equipment and sophisticated production technologies enable us to provide sanding products at the highest level. Abrasive materials from sia undergo continuous development based on demanding customer requirements and our detailed analysis of production materials. They thus represent the finest examples of Swiss precision and quality with one goal: a commitment to the perfect surface.

## Innovative abrasives



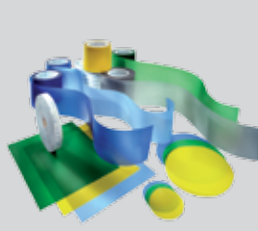
### Coated abrasives

Classic coated abrasives and abrasive systems for advanced surface treatment of all types of material.



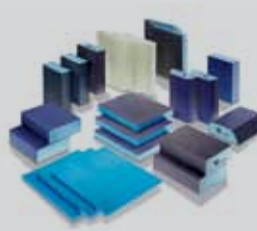
### Non-woven abrasives

Non-woven products for preparation, cleaning, finishing and regraining, especially on metal.



### Microabrasives

Products on special polyester film to give defined surface structures in the areas of graphics, optics and the auto industry.



### Foam abrasives

Foam sanding pads in the widest possible range of shapes and grades for precision sanding on wood, fillers, paintwork and varnish.



### Bonded abrasives

Precision cutting discs for optimum cutting performance and efficient grinding discs for a wide variety of metalworking applications.



## Environment



### **Environmentally-friendly production, competent and ethical waste disposal**

For many years we have concerned ourselves with the efficient use of energy and committed ourselves to maintaining an intact environment. We have implemented many measures within our production processes to protect the air, land and water. We use our energy and raw-material resources efficiently and carefully.

### **We care**

By joining the «EnAW» (Energy Agency for Industry) programme, we have voluntarily made a commitment to improve energy efficiency and limit CO<sub>2</sub> emissions as part of our day-to-day operations.

### **We take responsibility**

As a «dry factory», we protect nature by not putting untreated industrial wastewater back into the water system (i.e. public drains). Weekly analyses of additional industrial wastewater to ensure they meet prescribed values confirm the cleanliness of our wastewater.

## Quality



### **Monitoring raw materials, setting quality standards**

We manufacture top-quality products by thorough monitoring during the production process. The superior properties of sia products represent excellent value for our customers.

### **We verify**

We select our raw materials and their suppliers carefully and according to strict criteria. Long-standing partnerships and continuous testing of raw materials ensure good-quality, reliable and fault-free materials.

### **We continually optimise**

Our internal process management system records and improves important procedures and allows direct intervention in the production process where necessary. In this way we can operate an active, committed opportunity-management programme.

## People



### **A safe, healthy workplace**

We set the standard for an accident and hazard free workplace. The well-being of people is an integral part of our culture.

### **We are clean**

We develop products that also effectively help our customers stay healthy. We have had our finishing products tested for dust formation by the Swiss Accident Insurance Fund (SUVA). The results are impressive: the lowest dust emissions compared with our competitors' products.

### **We set an example**

We comply strictly with the recommendations of the FEPA safety standards and publish this, together with other safety information, at [www.sia-abrasives.com](http://www.sia-abrasives.com).



### **«REACH»**

#### **Regulations for chemicals – a priority project**

REACH (Registration, Evaluation and Authorisation of Chemicals) is a European Community regulation dealing with chemicals and has been in force since June 2007. Its purpose is to gather all necessary information regarding the properties of chemical substances and to examine their use and the associated risks to humans and the environment. We ensure compliance with REACH by keeping up-to-date records of all chemical materials and substances and by taking all necessary steps to meet our REACH obligations.

