Corecell™ S-Foam

Structural Foam Core

- **High hydrostatic crush strength and water resistance**
- **Outstanding mechanical properties**
- **Ultra-fine cell size**
- **Lower density than resin-based syntactics**

Introduction

Corecell S-Foam shares the benefits of SAN chemistry common to all **Core**cell products.

Built in toughness – High ductility and damage tolerance
Fine cell size – Resin absorbtion is very low, saving both weight and cost
Superior uniformity – More consistent density than resin-based syntactics
Eliminating outgassing – **Core**cell eliminates the problems of foam outgassing
Compatibility – Suitable for use with all polyester, vinylester and epoxy resins
No inhibition - **Core**cell does not inhibit any epoxy resin curing mechanisms
Handling – Robust for easy machining and use

Corecell S-Foam has been designed specifically for use in sub-sea buoyancy applications. Its resistance to crushing means that it can withstand depths of over 900m, and its closed-cell structure gives it a high water resistance that ensures buoyancy is maintained over time. With its very high compressive strength, **Core**cell S-Foam can also replace other materials, such as plywood, when creating high strength inserts for through-bolting in composite laminates.

Having the smallest cell size of all the **Core**cell products, Corecell S-Foam absorbs very little resin in lamination processes, thus minimising weight gain. The small cell size and the product's inherent toughness also contribute to the excellent machineability of **Core**cell S-Foam. Complex shapes can be created in **Core**cell S-Foam using a variety of milling, routing, sawing and drilling techniques.

Corecell S-Foam is available at lower densities that can be achieved with a syntactic, with standard products ranging from 150 to just over 300kg/m^3.

Type	Test Method	Units	S800	S1200	S1800
Average Density	ASTM D1622	kg/m^3	150	210	315
Manufacturing Range		kg/m^3	140-160	200-220	300-330
Average Density		lb/ft^3	9.3	13.1	19.7
Manufacturing Range		lb/ft^3	8.7-10.0	12.5-13.7	18.7-20.5
Hydrostatic Crush Pressure (HCP)*	ASTM D-2736	Bar	>20	>45	>90
		Mean MPa	3.46	6.19	10.97
		Mean psi	500	900	1,590
		m of Water	353	632	1119
Compression Strength	ASTM D1621 or DIN 53421	Mean MPa	2.79	4.71	9.17
		Mean psi	405	683	1,331
Compressive Modulus	ASTM D1621b or DIN 53421	Mean MPa	224	359	634
		Mean psi	32,530	52,140	92,040
Shear Strength	ISO 1922	Mean MPa	1.85	2.91	5.21
		Mean psi	268	422	756
Shear Modulus	ISO 1922	Mean MPa	64.8	98.4	157
		Mean psi	9,400	14,270	22,800
Shear Elongation	ISO 1922	Mean %	16%	13%	7%
Dimensional Stability**	DIN 53424	°C	100	100	110
Thermal Conductivity	ASTM C518	W/mK	0.04	0.05	0.06

* This is where at a pressure of 1-2 bar per second, the material has lost 5% of its volume, when loaded for 1 minute

** at elevated temperature with flexural load

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