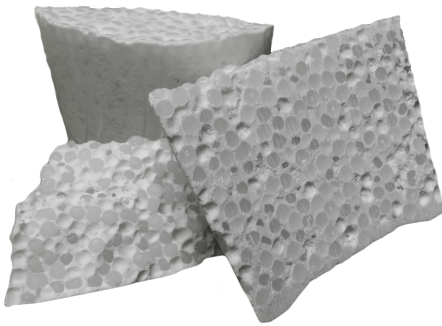




SWX-259 & 259Z-4 Neutron Shielding

Polykast - Castable Shielding



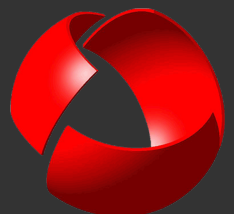
SWX-259

- Excellent neutron shielding with 0.9% to 4% boron additive
- Field-castable into closed containers
- Maintains 80% of its very high hydrogen content up to 300°F
- Sets up in about 30 minutes, requires only mixing with water

WX-259 is a field-castable dry mix that provides excellent neutron shielding characteristics. It is typically cast into closed containers and retains its hydrogen content even at elevated temperatures. SWX-259 contains 0.9% boron. For better thermal neutron attenuation SWX-259Z-4 contains 4% boron.

SWX-259 is mixed on-site with water and provides a hydrogen atom density that is roughly 6% greater than that of pure water. While the recommended temperature limit for SWX-259 is 150 °F (66 °C), it will retain about 80% of its hydrogen content up to 300 °F (140 °C).

SWX-259 can be poured in layers and each layer forms a solid bond with the one underneath. It requires approximately 56 lbs. of SWX-259 dry mix to produce 1 ft³ of cast material. The material is typically provided in fiber barrels weighing 165 lbs (net).





SWX-259 & 259Z-4 Neutron Shielding

Specifications

Composition Data (as cast)	SWX-259	SWX-259Z-4
Hydrogen atom density / cm ³ :	7.15 x 10 ²²	6.98 x 10 ²²
Hydrogen weight percent:	10.4 %	10.1 %
Boron atom density / cm ³ :	5.82 x 10 ²⁰	2.57 x 10 ²¹
Boron natural isotope distribution:	19.6% ¹⁰ B and 80.4% ¹¹ B	19.6% ¹⁰ B and 80.4% ¹¹ B
Boron weight percent:	0.91 %	4.00 %
Total Density:	1.15 g / cm ³ (72 lbs / ft ³)	1.15 g / cm ³ (72 lbs / ft ³)
Radiation Properties		
Macroscopic thermal neutron cross section:	0.46 (cm ⁻¹)	1.96 (cm ⁻¹)
Gamma resistance:	5 x 10 ⁸ rad	5 x 10 ⁸ rad
Neutron resistance:	2.5 x 10 ¹⁷ n / cm ²	2.5 x 10 ¹⁷ n/cm ²
Physical Properties		
State:	Solid composite with pellets	Solid composite with pellets
Color:	White	White
Odor:	No odor	No odor
Machinability:	Poor	Poor
Compressive Strength:	Poor	Poor
Thermal Properties		
Recommended Temperature Limit:	150 °F (66 °C)	150 °F (66 °C)
Chemical Properties		
Chemical Name & Synonyms:	Borated hydrogenated mix	Borated hydrogenated mix
Trade Name & Synonyms:	SWX -259 Polykast	SWX-259Z-4 Polykast Plus
Chemical Family:	Ca salt, B, polyolefins	Ca salt, B, polyolefins
Solubility in Water:	< 1% (cast)	< 1% (cast)
Reactivity Data		
Reactive Metals and Metal Compounds :	Aluminum	Aluminum
Material Incompatibility		
Materials to Avoid:	Water, potassium, and acetic anhydride. Not compatible with aluminum housings	
Gas	C, CO, CO ₂ , H ₂ O, organic vapors	
Hazardous Polymerization:	Will Not Occur	