## Surface finishing technology



### 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 structures
- 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

### Process



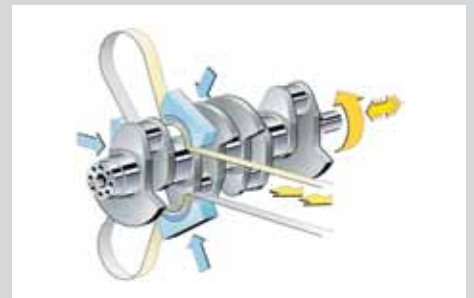
#### Contact roller

- Made of plastic or metal
- Continuous film feed
- Oscillating contact roller



#### Centerless

- Through-feed or in-feed
- Continuous film feed
- Belt oscillation



#### Pressure shoe

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

### Functional surfaces



Automobile 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

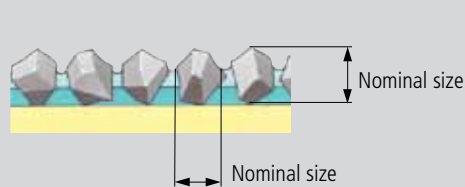
## Structure of microabrasives

### Grit selection

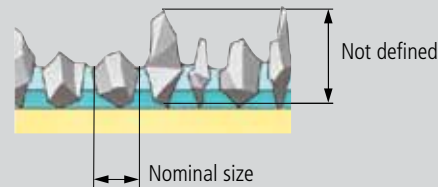
#### Very high surface quality thanks to a unique grit selection

A specially developed high-tech grit selection in accordance with CIS (Calibration for Industrial Standards) ensures consistent and reproducible machining results.

The standard defined by sia Abrasives (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.



Your benefits:  
Perfect contact line thanks to homogeneous grit size



Your 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 com-

pressible, they cannot ensure a constant processing action. This results in undesirable and inaccurate scratch depth values which prevent a consistent and reproducible surface from being achieved.



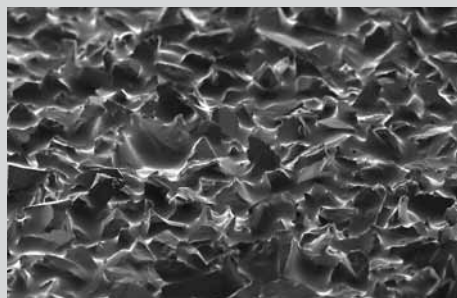
CR-Finishing® abrasive grit on polyester film backing, calibrated according to CIS standard

#### Advantages:

- Perfect flattening thanks to absolutely flat film backing
- Constant machining quality
- Exact roughness depth values

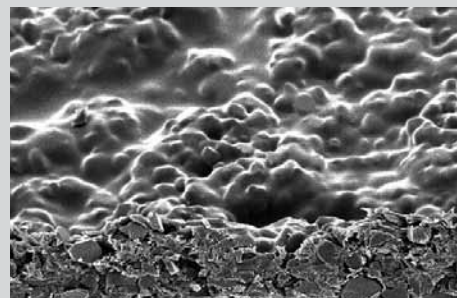
### Coating

#### Electrostatically coated



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

#### Slurry coated



- Multiple layers of grit embedded in a binder
- Finished as electrostatically coated products with the same grit size

## Rollers



Product profile	5230	5930	5900	5702
Copper rollers				
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 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).

### 5900 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.

### 5702 microtec

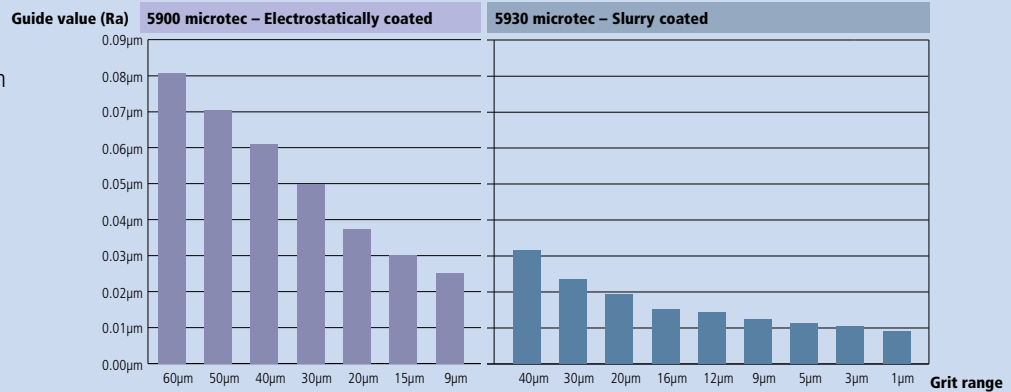
This electrostatically coated silicon carbide finishing product with 125 µm (5 mil) polyester film backing and resin-over-resin bonding and anti-slip coating is specifically designed for the surface finishing of rubber, plastic and Teflon rollers.



