

BORON CARBIDE (B₄C)

Sizing

Boron Carbide is offered according to FEPA F Available micro grit sizes are: F240, F280, F320, F360, F400, F500, F600, F800, F1000, F1200.

Standard macro grit and custom sizes such as: - 200F and -325 F as well as 12, 25 & 45 micron available upon request.

TYPICAL ANALYSIS

B ₄ C	96.17% min.
B ₂ O ₃	0.22%
Total Boron	78.55%
Total Carbon	18.5%
Free Boron	0.24%
Free Carbon	1.27%
Al	0.05%
Fe	0.20% max.
pH	7.0
Magnetic Fe	0.0001% max
Specific Gravity	2.50

TYPICAL APPLICATIONS

Reaction Bonded Parts	Body and Vehicle Armor	Lapping
Hot-Pressed Parts	Nuclear Shielding	Refractory
Sintered Parts	Wear Parts	
Technical Ceramics	Abrasives	



TYPICAL PROPERTIES

High Hardness

Abrasion / Wear-Resistance

Abrasives

Fracture Toughness

Chemical Inertness

High Neutron Absorbing Cross Section

BORON CARBIDE TECHNICAL DATA

PROPERTIES	UNITS	VALUE
Physical		
Chemical Formula	-	B ₄ C
Density, ρ	g/cm ³	2.51
Color	-	black or dark gray
Crystal Structure	-	hexagonal
Water Absorption	% @R.T.	ng
Hardness	Mohs	36
Hardness	knoop (kg/mm ²)	ng
Mechanical		
Compressive Strength	MPa @ R.T.	2.9
Tensile Strength	MPa @ R.T.	155
Modulus of Elasticity (Young's Modulus)	GPa	445
Flexural Strength (MOR)	MPa @ R.T.	375
Poisson's Ratio, ν		0.19
Fracture Toughness, K _{IC}	MPa x m ^{1/2}	ng
Thermal		
Max. Use Temperature (* denotes inert atm.)	°C	2450
Thermal Shock Resistance	ΔT (°C)	ng
Thermal Conductivity	W/m-K @ R.T.	28
Coefficient of Linear Thermal Expansion, α _l	μm/m-°C (~-25°C through ±1000°C)	5.54
Specific Heat, c _p	cal/g-°C @ R.T.	945
Electrical		
Dielectric Constant	1MHz @ R.T.	ng
Dielectric Strength	kV/mm	ng
Electrical Resistivity	Ωcm @ R.T.	ng



HOT-PRESSED GRADE BORON CARBIDE (B₄C)

Hot Pressed Grade Boron Carbide Powders are specially sized to aid in the hot pressing of boron carbide ceramic parts. They are typically fine powders with an average particle size of less than 10 microns and a specially tailored size distribution.

Contact Panadyne to discuss your hot pressed B₄C application.



TYPICAL APPLICATIONS

Hot Pressed Ceramic Parts

Technical Ceramics

Body and Vehicle Armor

Wear Parts

TYPICAL PROPERTIES

High Hardness

Abrasion / Wear-Resistance

Fracture Toughness

Chemical Inertness

High Neutron Absorbing Cross Section

