

ALT Aquarium Grade Panel Properties
According to 3.1 B EN 10 204



Property		General Value	Required Value	Unit	Test procedure
Izod notched impact strength		22.3	≥ 13.3	J/m	ASTM D 256 specimen size 64x12.7x4mm
Refractive index		1.4899	1.49 ± 0.01		ASTM D 542
Water absorption, 24 h		0.18	≤ 0.25	%	ASTM D 570
Compressive deformation		0.47	≤ 1	%	ASTM D 621-64, specimen size 12.7x12.7x12.7mm, 454 kg., 50°C
Tensile	modulus	3263	≥ 2760	Mpa	ASTM D638M-91a, specimen type M-I, sample thickness 10mm, testing speed 1mm/min
Tensile	strength	82.9	≥ 62	Mpa	ASTM D 638M-91 a, specimen type M-I, sample thickness 10mm, testing speed 5mm/min
	elongation at break	5.9	≥ 2	%	
Compressive	modulus	3482	≥ 2760	Mpa	ASTM D 695M-91, specimen size 12.5x12.5x50mm, testing speed 1mm/min
Compressive	yield strength	124.9	≥ 103	Mpa	ASTM D 695M-91, specimen size 12.5x12.5x25mm, testing speed 1mm/min
Shear ultimate strength		72.3	≥ 55	Mpa	ASTM D 732
Rockwell hardness		105	≥ M scale 90		ASTM D 785
Flexural ultimate strength		124	≥ 97	Mpa	ASTM D 790M-86, specimen size 80x10x4mm, testing speed 2mm/mm
Specific gravity		1.1861	1.19 ± 0.01	g/cm ³	ASTM D 792
Ultraviolet (290-330nm) light transmittance		< 3	≤ 5	%	ASTM E 308, sample thickness 12.5mm
Clarity, visually rated		readability confirmed	must have readability		PVHO-1 method, para. 2-3.7(e)
Coefficient of linear thermal expansion at	°C				
	-40	3.02	≤ 5.22	10 ⁻⁵ mm/mm °C	ASTM D 696
	-29	3.87	≤ 5.40	10 ⁻⁵ mm/mm °C	ASTM D 696
	-18	4.65	≤ 5.76	10 ⁻⁵ mm/mm °C	ASTM D 696
	-7	5.34	≤ 6.12	10 ⁻⁵ mm/mm °C	ASTM D 696
	4	5.95	≤ 6.66	10 ⁻⁵ mm/mm °C	ASTM D 696
	16	6.53	≤ 7.20	10 ⁻⁵ mm/mm °C	ASTM D 696
	27	6.98	≤ 7.74	10 ⁻⁵ mm/mm °C	ASTM D 696
	38	7.35	≤ 8.46	10 ⁻⁵ mm/mm °C	ASTM D 696
49	7.64	≤ 9.18	10 ⁻⁵ mm/mm °C	ASTM D 696	
60	7.86	≤ 9.72	10 ⁻⁵ mm/mm °C	ASTM D 696	
Deflection temperature of plastics under flexure at 1.8Mpa		117	≥ 85	°C	ASTM D 648
Total residual monomer methyl methacrylate	top surface	0.7			
	core	0.6	≤ 1.6	%	---
	bottom surface	1			

Note: For the measurement of total residual monomer, individual measurements were performed on samples taken from both surfaces and the core of the material. In all other cases, samples were taken from the top surface only.

The properties of Aquarium Grade block supplied by Alternative Plastics Ltd. Will meet or exceed the required values above as taken from table 2-3.1, ASME PVHO-1-2002. Metric versions of ASTM standards 638, 695 and 790 were chosen. ISO 7823-1 International Standard (available on request)

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For guaranteed calculations Alternative Plastics can consult a qualified engineer at the cost of the customer.