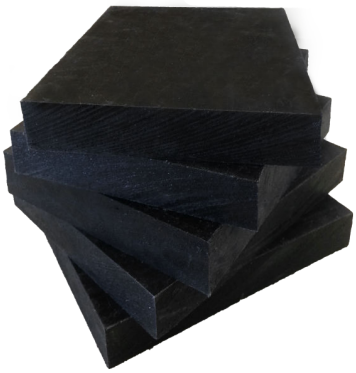
shieldwerx™

SWX-210
Neutron Shielding

30% Borated Polyethylene



SWX-210

- Contains 30% boron and relatively high hydrogen content
- Effective neutron shielding for criticality control applications
- Available in slabs, bricks, cylinders, and other custom shapes

Control of criticality is of the utmost importance during all phases of power reactor fuel handling, including reprocessing. In order to assure neutron isolation during these stages, shielding materials containing very high concentrations of boron are frequently used.

SWX-210 consists of polyethylene loaded with 30% natural boron. It contains 2.0×10^{22} boron atoms per cm^3 and is typically used in applications such as criticality control where an effective thermal neutron absorber is required. It has a relatively high hydrogen content making it an effective fast neutron shield combined with a very high boron content for thermal neutron attenuation.

SWX-210 is available in slabs, bricks, and cylinders.

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Specifications

Composition Data

Hydrogen atom density / cm^3:	6.19 x 10^{22}
Hydrogen weight percent:	8.7 %
Boron atom density / cm^3:	2.02 x 10^{22}
Boron natural isotope distribution:	19.6 % ^{10}B and 80.4 % ^{11}B
Boron weight percent:	30 %
Total Density:	1.19 g / cm^3 (74.3 lbs / ft^3)

Radiation Properties

Macroscopic thermal neutron cross section:	15.3 (cm^{-1})
Gamma resistance:	5 x 10^8 rad
Neutron resistance:	2.5 x 10^{17} n/ cm^2

Physical Properties

State:	Bricks, slabs, cylinders
Color:	Dark gray / black
Odor:	No odor
Machinability:	Poor

Thermal Properties

Recommended Temperature Limit:	180 °F (82.2 °C)

Chemical Properties

Chemical Name & Synonyms:	Borated Polyethylene
Trade Name & Synonyms:	SWX-210
Chemical Family:	Polyolefins
Formula:	Mixture $(CH^2)n$, B
Solubility in Water:	Negligible

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June 2018