

# Radiation Shielding Sheet

## 5% Boron HDPE Radiation Shielding Sheet

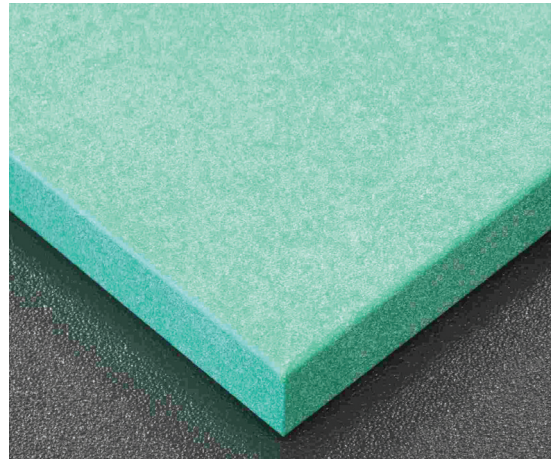
### Description and Overview

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

Property	ASTM Method	English Units	Metric Units
<b>Physical and Mechanical Properties</b>			
Density	D792	63.05 lbs/ft <sup>3</sup>	1.01 glee
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 <sup>2</sup>	> 60 KJ/m <sup>2</sup>
Charpy Impact	ISO 11542-2	> 37.9 ft-lbf/in <sup>2</sup>	> 80 KJ/m <sup>2</sup>
Durometer Hardness	D2240	62 Shore D	62 Shore D
Water Absorption av Saturation	D570	0.01%	0.01%
Average Intrinsic Viscosity	D4020	-----	28 dl/a
<b>Thermal Properties</b>			
Heat Deflection Temperature @ 66 psi	D648	174 oF	79 oC
Vicat Softening Temperature	D1525	262 oF	128 oC
Melting Point	-----	271 oF	133 oC
Coefficient of Linear Thermal Expansion	D696	8.3 X 10 <sup>-5</sup> in/in/oF	1.49 X 10 <sup>-4</sup> cm/cm/oC
Thermal Conductivity	C177	2.8 Btu-in/h-ft <sup>2</sup> -oF	0.39 W/m-oK
Specific Heat	C351   D150	0.48 Btu /lb/oF	0.62 KJ/Ka/oC
Continuous Use Temperature	C351   D150	100oF to 180oF	73oC to 82oC

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 **WARNING:** This product can expose you to chemicals, which are known to the State of California to cause cancer, birth defects, and/or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