## Surface roughness according to use

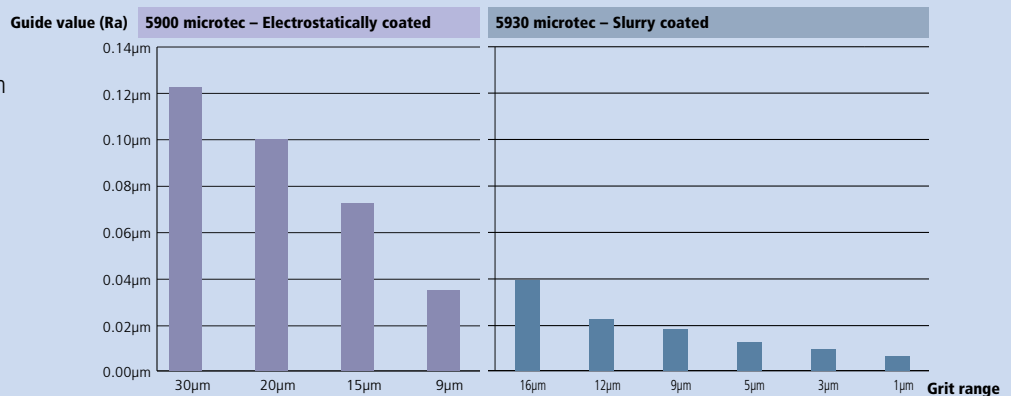
### Chrome roller

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



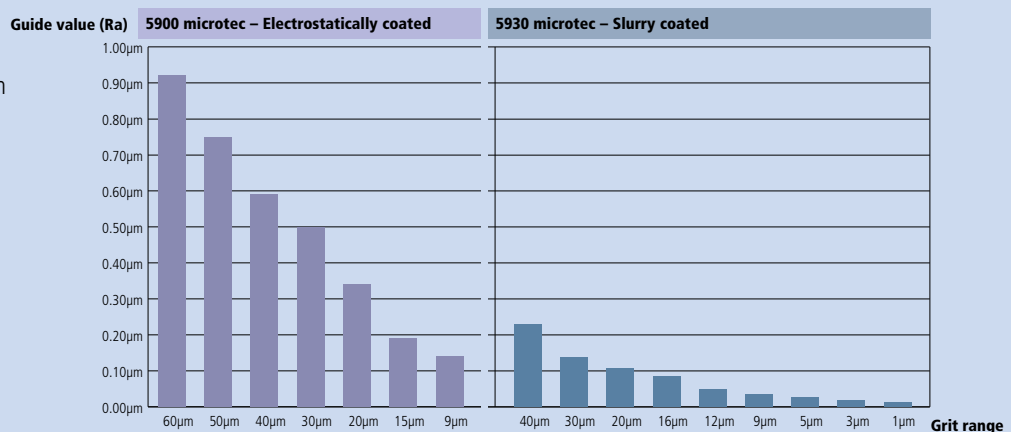
### Hard chrome roller

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



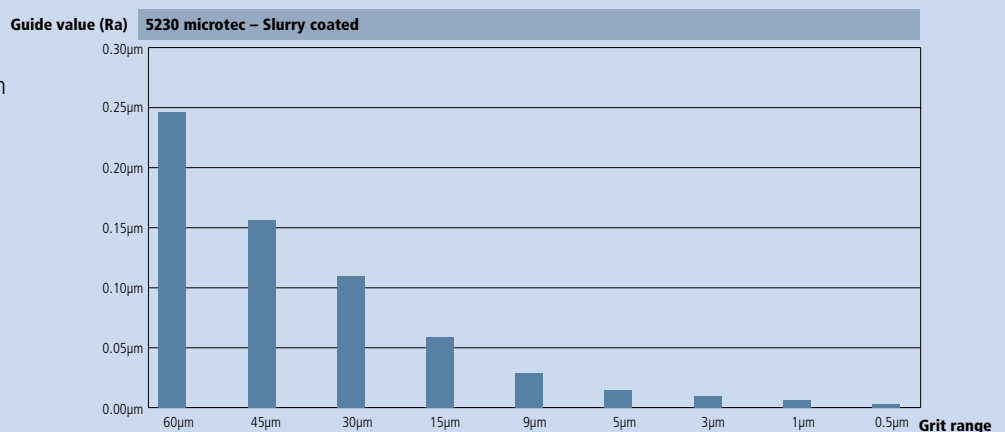
### Copper roller

Dimensions: Ø 40 mm x 250 mm length  
 Cutting speed: 12 cm/min  
 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  
 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



## Vehicles and machines



Product profile:	5930	5900	5902	5903
Camshafts				
Crankshafts				
Steering components				
Shock absorber parts				
Valves				
Hydraulic components				
Pneumatic components				
Ball bearings				

### 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.

### 5900 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.

### 5902 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 workpieces such as crankshafts, camshafts, etc. Coolant (oil) is always used in this application.

### 5903 microtec

This electrostatically coated aluminium oxide finishing product with 75 µm (3 mil) polyester film backing and resin-over-resin bonding with anti-slip coating is an alternative to 5902 and is suitable for applications involving the use of a clamping shoe where a thinner film is required.

