Physical Properties for Substrate Nucleate (SN) Pyrolytic Graphite

Property	Direction*	Metric Units	English Units
Density	---	2.22 g/cc	137 lb/ft3
Flexural Strength			
Room Temperature	XY	840 kg/cm2	12,000 psi
2750°C	XY	3,500 kg/cm2	50,000 psi
Compressive Strength			
Room Temperature	XY	1,050 kg/cm2	15,000 psi
	Z	1,750 kg/cm2	25,000 psi
Shear Strength			
Room Temperature	XY	70 kg/cm2	1,000 psi
Coefficient Thermal Expansion			
Room Temperature	XY	0.57×10^{-6} cm/cm° C	1.0×10^{-6} in/in° F
2200°C	XY	1.09×10^{-6} cm/cm° C	1.16×10^{-6} in/in° F
Room Temperature	Z	23.9×10^{-6} cm/cm° C	25.5×10^{-6} in/in° F
2200°C	Z	25.0×10^{-6} cm/cm° C	26.67×10^{-6} in/in° F
Thermal Conductivity			
Room Temperature	XY	444 W/m° K	257 BTU/(hr ft2)(°F/ft)
1650°C	XY	114 W/m° K	66 BTU/(hr ft2)(°F/ft)
Room Temperature	Z	2.20 W/m° K	1.27 BTU/(hr ft2)(°F/ft)
1650°C	Z	1.30 W/m° K	0.75 BTU/(hr ft2)(°F/ft)
Electric Resistivity			
Room Temperature	XY	500 $\mu\Omega$cm	
1650°C	XY	200 $\mu\Omega$cm	
Room Temperature	Z	0.6 Ωcm	
1650°C	Z	0.22 Ωcm	
Scleroscope Hardness	XY	103	103
	Z	68	68
Oxidation Threshold		650°C	1200°F
Permeability		Helium Leak Tight at 10-6 mmHg	

Physical Properties for Continuously Nucleated (CN) Pyrolytic Graphite

Property	Direction*	Metric Units	English Units
Density	---	2.19 g/cc	136 lb/ft3
Flexural Strength			
Room Temperature	XY	840 kg/cm2	12,000 psi
2750°C	XY	3,500 kg/cm2	50,000 psi
Compressive Strength			
Room Temperature	XY	1,200 kg/cm2	17,500 psi
	Z	2,500 kg/cm2	38,011 psi
Shear Strength			
Room Temperature	XY	140 kg/cm2	2,000 psi
Coefficient Thermal Expansion			
Room Temperature	XY	0.57×10^{-6} cm/cm° C	1.0×10^{-6} in/in° F
2200°C	XY	1.09×10^{-6} cm/cm° C	1.16×10^{-6} in/in° F
Room Temperature	Z	23.9×10^{-6} cm/cm° C	25.5×10^{-6} in/in° F
2200°C	Z	25.0×10^{-6} cm/cm° C	26.67×10^{-6} in/in° F
Thermal Conductivity			
Room Temperature	XY	440 W/m° K	255 BTU/(hr ft2)(°F/ft)
1650°C	XY	114 W/m° K	66 BTU/(hr ft2)(°F/ft)
Room Temperature	Z	1.73 W/m° K	1.00 BTU/(hr ft2)(°F/ft)
3000°F	Z	1.30 W/m° K	0.75 BTU/(hr ft2)(°F/ft)
Electric Resistivity			
Room Temperature	XY	500 $\mu\Omega$cm	
1650°C	XY	200 $\mu\Omega$cm	
Room Temperature	Z	0.6 Ωcm	
1650°C	Z	0.22 Ωcm	
Scleroscope Hardness	XY	101	101
	Z	83	83
Oxidation Threshold		650°C	1200°F
Permeability		Helium Leak Tight at 10-6 mmHg	

*XY: Along basal planes (across surface)
Z: Through basal planes (through thickness)