Divinycell® H

Divinycell is a semi-rigid PVC foam used as a core material in conjunction with high-strength skins, to produce strong, stiff, lightweight composites structures. Divinycell H is our most commonly used core material. All Divinycell foam has a high strength-to-weight ratio, exceptional dynamic strength, excellent insulating properties, and a closed-cell structure that makes it impervious to water. Divinycell is widespread in the marine, transportation, and aerospace industries, and can be used in countless applications where strength, stiffness, and low weight are desired. This material is available in a range of densities, as standard sheets or fabricated to customer specifications.

Material Properties									
Quality		**H 45**	**H 60**	**H 80**	**H 100**	**H 130**	**H 160**	**H 200**	**H 250**
Density	kg/m^3	48	60	80	100	130	160	200	250
ASTM D 1622	lb/ft^3	3.0	3.7	5.0	6.2	8.1	10.0	12.5	15.6
Compressive Strength	MPa (+22ºC)	0.6	0.8	1.2	1.7	2.5	3.4	4.4	5.8
ASTM D 1621	psi (+72ºF)	80	115	175	245	360	500	640	840
Compressive Modulus	MPa (+22ºC)	40	60	85	125	175	230	310	400
ASTM D 1621 - B	psi (+72ºF)	5800	8700	12325	18125	25375	33350	44950	58000
Tensile Strength	MPa (+22ºC)	1.3	1.6	2.2	3.1	4.2	5.1	6.4	8.8
ASTM D 1623	psi (+72ºF)	190	230	320	450	610	740	930	1275
Tensile Modulus	MPa (+22ºC)	42	56	80	105	140	170	230	300
ASTM D 1623	psi (+72ºF)	6090	8120	11600	15225	20300	24650	33350	43500
Shear Strength	MPa (+22ºC)	0.5	0.7	1.0	1.4	2.0	2.6	3.3	4.5
ASTM C 273	psi (+72ºF)	70	100	145	200	290	380	480	650
Shear Modulus	MPa (+22ºC)	18	22	31	40	52	66	85	108
ASTM C 273	psi (+72ºF)	2610	3190	4495	5800	7540	9570	12325	15660

Refer to the H Grade Technical Manual for more detailed information.

Continuous operating temperature range:	-200°C to +70°C (-325°F to 160°F)
Maximum processing temperature:	+80°C (+176°F)
Coefficient of linear expansion (ASTM D-696):	35×10^{-6} / °C (2×10^{-5} / °F)
Poissons ratio:	0.32
Density Tolerance:	-10% / +15%

The Divinycell H grade has all the properties expected of a high-performance, lightweight construction material. It is a partially cross-linked, structural cellular material expanded according to CFC free process. High ductility and resilience give excellent dynamic behavior under shock and impact. Compatibility with a wide range of matrix materials, low water absorption, self-extinguishing and exceptionally good thermal forming properties are other basic features.

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Divinycell® H

Divinycell H has a unique position in the international composite market as a core material in multifunctional sandwich constructions. The Divinycell H grade is used in a wide range of applications where there is a need for a strong, lightweight construction material with excellent mechanical characteristics. Applications include helicopter rotor blades, pleasure crafts, ship hulls and truck bodies. Divinycell H grade is available in a range of densities as standard sheets or fabricated to customer specifications.

Thermal Properties									
Quality		**H 45**	**H 60**	**H 80**	**H 100**	**H 130**	**H 160**	**H 200**	**H 250**
Density	kg/m^3	48	60	80	100	130	160	200	250
ASTM D 1622	lb/ft^3	3	3.7	5	6.2	8.1	10	12.5	15.6
Thermal Conductivity	W/m ºC	0.023	0.024	0.026	0.028	0.032	0.035	0.04	0.046
ASTM C 377 -10ºC	Btu in/ft² h ºF	0.153	0.16	0.173	0.187	0.213	0.233	0.267	0.307
Thermal Conductivity	W/m ºC	0.024	0.025	0.028	0.03	0.034	0.038	0.043	0.048
ASTM C 377 +10ºC	Btu in/ft² h ºF	0.16	0.167	0.187	0.2	0.227	0.253	0.287	0.32
Thermal Conductivity	W/m ºC	0.026	0.027	0.03	0.032	0.036	0.04	0.046	0.052
ASTM C 377 +37ºC	Btu in/ft² h ºF	0.173	0.18	0.2	0.213	0.24	0.267	0.307	0.347
Water Absorption	kg/m^2	0.1	0.072	0.046	0.04	0.03	0.024	0.02	0.018
ASTM C 272	lb/ft^2	0.0205	0.0148	0.0094	0.0082	0.0061	0.0049	0.0041	0.0037
Water Permeability	m^2/s x 10-8	2.8	1.6	1.1	1	1	1	1	1
ASTM E 96	ft^2/s x 10-8	0.26	0.15	0.1	0.09	0.09	0.09	0.09	0.09
Specific Heat	kJ/kg ºC	1.9	1.8	1.75	1.7	1.65	1.6	1.55	1.5
ASTM E 1296	Btu/lb ºF	0.454	0.423	0.418	0.406	0.394	0.382	0.37	0.358
R-Value Based on +10ºC K factor	12 mm / 0.5 in	3.2	3	2.7	2.5	2.2	2	1.8	1.6
	25 mm / 1.0 in	6.3	6	5.3	5	4.4	4	3.5	3.1
	51 mm / 2.0 in	12.6	12	10.6	10	8.8	8	7	6.2

Refer to the H Grade Technical Manual for more detailed information.

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