

The FIVE logo is positioned in the top right corner. It features the word "FIVE" in a bold, white, sans-serif font, followed by "N" in a similar font. A stylized white graphic element, resembling a checkmark or a series of parallel lines, is integrated into the letter "V".

FIVE

INNOVATION AT FIVE

SIKA® ABR



Silicon Carbide



FIVEN - WE SHAPE INDUSTRIES

High-quality silicon carbide for abrasive applications

Fiven is the world's leading producer of silicon carbide. Based on long time experience and industrial expertise, we are delighted to provide a wide range of high quality products combined with excellent services. Together with our customers we are expanding in growing markets by increasing our production and processing capacities. Environmental protection and safety aspects are crucial for us, which we continuously develop by optimizing our production processes. Due to its high abrasion resistance and relatively low cost, silicon carbide is, in many different forms, used as a loose- or fixed-abrasive material in a wide variety of applications:

- Grinding wheels with organic or vitrified bonds
- Honing sticks
- Cut-off and thin wheels
- Snagging wheels
- Stone polishing segments
- Coated abrasive sheets, belts and discs
- Non-woven abrasive
- Lapping and polishing of substrates and mechanical components
- Surface blasting
- Anti-slip flooring

Our long experience in serving leading manufacturers in the abrasives industry, from our many local production platforms, allows us to have a deep understanding of our Abrasive customers' requirements.

In addition to our broad product range, we have the capability to co-develop with our clients new tailor-made solutions.

Properties of silicon carbide

SiC is a ceramic material with an outstanding hardness, only surpassed by diamond, cubic boron nitride and boron carbide. The material is highly wear-resistant and chemically inert to all alkalis as well as acids. It can also withstand very high temperatures. These properties make silicon carbide an outstanding abrasive and ceramic material to be used under extreme operating conditions.

Silicon carbide abrasives are ideal for grinding low tensile materials like grey iron and unannealed malleable iron, non-metallic materials such as stone, ceramic, glass, plastic and rubber. Silicon carbide is also used for non-ferrous material, cast iron and stainless steel.



Silicon Carbide

The background image shows a close-up of a grinding wheel in operation, with a large volume of bright sparks being ejected from the point of contact. The scene is overlaid with a semi-transparent blue geometric shape that cuts across the image diagonally. The text is positioned on the left side, within the blue area.

SIKA® ABR
Products for Abrasive
Applications

Each particular product in our wide range of solutions is adapted to the customer needs, and is characterized by the following parameters:

Particle size distribution

All micro and macro grit sizes according to FEPA, JIS, and ANSI standards

Particle shape

Blocky or sharp-shape grits

Crystal grade

Green and black silicon carbide

Surface chemistry

Various purity levels dependent on the type of treatment: chemically-treated, water-washed, air-dusted

Density

3,21 g/cm³

Vickers Hardness

29 GPa

Coefficient of thermal expansion

5·10⁻⁶ K

Thermal conductivity

50 to 100 W/m K

Temperature resistance

**1500 °C in air,
2400 °C in inert atmosphere**

Specific heat capacity

750 J/kg K



SIKA® ABR	Characteristics & Color	Classification	Grit Sizes	Description
I	high purity green silicon carbide	MAC + MIC	F24 – F220, F230 – F2000	produced to comply with FEPA standard and particularly suitable for high quality vitrified and resin bonded grinding wheels, honing stones, lapping and polishing applications
II	high quality green silicon carbide	MAC + MIC	F16 – F220, F230 – F1200	produced to comply with FEPA standard and particularly suitable for vitrified and resin bonded grinding wheels, honing stones and polishing applications
II A	green silicon carbide	MAC + MIC	F8 – F220, F230 – F800	produced to comply with FEPA standard and particularly suitable for vitrified and resin bonded grinding wheels, honing stones and polishing applications
III	high purity black silicon carbide	MAC + MIC	F24 – F220, F230 – F2000	produced to comply with FEPA standard and particularly suitable for high quality vitrified or resin bonded grinding wheels, lapping and polishing applications
III L	special grains in black silicon carbide for lapping	MIC	F400L – 800L	produced to comply with FEPA standard and particularly suitable for lapping applications. Special designed grains enable smooth surface finish without scratches or cracks
IV	high quality black silicon carbide	MAC + MIC	F8 – F220, F230 – F1200	produced to comply with FEPA standard and particularly suitable for high quality resinoid bonded grinding wheels, cut-off oder snagging wheels, flap-discs and anti-slip flooring applications
IV A	black silicon carbide	MAC	F8 – F220, F240 – F800	produced to comply with FEPA standard and particularly suitable for resinoid bonded grinding wheels, cut-off or snagging wheels, anti-slip flooring applications
P	high quality black silicon carbide	MAC + MIC	P8 – P5000	produced to comply with FEPA standard and particularly suitable for high quality coated abrasives for surface preparation and finishing
Stone	high quality black silicon carbide	MIC	F230 – F600	produced to comply with FEPA standard and particularly suitable for stone polishing applications