## Watches



Product profile:	5230	5930	5902	5903
Watch cases and bracelets				

### 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.

## Metallurgy



Product profile:	5230	5930	5902	5903	5702
Test specimens etc.					

### Production technology

Finishing of test specimens is key in the research & 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



Product profile:	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 delivers suitable products which offer consistent quality. High cost efficiency is achieved in ferrule production by co-ordinating the individual work steps. The following application recommendation applies 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

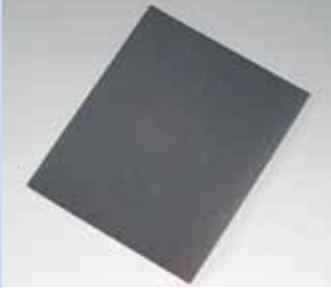
This specially developed silicon dioxide grit coated on a 75 µm (3 mil) polyester film backing is used in the final stage of polishing.



## 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.

### Manual removal of the core and epoxy resin



1727 siawat (P1200)\*

### 1st polishing step



5230 microtec (9 µm)

### 2nd polishing step

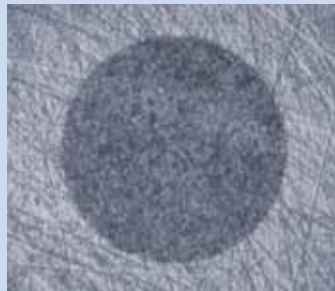


5230 microtec (1 µm)

### 3rd polishing step



5330 microtec (0.01 µm)



Resultat (9 µm)



Resultat (1 µm)



Resultat (0.01 µm)



