Datasheet SIGRADUR® Glassy Carbon

Physical Properties

		SIGRADUR® K	SIGRADUR® G
Bulk density	g/cm^3	1.54	1.42
Ash values acc. to DIN 51903	ppm	< 100	< 100
Maximum service temperature (inert gas)	°C	1000	3000
Electrical resistance	Ω·cm	50×10^{-4}	45×10^{-4}
Open porosity	%	0	0
Permeability coefficient	cm^2/s	10^{-11}	10^{-9}
Vickers hardness	HV_1	340	230
Flexural strength[1)]	N/mm^2	210	260
Compressive strength[2)]	N/mm^2	580	480
Young's modulus[1)]	kN/mm^2	35	35
Coefficient of thermal expansion (20-200°C)	1/K	3.5×10^{-6}	2.6×10^{-6}
Thermal conductivity	W/(K x m)	4.6	6.3

1) = 4-point bending test; geometry of specimen: circular rod, diameter: 3 mm, length: 60 mm

2) = geometry of specimen: circular rod, diameter: 7 mm, length: 10 mm

Material Characteristics

- High temperature resistance in inert gas or vacuum up to 3000°C
- High purity
- Extreme corrosion resistance
- Impermeability to gas and liquids, no open porosity
- No wetting by melts
- High hardness and strength
- Low density
- High surface quality, no particle generation
- Low thermal expansion
- Extreme resistance to thermal shock
- Isotropy of physical and chemical properties
- Good electrical conductivity
- Biocompatibility

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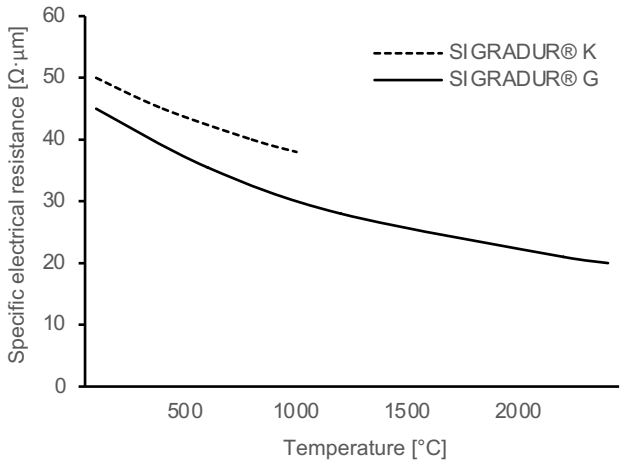

Figure 1: Specific electrical resistance of SIGRADUR® K and SIGRADUR® G Glassy Carbon

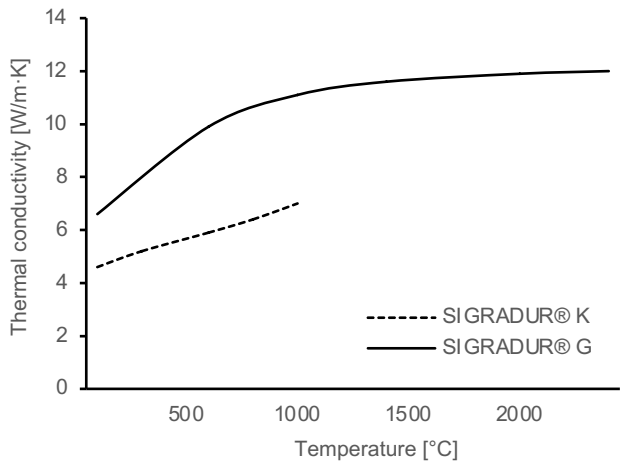

Figure 2: Thermal conductivity of SIGRADUR® K and SIGRADUR® G Glassy Carbon

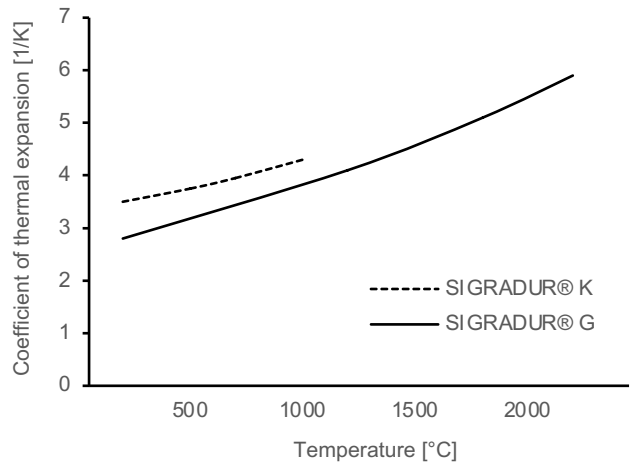

Figure 3: Coefficient of thermal expansion of SIGRADUR® K and SIGRADUR® G Glassy Carbon

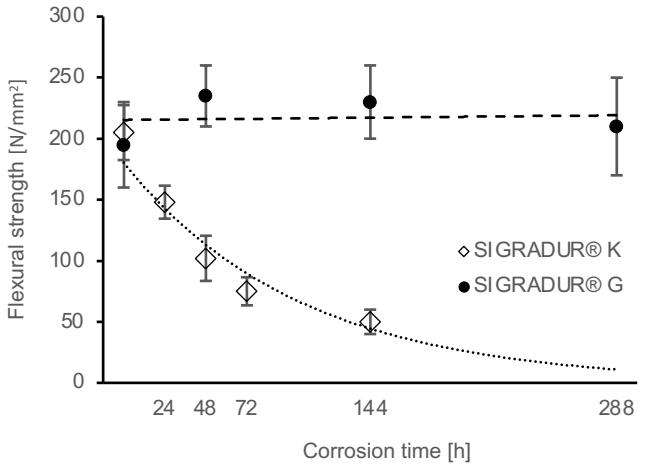

Figure 4: Flexural strength of SIGRADUR® K and SIGRADUR® G Glassy Carbon as a function of corrosion time in 65% nitric acid at 120°C; 4-point bending test; geometry of test specimen: circular rod, diameter: 5 mm, length: 60 mm

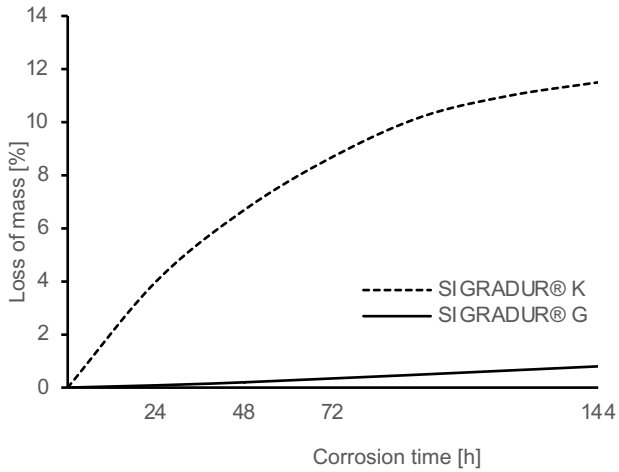

Figure 5: Loss of mass of SIGRADUR® K and SIGRADUR® G Glassy Carbon as a function of corrosion time in 65% nitric acid at 120°C

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