

PS-HB5, 5% Borated Polyethylene

Specification:

<i>Chemical Properties</i>				
Chemical Name & Synonyms:	Borated Polyethylene			
Trade Name & Synonyms:	PS-HB5			
Chemical Family:	Polyolefin's			
Formula:	Mixture (CH ₂ -CH ₂) _n , B			
Solubility in Water:	Not Soluble in Water			
<i>Mechanical Properties</i>				
	Comments	PS-HB5	MarShield	SWX-201HD
Hardness:	ASTM D2240	70	71	
Tensile Strength:	ASTM D638	25.7 MPa	16.6 MPa	
Tensile Modulus of Elasticity:	ASTM D638	0.26 GPa	0.767 GPa	
Tensile Elongation:	ASTM D638	25%	4 %	
Compressive Strength:	ASTM D695	28.5 MPa	24.5 MPa	5.51 MPa
Compressive Modulus of Elasticity:	ASTM D695	0.35GPa	0.672 GPa	
Izod Impact, Notched	ASTM D256	0.68 J/cm ²	0.48	
Machining		Excellent		Excellent
<i>Material Incompatibility</i>				
Materials to Avoid:				
Hazardous Decomposition Products	Solid			
	Liquid			
	Gas		Carbon Monoxide, Carbon Dioxide	
Hazardous Polymerization:			Will Not Occur	
<i>AVAILABLE SIZES</i>				
Thickness	From 2 to 200 mm			
Sheet Size	Standard Sheet Size * and Custom Size			
* PS-HB5 Available in Slab, Sheet, Cylinder and Other Custom Shape or Part and also Pour in to Custom Made Molds to Provide Application Specific Shielding Forms.				

<i>Composition Data</i>		
Hydrogen	Atom density / cm ³ :	7.5 × 10 ²²
	Natural isotope distribution:	99.98 % ¹ H
Boron	Atom density / cm ³ :	3.0 × 10 ²¹
	Natural isotope distribution:	19.6% ¹⁰ B and 80.4 % ¹¹ B
Carbon	Atom density / cm ³ :	
	Natural isotope distribution:	
Other element	Atom density / cm ³ :	
	Natural isotope distribution:	Does not exist
Weight percent of all isotopes of boron:		5.0 %
Total Density:		1.008 g/cm ³ (ASTM D792)
<i>Radiation Properties</i>		
Macroscopic thermal neutron cross section:		2.01s (cm ⁻¹)
Gamma resistance:		
Neutron resistance:		
HVL, cm		0.3
TVL, cm		1.15
<i>Physical Properties</i>		
State:		Sheet, Slab, Cylinder, Bricks
Color:		Dark Gray/ Black
Odor:		No Odor
Machinability:		Excellent
Compressive Strength:		28.5 MPa
Humidity:		
<i>Thermal Properties</i>		
Recommended Temperature Limit:		85 °c
Melting Point:		ASTM D 3418 137.8 °c
Boiling Point:		N/A
Thermal Conductivity:		ASTM C177 0.5 W/m.K
Heat Capacity:		ASTM D 3418 2700 J/kg.K
Cubical Coefficient of Expansion:		N/A
Linear Coefficient of Expansion:		ASTM E831 200.95 μm/m°C
<i>Electrical Properties</i>		
Surface Resistivity		ASTM D257-99 750×10 ¹² ohm