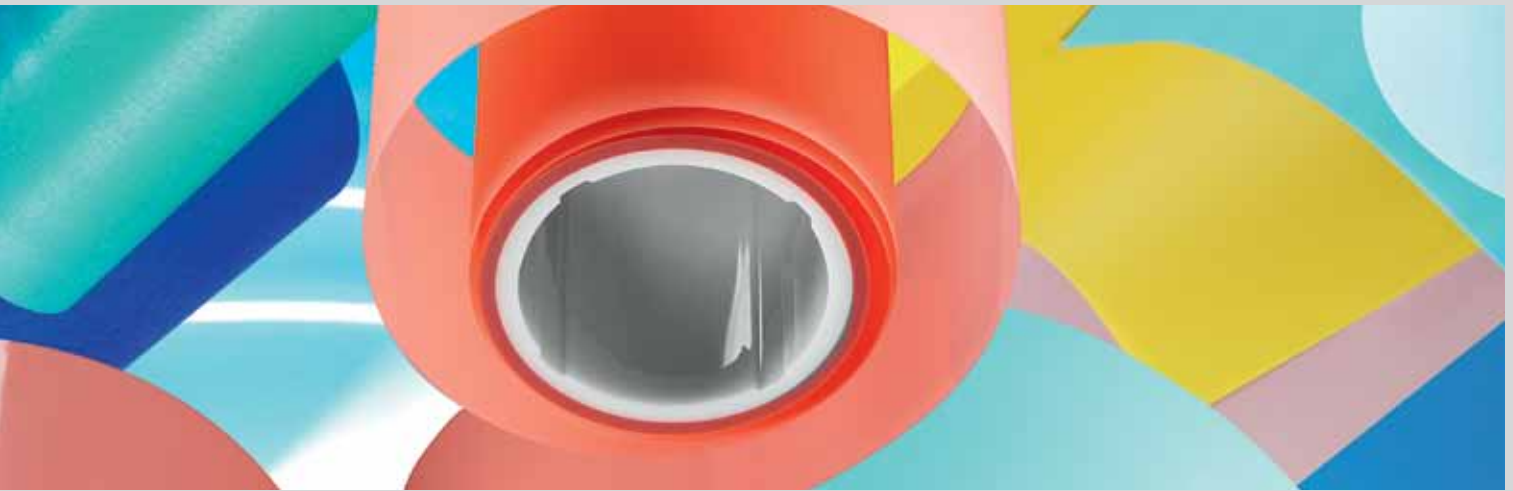
\* Refer to special product information

## Slurry coated products



Colour	µm	FEPA P*	Film thickness	Coating	Grit type	Conversion forms	
5230 microtec							
Silver	60	240	75 µm (3 mil)	Slurry coated	Diamond	Rolls Sheets Discs	(8-205 mm) x (15-300 m) 230 x 280 mm Ø 25-450 mm
Silver	45	320					
Green	30	500					
Orange	15	1200					
Blue	9	2000					
Brown	5	2700					
Light pink	3	3000					
Lilac	1	6000					
Colourless	0.5	9000					
5330 microtec							
Light green	0.01	–	75 µm (3 mil)	Slurry coated	Silicon carbide	Discs	Ø 25-450 mm
5930 microtec							
Colourless	40	360	75 µm (3 mil)	Slurry coated	Aluminium oxide	Rolls Sheets	(8-205 mm) x (15-300 m) 230x 280 mm
Violet	30	500					
Colourless	20	800					
Orange	16	1200					
Scarlet red	12	1500					
Blue	9	2000					
Colourless	5	2700					
Yellow	3	3000					
Pink	1	6000					

## Electrostatically coated products



Colour	µm	FEPA P*	Film thickness	Coating	Grit type	Conversion forms	
5702 microtec							
Grey  Printed with anti-slip coating	60	240	125 µm (5 mil)	Electrostatic	Silicon carbide	Rolls	(8 - 205 mm) x (15 - 300 m)
	40	360				Sheets	230 x 280 mm
	30	500				SKF sheets	230 x 280 mm
	20	800				Discs	Ø 25 - 450 mm
	15	1200				SKF discs	Ø 25 - 450 mm
					Belts	On request	
5900 microtec							
Transparent  Printed	60	240	75 µm (3 mil)	Electrostatic	Aluminium oxide	Rolls	(8 - 205 mm) x (15 - 300 m)
	50	280					
	40	360					
	30	500					
	20	800					
	15	1200					
	9	2000					
5902 microtec							
Transparent  Printed with anti-slip coating	100	150	125 µm (5 mil)	Electrostatic	Aluminium oxide	Rolls	(8 - 205 mm) x (15 - 300 m)
	80	180				Sheets	230 x 280 mm
	60	240				SKF sheets	230 x 280 mm
	50	280				Discs	Ø 25 - 450 mm
	40	360				SKF discs	Ø 25 - 450 mm
	30	500				Belts	On request
	20	800					
	15	1200					
	9	2000					
5903 microtec							
Transparent  Printed with anti-slip coating	50	280	75 µm (3 mil)	Electrostatic	Aluminium oxide	Rolls	(8 - 205 mm) x (15 - 300 m)
	40	360				Sheets	230 x 280 mm
	30	500				SKF sheets	230 x 280 mm
	20	800				Discs	Ø 25 - 450 mm
	15	1200				SKF discs	Ø 25 - 450 mm
				Belts	On request		



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