

Float Specifications

Weekly Quality Checks Ensure Consistency with Manufacturer and Industry Guidelines

Factory quality procedures dictate testing of all new materials and weekly random sampling of production floats to ensure the consistency of roto-molded shells for wall thickness and puncture resistance; and foam filled floats for water absorption characteristics within accepted industry specifications (see sample quality test document below). Test results are available on request.

Wall Thickness Test... Sampled floats are tested at 20 or more spots to ensure a nominal wall thickness of 0.150", 0.175", 0.180" and 0.375" depending on the size of the standard float selected. An average wall thickness and minimal wall thickness are measured. For 0.150" nominal wall floats the minimal acceptable wall thickness is 0.125"

ASTM D1998-04 Falling Dart Puncture Test... Sampled floats first are subjected to -20°F for several hours and then are tested by dropping a 2" diameter steel bar/shaft, 37" long with a 1/2" radius nose from a height of 40" to attain 90 ft. lbs. of impact to determine the cracking and puncture resistance of the shell material. Ace's dock float shells do not crack or puncture exceeding the requirements of this test; and pass the test even at 180 ft. lbs., twice the ASTM standard.

Hunt 7-Day Water Absorption Test... This industry standard test measures the water absorption of foam block formed by injecting raw EPS beads, under steam, into a float shell. The acceptable absorption level is 3 lbs/CuFt or less

Weekly Factory Quality Assurance Checks and Testing (example)

Q 070000A	Data for Week	2/22/04	To	2/28/04	Drum Data Code 0204	
Hunt 7-Day Water Absorption Test						
Test Beg. Date	Test End Date	Date Steamed	Supplier	Lot Number	Drum Size	Result (lb./Cu.Ft.)
2/22/04	2/28/04	2/17/05	Huntsman	9776	4x8x20	2.95
ASTM Falling Dart Puncture Test						
Test Date	Supplier	Material	Drum Size	Wall Thickness	Ft-Lbs Test	Result
2/22/04	Exxon Mobil	625	24x48x12	0.18	90	Pass
Encasement Wall Thickness Test						
	Test Date	Drum Size	Average	Std. Deviation	Low	
	2/22/04	3x6x20	0.2100"	0.152	0.179"	

	2/22/04	4x6x20	0.2004"	0.0141	0.172"	
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Float Encasement Specifications: All units are manufactured from linear virgin polyethylene resin containing UV ray inhibitors and carbon black pigment to protect against ultra-violet deterioration. These resins offer toughness, rigidity, environmental stress crack resistance and low temperature impact performance; and compliance with the FDA title 21 (will not contaminate the waterways and is recyclable). All units are rotationally molded for seamless, one piece construction, with a .150" nominal wall thickness standard on all encasements (see float size chart for variances). Custom wall thicknesses can be specified. All units are resistant to damage by animals, ice, bumps by watercraft and contact deterioration from petroleum products. They are suitable for outdoor use with respect to exposure to ultra-violet light, water exposure, immersion and fire in accordance with the Underwriters Laboratory's class 746C and flame class UL - 94HB. The encasements also meet the Hunt 7-Day Water Absorption and ASTM Falling Dart puncture and thickness test. All units will exhibit the following ASTM test methods:

Properties	ASTM	Units	Typ. Units
Density	D-1505	b/cc	0.937
Melt Index (190c//21.6kg)	D-1238	g/10 min.	5.00
Melt Index (190c//21.6kg)	D-1238	q/10 min.	125
ESCR (100/gelpad, F -90)	D-1693 (B)	Hrs.	1000
Tensile Strength at yield, 2"/min.	D-638	Psi	2750
Elongation at Break	D-638	%	600
Flexural Modulus (1% Secant)	D-790	Psi	109.000
Low Temperature Impact	ARM-STD-40F	Ft-lbs.	68
Brittleness temperature	D-746	O deg. C	-90
Heat Distortion Temperature	D-648	O deg. C	63

Float Drum Contents: All encasements are filled with virgin polystyrene (EPS) beads. The EPS beads are steamed together to provide less water absorption and solid core for structural strength. The EPS contents have a 0.9 to 1.2 lbs. per cubic foot density with water absorption not to exceed three pounds per cubic foot in accordance with the Hunt 7-Day Water Absorption Test. It will not sink or contaminate the water when punctured. The EPS contents conform to the ASTM C-578 and the Underwriters Laboratory standards. Regarding fire resistance; it

passes the UL723, UL1975 and ASTM E84 tests. Below are other ASTM test results:

Properties	ASTM Test	Units	Value
Density	C-303	Min lb./ft ³	0.90
Thermal Resistance			
@ 25° F (-3.9° C)	C-177 or	Min R for 1" Thickness	4.20
40° F (4.4° C)	C-518		4.00
75° F (23.9° C)	C-158		3.60
110° F (43.3° C)			3.25
Compressive resistance at Yield or 10% Deformation	D-1621	Min psi	10.0
Flexural Strength	C-203	Min psi	25.0
Water Vapor Permeability	E-96	Max perm-in	5.0
Water Absorption	C-272	% by Vol Max	3.0
Dimensional Stability		Max %	2.0
Oxygen Index	D-2863	Min %	24.0
Coefficient of Thermal Expansion	D-696	In/in/°F	0.000035
Flash Ignition Temperature	D-1929	°F	824
Auto-Ignition Temperature	D-1929	°F	896
BTU Content	NFPA 259	BTU/lb.	17,425

Contact

Gordie Burns
 Nelco Marine
 P. O. Box 39
 Nelson, B.C. Canada V1L 5P7

Phone: 250.354.9011
 Fax 250.352.7715
nelcom@telus.net

