



# MOMENTIVE

performance materials

## Pyrolytic Graphite

Pyrolytic graphite (PG) is a unique form of graphite manufactured by decomposition of hydrocarbon gas at very high temperature in a vacuum furnace. The result is an ultra-pure product which is near theoretical density and extremely anisotropic. As an example, PG exhibits thermal conductivity consistent with the best conductors in the "ab" plane and lower than alumina brick in the "c" direction. Mechanical, thermal, and electrical properties are generally far superior to conventional graphites.

PG is available as plate and as an impermeable coating on graphite and other substrates.

### Features

- Chemically inert
- High purity
- Stable to 3000°C
- Impermeable
- Directional electrical and thermal characteristics
- Self-lubricating
- Non-dusting
- Low etch rate

### Applications

- Sputtering Targets
- Ion Beam Grids
- Ion Implant Hardware
- Liquid Phase Epitaxy Hardware
- Crucibles for Ultra High Vacuum
- Thermal Insulators
- Rocket Nozzles
- Heater Elements



### Typical Properties (@ 300K)

PROPERTY	VALUE
Density	2.18-2.22 g/cc
Flexural Strength (a,b)	18,000 psi (120 MPa)
Tensile Strength (a,b)	12,000 psi (80 MPa)
Compressive Strength (a,b)	15,000 psi (100 MPa)
Young's Modulus (a,b)	3 x 10 <sup>6</sup> psi (20,000 MPa)
Thermal Expansion (a,b)	0.5 x 10 <sup>-6</sup> /K
(c)	20 x 10 <sup>-6</sup> /K
Thermal Conductivity (a,b)	300 W/m-K
(c)	3.5 W/m-K
Electrical Resistivity (a,b)	0.5 x 10 <sup>-3</sup> ohm-cm
(c)	0.5 ohm-cm
Crystal Structure	Hexagonal
C/2 Spacing	3.42 Å
Melting Point (Atmosphere)	Sublimes at 3650°C
Impurities	
Total	0.01% Maximum
Metallic	10 ppm
Outgassing	Negligible

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