HORIZON
Redefine Materials Frontier

TECHNICAL DATA



HXCELL®-HX

HIGH PERFORMANCE PVC CORE MATERIAL

HXCELL®-HX is a high-performance polyvinyl chloride (PVC) rigid foam core with a semi-interpenetrating polymer network (Semi-IPN) structure, achieving an engineered balance between mechanical properties and processability. Compared with conventional linear-structure foam cores, HXCELL®-HX significantly improves specific modulus through its unique Semi-IPN architecture. Meanwhile, unlike conventional crosslinked foams, its functional groups and molecular chain mobility are both optimized, endowing the material with superior elongation at break and toughness. The synergy of high modulus and high toughness delivers outstanding machinability: flat panel thickness can be reliably processed down to 0.8 mm, while warpage and other processing defects are reduced. The optimized interpenetrating network substantially shortens the post-curing time, effectively reducing the manufacturing cycle and thus the product delivery lead time. Additionally, thanks to its unique combination of high modulus and high strain capacity, the material exhibits excellent fatigue resistance and impact energy absorption under dynamic loading conditions, with exceptional long-term structural stability. Based on the above performance advantages, HXCELL®-HX is widely used in aerospace, marine and yachting, sporting goods, automotive composite components, and industrial manufacturing.

MECHANICAL PROPERTIES

Property	Test Procedure	Unit	Statistical Value	HX45	HX50	HX60	HX80	HX100	HX130	HX200	HX250	HX300
Density	ISO 845	kg/m³	Max.	50	55	69	90	110	150	220	275	330
			Avg.	45	50	60	80	100	130	200	250	300
			Min.	40	45	54	72	90	120	180	225	275
Compressive Strength	ISO 844:2006	MPa	Avg.	0.68	0.78	1.03	1.51	2.16	3.10	5.44	7.22	9.44
			Min.	0.56	0.69	0.85	1.30	1.80	2.80	4.80	6.00	8.10
Compressive Modulus	ISO 844:2006	MPa	Avg.	48.2	63.5	90.8	119	180	206	353	420	599
			Min.	36.0	50.0	75.0	103	150	180	300	360	530
Tensile Strength	ASTM C297	MPa	Avg.	0.96	1.36	1.88	2.41	3.51	4.25	6.62	7.34	8.60
			Min.	0.84	1.02	1.70	2.20	3.00	3.50	5.50	6.20	7.45
Tensile Modulus	ASTM C297	MPa	Avg.	72	79	96	130	150	186	341	386	412
			Min.	63	70	87	110	130	155	270	305	320
Shear Strength	ISO 1922:2012	MPa	Avg.	0.55	0.70	0.79	1.15	1.57	2.18	3.40	4.51	5.62
			Min.	0.47	0.59	0.70	1.0	1.35	1.80	3.15	3.90	5.00
Shear Modulus	ISO 1922:2012	MPa	Avg.	16	20	23	32	42	54	90	123	152
			Min.	14	16	20	27	33	48	75	105	130
Shear Strain	ISO 1922:2012	%	Avg.	13	13	22	28	30	35	42	45	48

***Note:** The above values are average results obtained from routine production testing.

PRODUCT CHARACTERISTICS

- **SEMI-IPN STRUCTURE:** High strength-to-weight ratio, excellent stiffness, and high impact resistance for dynamic load applications.
- **EXCELLENT CHEMICAL RESISTANCE:** Compatible with a wide range of resin systems, including epoxy and unsaturated polyester resins.
- **CLOSED-CELL STRUCTURE:** Provides low resin absorption, low water absorption, thermal insulation, sound insulation, and dielectric transparency.
- **SELF-EXTINGUISHING PROPERTY:** Suitable for applications requiring enhanced fire safety and higher performance standards.

TECHNICAL CHARACTERISTICS

Characteristics	Test Procedure	Unit	HX45	HX50	HX60	HX80	HX100	HX130	HX200	HX250	HX300
Thermal Conductivity (20°C)	EN 12667	W/(m-K)	0.028	0.028	0.029	0.031	0.033	0.037	0.044	0.049	0.055
Coefficient of Linear Thermal Expansion	ISO 4897	x10^-6/°C	40	40	40	40	40	40	40	40	40
Heat Deflection Temperature	DIN 53424	°C	125	125	125	125	125	125	125	125	125
Maximum Continuous Service Temperature	/	°C	80	80	80	80	80	80	80	80	80
Dissipation Factor	ASTM D 2520	/	0.0002	0.00024	0.0003	0.0005	0.0006	0.0009	0.0015	0.0019	0.0024
Dielectric Constant	ASTM D 2520	/	1.05	1.05	1.06	1.08	1.11	1.14	1.23	1.28	1.34
Poisson's Ratio	ASTM D638-22	/	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

***Note:** The above data are average values from routine production testing. Continuous service temperature: -200°C to +80°C. For high-temperature or sustained load applications, please contact us for design support.Maximum processing temperature depends on time, pressure and process conditions; recommended limit under normal conditions is 110°C.

SPECIFICATIONS

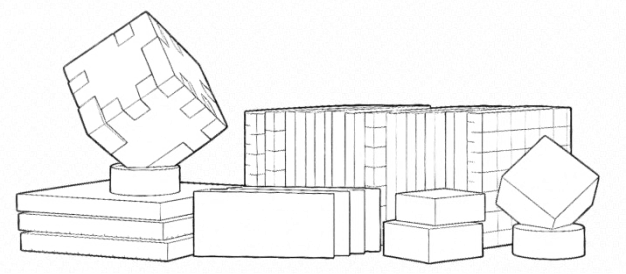
Format	Specifications	Unit	HX45	HX50	HX60	HX80	HX100	HX130	HX200	HX250	HX300
Plain sheet	L	mm	2500	2450	2450	2240	2050	1950	1700	1600	1480
	W	mm	1250	1250	1250	1120	1050	980	850	800	780
	THK.	mm	0.8-90	0.8-85	0.8-90	0.8-80	0.8-70	0.8-60	2-55	2-55	2-45
	Color	/	Yellow	Yellow	Yellow	Green	Red	Blue	Yellow	Yellow	Yellow
GS sheet	L	mm	1250	1225	1225	1120	1025	975	/	/	/
	W	mm	1250	1250	1250	1120	1050	980	/	/	/
	THK.	mm	5-50	5-50	5-50	5-50	5-50	5-50	/	/	/
	Color	/	Yellow	Yellow	Yellow	Green	Red	Blue	Yellow	Yellow	Yellow

*Note: The above data are based on measurements of currently produced sizes. For updated information, please contact our Technical Service Department.

HXCELL®- HX IS TYPE APPROVED BY:

Disclaimer:

This data sheet may be subject to revision and changes due to development and changes of the material. The data is derived from tests and practical experience. If not stated as minimum values, the data is average data and should be treated as such. Relevant calculations should be verified by actual tests. The data is furnished without liability for the company and does not constitute any warranty or representation in respect of the material or its use. The company reserves the right to release new data sheets in replacement.



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