EXCELLENT PROPERTIES FOR HIGH PERFORMANCE ABRASIVE APPLICATIONS

Products for bonded abrasive – Vitrified bond (glass)

SIKA® ABR	Grit Sizes	Color
I	F24 - F2000	green
II	F16 - F1200	green
III	F24 - F2000	black
IV	F8 - F1200	black

Products for bonded abrasive – Organic bond (resin, rubber, plastic)

SIKA® ABR	Grit Sizes	Color
I	F16 - F1200	green
II A	F16 - F800	green
IV	F8 - F1200	black
IV A	F8 - F800	black

Products for stone polishing

SIKA® ABR	Grit Sizes	Color
IV A	F8 - F800	black
IV	F8 - F220	black
Stone	F240 - F600	black

Products for lapping and polishing

SIKA® ABR	Grit Sizes	Color
I	F8 - F2000	green
III	F230 - F2000	black
III L	F400L - F1000L	black

Products for flooring

SIKA® ABR	Grit Sizes	Color
IV A	F8 - F40	black
IV	F8 - F40	black

Products for blasting

SIKA® ABR	Grit Sizes	Color
IV A	F8 - F220	black
IV	F8 - F220	black

Products for coated abrasive

SIKA® ABR	Grit Sizes	Color
P	P8 - P5000	black

Products for abrasives and ceramic grains

SIKA® ABR I and II green SiC FEPA-F and JIS, SIKA® ABR III and IV black SiC FEPA-F-P and JIS

Macro Sizes					Macro Sizes				
µm	ASTM mesh	Median value of			µm	ASTM mesh	Median value of		
		F	P	JIS			F	P	JIS
63		220		220	450		40		40
65			220		500	35			
75	200	180		180	525			36	
80			180		530		36		36
90	170	150		150	600	30			
98			150		625			30	
106	140				630		30		30
110		120		120	710	25			
120			120		740			24	
125	120				750		24		24
130		100		100	850	20			
150	100				880		22		22
155		90		90	980			20	
160			100		mm				
180	80				1.00	18			
190		80		80	1.04		20		20
200			80		1.18	16			
212	70				1.25		16		16
220		70		70	1.30			16	
250	60				1.40	14			
260			60		1.48		14		14
270		60		60	1.70	12			
300	50				1.75		12	12	12
320		54		54	2.00	10			
330			50		2.10		10		10
355	45				2.36	8			
390		46		46	2.50		8		8
415			40		2.80	7			
425	40				3.35	6			

Products for abrasives and ceramic grains

Apertures for ASTM sieve and the 50% point for F-P and JIS grits

Micro Sizes					Micro Sizes				
μm	ASTM mesh	Median value of			μm	ASTM mesh	Median value of		
		F	P	JIS			F	P	JIS
0.4				10000	29.2		320		
0.7				9000	30.0				400
1.2		2000		8000	30.2			500	
2.0		1500		6000	35.0			400	360
2.7			5000		36.5		280		
3.0		1200		4000	38.0	400			
3.6			4000		40.0				320
4.0				3000	40.5			360	
4.5		1000	3000		44.5		240		
5.4			2500		45.0	325			
5.5				2500	46.2			320	
6.5		800	2000		48.0				280
6.7				2000	52.2			280	
8.0				1500	53.0	270	230		
8.6			1500		57.0				240
9.3		600			58.5			240	
9.5				1200					
11.5				1000					
12.8		500							
14.0				800					
15.3			1200						
17.0				700					
17.3		400							
18.3			1000						
20.0				600					
21.8			800						
22.8		360							
25.0				500					
25.8			600						

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