

Quadrant EPP Borotron® HM PE-HMW + boron based additive (ISO Data)

Category : Polymer , Thermoplastic , Polyethylene (PE) , HDPE

Material Notes:

Borotron UH and Borotron HM are boron loaded PE-(U)HMW grades, specifically developed for neutron shielding purposes in nuclear installations. The high hydrogen content of PE-(U)HMW makes it very suitable for slowing down fast neutrons to lower energy thermal (slow) neutrons, which are then absorbed by the added boron compound. Whereas both PE-HMW and PE-UHMW are suitable for neutron shielding, PE-UHMW is often preferred because of its better deformation behaviour at high temperatures and its superior impact strength and wear resistance Effectively attenuates neutron radiation particles and minimises the gamma radiation released during their capture Very good wear and abrasion resistance High impact strength (particularly PE-UHMW) Excellent chemical resistance Low coefficient of friction Very low water absorption Moderate mechanical strength, stiffness and creep resistance Excellent machinability

Order this product through the following link:

http://www.lookpolymers.com/polymer_Quadrant-EPP-Borotron-HM-PE-HMW-boron-based-additive-ISO-Data.php

Physical Properties	Metric	English	Comments
Density	1.01 g/cc	0.0365 lb/in ³	ISO 1183-1
Outgassing - Total Mass Loss	0.14 %	0.14 %	

Mechanical Properties	Metric	English	Comments
Hardness, Shore D	65	65	
Ball Indentation Hardness	55.0 MPa	7980 psi	ISO 2039-1
Tensile Strength	23.0 MPa	3340 psi	at Yield; ISO 527-1/-2
Elongation at Break	15 %	15 %	ISO 527-1/-2
Elongation at Yield	8.0 %	8.0 %	ISO 527-1/-2
Tensile Modulus	1.55 GPa	225 ksi	ISO 527-1/-2
Flexural Strength	28.0 MPa	4060 psi	
Compressive Strength	13.5 MPa	1960 psi	ISO 604
	@Strain 1 %	@Strain 1 %	
	20.5 MPa	2970 psi	
	@Strain 2 %	@Strain 2 %	ISO 604
	28.5 MPa	4130 psi	ISO 604
	@Strain 5 %	@Strain 5 %	
K Factor (ISO)	150 µm/km	150 µm/km	
Charpy Impact Unnotched	2.50 J/cm ²	11.9 ft-lb/in ²	ISO 179-1/1eU

Mechanical Properties	Metric	English	Comments
Charpy Impact, Notched	0.600 J/cm ²	2.14 ft-lb/in ²	Complete Break; ISO 179-1/1eA
Coefficient of Friction, Dynamic	0.15 - 0.30	0.15 - 0.30	
Sand Slurry	275	275	
Limiting Pressure Velocity	0.0500 MPa-m/sec	1430 psi-ft/min	at 1 m/s unlubricated
	0.0800 MPa-m/sec	2280 psi-ft/min	at 0.1 m/s unlubricated

Thermal Properties	Metric	English	Comments
CTE, linear	140 μm/m-°C	77.8 μin/in-°F	
	@Temperature 23.0 - 100 °C	@Temperature 73.4 - 212 °F	
Thermal Conductivity	0.650 W/m-K	4.51 BTU-in/hr-ft ² -°F	
Melting Point	135 °C	275 °F	DSC, 10°C/min.; ISO 11357-1/-3
Maximum Service Temperature, Air	80.0 °C	176 °F	Continuous
Deflection Temperature at 1.8 MPa (264 psi)	45.0 °C	113 °F	ISO 75-1/-2
Flammability, UL94	HB	HB	
Oxygen Index	<= 20 %	<= 20 %	ISO 4589-1/-2

Electrical Properties	Metric	English	Comments
Volume Resistivity	>= 1.0e+14 ohm-cm	>= 1.0e+14 ohm-cm	IEC 60093
Surface Resistivity per Square	>= 1.0e+12 ohm	>= 1.0e+12 ohm	IEC 60093

Compliance Properties	Metric	English	Comments
3A-Dairy	No	No	
European Food 1935/2004	No	No	
FDA	No	No	
USP Class VI	No	No	

Chemical Resistance Properties	Metric	English	Comments
Acids, Strong (pH 1-3)	Acceptable	Acceptable	
Acids, Weak	Acceptable	Acceptable	

Alcohols Chemical Resistance Properties	Acceptable Metric	Acceptable English	Comments
Alkalies, Strong (pH 11-14)	Acceptable	Acceptable	
Alkalies, Weak	Acceptable	Acceptable	
Chlorinated Solvents	Acceptable	Acceptable	
Continuous Sunlight	Limited	Limited	
Hot Water / Steam	Unacceptable	Unacceptable	
Hydrocarbons - Aliphatic	Acceptable	Acceptable	
Hydrocarbons - Aromatic	Limited	Limited	
Inorganic Salt Solutions	Acceptable	Acceptable	
Ketones, Esters	Acceptable	Acceptable	

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