



PERMAFLOAT® SPECIFICATIONS

Permafloat® Specifications

All Cellofoam Permafloat dock floats are manufactured to the exacting standards listed on this document. Each float is made up of a shell rotationally molded from durable polyethylene and is filled with expanded polystyrene foam to offer maximum buoyancy even if the shell is breached. Permafloat shells are made from virgin, linear low density, polyethylene resin that contains UV inhibitors and carbon black to protect from deterioration caused by sunlight. The resin offers a balance of toughness, rigidity, environmental stress crack resistance, and low temperature impact performance. Typical physical properties of the shells appear in the following table.

Permafloat® Shell Virgin Polyethylene Typical Physical Properties ³			
Properties	Test Method	Units	Typical Results
Density	ASTM D792	g / cm ³	0.935
Melt Index (190°C/2.16 kg)	ASTM D1238	g / 10 min	5.2
Environmental Stress Cracking Resistance (ESCR) ¹	ASTM D1693		
122°F (50°C), 10% Igepal, F50		hr	> 982
122°F (50°C), 100% Igepal, F50		hr	> 1000
Tensile Strength (Yield) ¹	ASTM D638	psi (MPa)	2720 (18.8)
Flexural Modulus (1% Secant) ¹	ASTM D790B	psi (MPa)	95000 (655)
Rotationally Molded Impact Strength	ARM Int. ²		
-40°F (-40°C), 0.125 in (3.18 mm)		ft-lb (J)	59 (80)
-40°F (-40°C), 0.250 in (6.35 mm)		ft-lb (J)	188 (255)
Deflection Temperature Under Load ¹	ASTM D648		
66 psi (0.45 MPa), unannealed		°F (°C)	125 (51.7)
264 psi (1.8 MPa), unannealed		°F (°C)	95 (35.0)
Melting Temperature (DSC)	Dow Method	°F (°C)	257 (125)
¹ Plaque molded and tested in accordance with ASTM D4976 ² Association of Rotational Molders International, Low Temperature Impact Test, Version 4.0, July 2003. Note that some competitors use the impact test procedure of ASTM D1998 which is, by definition, only applicable to cylindrical tanks for upright chemical storage and is not applicable to dock floats. ³ These are typical values only acquired and not to be construed as specifications. Further, these values are for virgin polyethylene only, and for molding under ideal conditions. Carbon Black is added at the time of molding and may change these typical values significantly.			



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All float shells are rotationally molded for a seamless one-piece construction with a nominal wall thickness of 0.150" and a minimum wall thickness of 0.125". The shells are resistant to damage by animals and are resilient against ice, bumping by watercraft, and degradation caused by petroleum products. Custom thicknesses may be special ordered.

Permafloat dock floats are filled with nominal 1.0 pcf, virgin, expanded polystyrene (EPS) foam that is fused using steam. This increases the compressive strength of the float as well as provides back-up buoyancy in the unlikely event of catastrophic damage to the encasement. The flotation material used meets the higher UL94H and ASTM E84 requirement for flammability and both the shell and the EPS foam are recyclable. Typical physical properties of the EPS foam are shown in the following table.

Permafloat EPS Physical Properties		Units	ASTM Test	Typical Values ¹ ASTM C578 Type I
Density (Nominal)		lb/ft ³	C303 or	1.0
Density (Minimum)		lb/ft ³	D1622	0.90
Thermal Resistance				
R-Value ²	at 25° F	(°F ft ² hr) / Btu per inch	C177 or C518	4.35
	at 40° F			4.17
	at 75° F			3.85
Compressive Strength at 10% deformation		psi	D1621	10 - 14
Flexural Strength		psi	C203	25 - 30
Water Absorption by total immersion		volume %	C272 or C1763	< 1.5
Dimensional Stability maximum		change %	D2126	< 0.5
Coefficient of Thermal Expansion		in/(in °F)	D696	0.000035
¹ Typical physical properties are based on data provided by resin manufacturer, independent test agencies, and Cellofoam North America Inc. All data is for plain, unlaminated EPS foam. ² R means resistance to heat flow. The higher the R value, the greater the insulating power.				

Premium Quality
Permafloat® is a premium quality dock float and is manufactured with numerous quality control checks. Extensive in-house and third-party quality control testing is conducted on both the shells as well as the inside expanded polystyrene foam. All floats have been tank-tested for buoyancy and meet the US Army Corps of Engineers dock float requirements.

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