

# GRAFOIL®

## Flexible Graphite

### TYPICAL GRAFOIL® SHEET PROPERTIES

PROPERTIES	ENGLISH	METRIC	PROPERTIES	ENGLISH	METRIC
<b>TYPICAL MATERIAL PROPERTIES</b>			<b>TYPICAL THERMAL PROPERTIES (Cont'd.)</b>		
Density (ASTM C-559)	70lb/ft <sup>3</sup>	1.1gm/cc	Thermal Conductivity Along Length & Width	960BTU-in/ft <sup>2</sup> -H-°F	140W/m-K
Leachable Chloride Content-Maximum			Through Thickness	36BTU-in/ft <sup>2</sup> -H-°F	5W/m-K
Industrial Grades	100 ppm		Thermal Expansion "a" Direction, parallel to layers		
Premium (Nuclear) Grades	50 ppm		70°F-2000°F (21°C-1094°C)	- 0.2 x 10 <sup>-6</sup> in/in°F	- 0.4 x 10 <sup>-6</sup> m/m°C
Sulfur Content — Max. (C-816)			2000°F-4000°F (1094°C-2206°C)	0.5 x 10 <sup>-6</sup> in/in°F	0.9 x 10 <sup>-6</sup> m/m°C
Industrial Grades	1000 ppm		"c" Direction, Through Thickness		
Premium (Nuclear) Grades	700 ppm		70°F-4000°F (21°C-2206°C)	15 x 10 <sup>-6</sup> in/in°F	27 x 10 <sup>-6</sup> m/m°C
Carbon Content-Min. (C-571)**			Specific Heat at 75°F (24°C)	0.17 Btu/lb°F	711 J/Kg.K
Industrial Grades	95.0%		Heat Storage in a 0.015" layer at 1000°F (538°C)	0.035 Btu/ft <sup>2</sup> °F	0.02 cal/cm <sup>2</sup> °C
Premium (Nuclear) Grades	99.5%		Surface Emissivity	0.5	0.5
Compressibility (ASTM F-36)	40%		Sublimation Point (Does not melt)	6000°F	3300°C
Recovery (ASTM F-36)	20%		Thermal Shock Resistance	Excellent	Excellent
Creep Relaxation (ASTM F-38)	< 5%				
Sealability (ASTM F-37)	< 0.012 Fluid Ounces	< 0.5 ml/hr			
<b>TYPICAL PHYSICAL PROPERTIES</b>			<b>††NUCLEAR RADIATION RESISTANCE</b>		
Tensile Strength — (F-152) Along Length & Width			<b>EXPOSURE LEVELS</b>		<b>RESULTS</b>
Industrial Grades	650 psi	4.4 MPa	†5.5 x 10 <sup>21</sup> NVT@1000°C		No Apparent Effect
Premium (Nuclear) Grades	1000 psi	6.9 MPa	1.5 x 10 <sup>9</sup> RADS Gamma Radiation (1.5 x 10 <sup>11</sup> ERGS/GRAM)		No Apparent Effect
Coefficient of Friction against Steel			††Source: Oak Ridge National Laboratory (1978)		
@ 4 psi (.03 MPa)	.018		†Integrated Neutron Flux:		
@ 8 psi (.07 MPa)	.052		N = Neutrons Per CC. V = cm/sec.		
@ 12 psi (.08 MPa)	.157		T = Seconds		
Compressive Strength Through Thickness (C-695)	24000 psi	165 MPa			
Modulus of Elasticity	0.2 x 10 <sup>6</sup> psi	1380 MPa			
Young's Compressive Modulus Through Thickness	27000 psi	186 MPa			
<b>TYPICAL THERMAL PROPERTIES</b>					
Functional/Temperature Range					
Neutral or Reducing Atmosphere	- 400 to 5400°F	- 200 to 3000°C			
Oxidizing Atmosphere					
Standard Grades	- 400 to 850°F**	- 200 to 450°C**			
Oxidation Resistant Grades	- 400 to 975°F**	- 200 to 525°C**			

\*\* Corrosion inhibited Grade GT\*J (99.0%) and GT\*K (94.5%)

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