Corecell™ A-Foam

Structural Core Material

Product Data Sheet

Corecell A-Foam – The toughest structural core

- Exceptional impact tolerance
- Suitable for dynamically-loaded structures
- Superior styrene and temperature resistance to linear PVC foam
- Highly thermoformable
- Ideal for resin infusion

Introduction

Corecell A-Foam shares the benefits of SAN chemistry common to all Corecell products.

Built in toughness – Very high ductility and damage tolerance
Environmental stability – High tolerance for heat and chemical exposure
Fine cell size – Resin absorbtion is very low, saving both weight and cost
Superior uniformity – Half the density variation of PVC and Balsa
Eliminating outgassing – Corecell eliminates the problems of foam outgassing
Compatibility – Suitable for use with all polyester, vinylester and epoxy resins
Handling – Tough and easy to machine

Corecell A-Foam is the original Corecell material, developed because of frustrations with inadequate PVC core technology in marine sandwich structures. Corecell A-Foam is well known for it's incredible toughness and resistance to cracking, which comes from its high ductility. Corecell A-Foam can elongate up to 65% in shear before failure, making core shear failure in a laminate almost impossible. Tests and experience show that Corecell A-Foam is the most reliable core material for dynamic loading situations where PVC and balsa may fail due to poor shear elongation properties. This reliability has made Corecell A-Foam the preferred choice amongst offshore yachtsmen for twenty years.

For the manufacturer, Corecell A-Foam offers the benefit of high resistance to styrene and other chemicals and better thermal stability than linear-PVC foam. Corecell A-Foam is also highly thermoformable, which is useful in many applications where cutting the core material is undesirable.

Corecell A-Foam is available in every resin infusion format and is compatible with polyester, vinylester and epoxy resin systems. The low resin absorption characteristics of Corecell and it's unique knife cut formats allow for higher performing infusions, lower resin cost and lower weight than any other structural core material. SP's global technical team have 10 years experience in resin infusion and offer on-site support for Corecell customers. This combination makes Corecell the most reliable resin infusion package available.

Approvals

- Accepted for DNV Slamming and Fatigue Applications
- Approved by the US Coast Guard for use as buoyancy foam
- Approved by the US Coast Guard for use as sandwich core material in the structures of integral diesel fuel tanks
- Type approved by: The American Bureau of Shipping
  Lloyd's Register of Shipping
  Germanischer Lloyd
  Det Norske Veritas

Corecell™

Corecell **A-Foam**

Type	Test Method	Units	A300	A400	A450	A500	A550	A600	A800	A1200
Nominal Density		kg/m^3	58.5	69	81	92	103	116.5	150	210
		lb/ft^3	3.6	4.3	5.0	5.7	6.4	7.3	9.3	13.1
Density Range		kg/m^3	54-63	64-74	75-86	87-97	98-108	109-124	140-160	200-220
		lb/ft^3	3.4-3.9	4.0-4.6	4.7-5.4	5.4-6.0	6.1-6.7	6.8-7.7	8.7-10.0	12.5-13.7
Compression Strength	ASTM D1621	MPa	0.5	0.6	0.8	0.9	1.1	1.4	2.1	3.9
		psi	65	90	112	135	161	197	308	564
Compressive Modulus	ASTM D1621b	MPa	32	41	53	64	72	83	117	217
		psi	4640	5950	7620	9290	10450	12040	16980	31490
Shear Strength	ISO 1922	MPa	0.6	0.7	0.8	1.0	1.1	1.2	1.6	2.6
		psi	81	102	123	144	157	176	229	373
Shear Modulus	ISO 1922	MPa	20	22	24	26	30	34	47	76
		psi	2900	3190	3480	3770	4350	4930	6820	11030
Shear Elongation	ISO 1922	%	62%	63%	63%	69%	66%	64%	50%	46%
Tensile Strength	ASTM C-297	MPa	0.8	0.9	1.1	1.3	1.6	1.8	2.5	3.9
		psi	110	135	165	194	225	264	364	560
Tensile Modulus	ASTM C-297	MPa	38	50	65	81	97	120	183	321
		psi	5510	7260	9430	11750	14080	17410	26560	46580
Thermal Conductivity	ASTM C518	W/mK	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05
Dimensional Stability	DIN 53424	°C	63	63	63	63	63	63	63	63
		°F	145	145	145	145	145	145	145	145
Compression Stability*	TMA	°C	98	98	98	98	98	98	98	98
		°F	208	208	208	208	208	208	208	208

* Peak change rate under static load

Intermediate densities may be available on request, subject to minimum order quantities.

Please Note:
Data quoted is average data at each product´s nominal density, and is derived from our regular testing of production materials.

Statistically derived minimum value data, satisfying the design requirements of various classification societies, is available on request.

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