



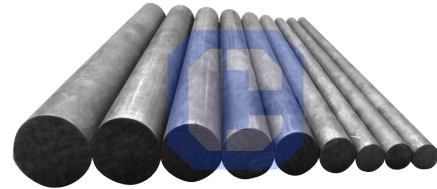
# TECHNICAL DATA SHEET

## Graphite Rods

### DESCRIPTION:

Graphite Rods are solid rods that are machined from blocks of graphite to specific dimensions. Our two main grades, JC3 and JC4 are used in various industries and applications.

**JC3** is a dense fine grained rod commonly used for electrochemical applications due to its electrical conductivity (0.00045 ohm-in) and high temperature resistance. Max operating temperature in vacuum is 5432°F and 1000°F in an oxidizing environment.



**JC4** is a strong fine grained rod commonly used in medium temperature mechanical applications due to its density, strength, and hardness. Compressive strength is 10,800 psi (75 MPa) and flexural strength is 4,500 psi (31 MPa). Max operating temperature in vacuum is 5432°F and 500°F in an oxidizing environment.

### Benefits

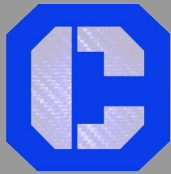
- High purity and outstanding high-temperature performance
- Excellent machinability and tolerance capability of ± .001"
- Great resistance to thermal shock and good thermal conductivity
- High compressive strength, dependent on grade, ranging from ~ 11k - 38k psi
- Corrosion resistance for all practical purposes and is unaffected by most acids, alkalis, solvents, and similar chemicals
- Non-galling and built-in lubrication as the molecular structure of graphite forms an extremely thin film on moving parts.
- Porosity. Graphite can be porous, but impregnants are used to fill these pores and can range from high to totally impervious

### Typical Applications

- Heat treating, hearth rails, and/or beam support applications
- High temperature fixtures and support post
- Electrodes, stire sticks, and other reaction purposes
- Casting of ferrous & non-ferrous metals
- Quartz and fused silica manufacturing
- Fibre optics and semiconductor production

## Technical Specifications Board

Coefficient of Thermal Expansion			
Type	Unit	JC4	JC3
WG (With Grain)	°C   °F	3.75x10 <sup>-6</sup>   2.09x10 <sup>-6</sup>	2.25x10 <sup>-6</sup>   1.26x10 <sup>-6</sup>
AG (Against Grain)	°C   °F	6.60x10 <sup>-6</sup>   3.69x10 <sup>-6</sup>	3.09x10 <sup>-6</sup>   1.73x10 <sup>-6</sup>



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**Graphite Rods**

Typical Physical Properties			
Type	Unit	JC4	JC3
Bulk Density	gm/cm3 lbs/ft3	1.68 105	1.72 107
Grain Size	µm inches	200 0.008	200 0.008
Sclerscope Hardness	Shore D	60	40
Specific Resistance	µ ohm-cm ohm-in	2290 0.0009	1140 0.00045
Flexural Strength	MPa GPa	31 4500	29 4200
Compressive Strength	MPa psi	75 10,800	61 8,820
Tensile Strength	MPa psi	14 2,025	13 1,890
Ash Maximum	ppm	2500	300
Total Porosity	%	15	15-20
Fabrication tolerances Standard	±	0.005	0.005
Available	±	0.001	0.001
Manufactured Process	-	Extruded, Superfine	Extruded, Superfine
Composition	-	Carbon/Graphite	Graphite

Temperature Ratings:			
Type	Unit	JC4	JC3
In Vacuum	°C   °F	3000 °C   5432 °F	3000°C   5432°F
In Air	°C   °F	260°C   500°F	538 °C   1000 °F

Thermal Conductivity w/m-k Btu in./hr/ft <sup>2</sup>			
Type	Unit	JC4	JC3
1112°F (600°C)	W/mk	57	114
1472°F (800 °C)	BTU/ft2/hr/°F	33	66