



Material Characteristics

	OK 997 Alumina	CARSIC 310 Silicon Carbide	CR 101 Zirconia	CR 105 Zirconia
Density [g/cm ³]	3,9	3,1	5,7	6,0
Purity	99,7%	ca. 98% SiC		
Colour	cream	black	yellow	white
Open Porosity [%]	0	0	0	0

Mechanical Properties

at 20°C

	OK 997 Alumina	CARSIC 310 Silicon Carbide	CR 101 Zirconia	CR 105 Zirconia
Vickers Hardness HV 0,5	2000	2400	1150	1250
Flexural strength ($\delta_{4\text{dB}}$) [MPa]	350	350	560	1000
Compressive strength (δ_{dB}) [MPa]	2000	2400	2700	3800
Weibull Module m [-]	> 10	> 10	20	20
E-Module [GPa]	350	350	200	200
Poisson's Ratio μ [-]	0,22	0,17	0,3	0,3
Content of free Si [%]		$\leq 0,01$		
Fracture toughness K_{Ic} [MPa m ^{1/2}]	5,0	4,0	8,0	10

Thermal Properties

	OK 997 Alumina	CARSIC 310 Silicon Carbide	CR 101 Zirconia	CR 105 Zirconia
Coefficient of thermal expansion α [10 ⁻⁶ /K] (20-1000°C)	6,6	4,2	10,0	10,0
Thermal conductivity λ [W/m K] (20°C)	28	100	3,0	2,5
Thermal conductivity λ [W/m K] (600°C)				2,0
Specific heat c_p [J/g K] (20-1000°C)	0,9	0,7	0,4	0,4

Electrical Properties

at 20°C

	OK 997 Alumina	CARSIC 310 Silicon Carbide	CR 101 Zirconia	CR 105 Zirconia
Spec. volume resistance 20 °C Ω cm (DIN EN 60672-1)	1×10^{14}		5×10^{13}	1×10^{12}
Spec. volume resistance 400 °C Ω cm (DIN EN 60672-1)	1×10^{13}		5×10^6	2×10^3
Dielectric strength kV/mm	20			20
Dielectric number at 20°C	9		27	29
Loss factor	6×10^{-4}		2×10^{-2}	2×10^{-3}



OK 997

- High-purity 99.7 % alumina
- High hardness
- Extreme corrosion and wear resistance
- Electrically insulating



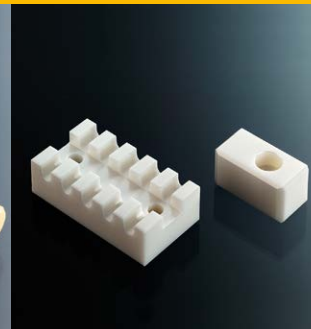
CARSIC 310

- Directly sintered silicon carbide (SSiC)
- High hardness
- Chemical resistance up to pH 0 to pH 14
- Thermal conductivity = 100 W/m K
- Circumferential speeds up to $v = 50$ m/s



CR 101

- Magnesium stabilised zirconia
- High wear resistance
- Flexural strength 560 MPa
- Compressive strength 2700 MPa
- Fracture toughness $KIC = 8,0$ MPa $m^{1/2}$
- Thermally insulating



CR 105

- Yttrium stabilised zirconia
- High wear resistance
- Flexural strength 1000 MPa
- Compressive strength 3800 MPa
- Fracture toughness $KIC = 10,0$ MPa $m^{1/2}$
- Thermally insulating

Specifications are subject to change without notice. 01/2021

Technical Ceramics

High-performance Ceramics Alumina, Silicon Carbide and Zirconia

Our materials alumina, silicon carbide and zirconia offer high wear resistance, as well as temperature, and corrosion stability. Alumina and zirconia also have excellent electrical insulation values.

All of our materials are proven to be valuable design materials in the fields of machine construction, process technology, plant design, chemistry, and electronics.

At OXIDKERAMIK J.Cardenas GmbH we develop highly specialised ceramic components in a wide range of different designs. To do this we rely on modern production facilities with highly efficient machines to produce components that meet the most exacting tolerance and surface quality requirements.



OXIDKERAMIK J. Cardenas GmbH
Siemensstraße 2, D-73095 Albershausen
Tel. +49 (0) 71 61/93 82-0, Fax +49 (0) 71 61/93 82-22
www.oxidkeramik.de, info@oxidkeramik.de

