

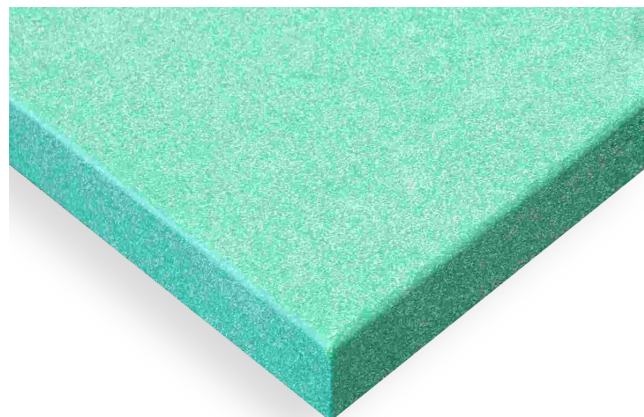


Radiation Shielding HDPE

5% Boron HDPE Radiation Shielding Sheet

Description and Overview

Radiation shielding HDPE provides nuclear shielding due to the 5% Boron (by weight) added during the molding process. Lighter than lead, this Boron protects people or rooms from the neutron bombardment that occurs during radioactive activity and is a suitable replacement for lead in nuclear shielding applications. The shielding on these HDPE sheets is so effective that they have been used in the construction or lining of linear particle accelerators. Radiation shielding HDPE is green in color with a planed finish and can be certified to Mil-P-23536 A Type B.



Applications and Uses

Radiation shielding specialty-grade HDPE is a suitable replacement for lead where nuclear shielding materials are necessary. This includes areas where radiation exposure will be constant as well as environments where radiation is expected for short bursts of time. Radiation shielding HDPE sees use in the following applications:

- MRI rooms
- Cancer treatment facilities
- X-ray rooms
- Nuclear power plants
- Containment cabinets and boxes
- Nuclear submarines
- Imaging machine rooms
- Linear particle accelerators

Properties and Specifications

Thermal Properties	Test Method	Units	Guideline Value
Heat Deflection Temperature @ 66 psi	D648	174°F	79°F
Vicat Softening Temperature	D1525	262°F	128°F
Melting Point	-	271°	133°F
Coefficient of Linear Thermal Expansion	D696	8.3 X 10 ⁻⁵ in/in/°F	1.49 X 10 ⁻⁴ cm/cm/°C
Thermal Conductivity	C177	2.8 Btu-in/h-ft ² -°F	0.39 W/m-°K
Specific Heat	C351 D150	0.48 Btu /lb/°F	0.62 KJ/Ka/°C
Continuous Use Temperature	C351 D150	100°F to 180°F	73oC to 82°C


Properties are typical.
Chem is an abbreviation for chemically affixed with glues, chemicals, or adhesive.
Mech is an abbreviation for mechanically affixed bonding.
Field testing is recommended for any application.


Rev 3 (07/25/2023)

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interstateplastics.com

 **WARNING:** This product can expose you to chemicals including Carbon Black, CAS 1333-86-4, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

 **WARNING:** This product can expose you to chemicals including TiO₂, CAS 13463-67-3, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.



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Typical Properties

Property	Test Method	Units	Values
PHYSICAL and MECHANICAL			
Density	D792	63.05 lbs/ft ³	1.01 g/cc
Tensile strength @ Yield, MPa (ksi)	D638	2,800 psi	19.3 MPa
Tensile strength @ Break, MPa (ksi)	D638	5,800 psi	40.0 MPa
Elongation at Break	D638	300%	300%
Coefficient of Friction Static	D1894	0.15 - 0.2	0.15 - 0.2
Coefficient of Friction, Kinetic	D1894	0.05 - 0.08	0.05 - 0.08
Notched Izod Impact Strength	D256	No Break ft-lbf/in	No Break J/m
Izod Impact Strength	D4020, Method A	> 28.4 ft-lbf/in ²	> 60 KJ/m ²
Charpy Impact	ISO 11542-2	> 37.9 ft-lbf/in ²	> 80 KJ/m ²
Durometer Hardness	D2240	62 Shore D	62 Shore D
Water Absorption av Saturation	D570	0.01%	0.01%
Average Intrinsic Viscosity	D4020	-	28 dl/g

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