BALTEK® SB and SBC

GM--TDS-097

Select Grade Structural Balsa

new DATA SHEET 03.2023

DESCRIPTION

BALTEK® SB and SBC are core materials produced from select kiln-dried balsa wood in the 'end-grain' configuration, which make them ideal for vacuum infusion. Both have extremely high strength and stiffness to weight ratios and achieve an excellent bond with all types of resins and adhesives. They are compatible with a variety of manufacturing processes and are resistant to temperature changes, or exposure to fire, or chemicals such as styrene.

3A Composites Core Materials owns and manages several thousand hectares of FSC®-certified balsa wood plantations. Its cultivation from seedling to the tree ensures sustainable forest management and strict traceability. Own plantations enable 3A Composites to provide a continuous supply to industrial customers.

Both **BALTEK® SB and SBC** are ideal core materials for an extensive range of applications subjected to static or dynamic loads in service. All while being a renewable resource.

CHARACTERISTICS

- Ecological product
- First-class, select grade lumber
- Broadest range of available balsa densities worldwide
- Certified for a range of applications by DNV, Germanischer Lloyd, Lloyd's Register, American Bureau of Shipping and Korean Register
- Excellent fatigue and impact resistance
- Outstanding strength and stiffness to weight ratios
- Good sound and thermal insulation
- Fulfils most FST (flame, smoke, toxicity) requirements
- Extremely wide operating temperature range -212 °C to +163 °C (-414 °F to +325 °F)
- Controlled time from harvesting to kiln-drying: Optimized for vacuum infusion processes
- Full traceability and highest lumber quality due to strict process control from seedling to final product

APPLICATIONS

- **Wind energy**: Rotor blades (shear webs & shells), nacelles, spinners
- **Marine:** Hulls, decks, bulkheads, superstructures, interiors, tooling/molds
- **Road and Rail:** Floors, roofs, side skirts, front-ends, doors, interiors, covers
- **Industrial:** Tanks, containers, architectural panels, impact limiters, sporting goods
- **Aerospace:** Floors, cargo pallets, cargo containers, bulkheads, general aviation
- **Defense**: Naval vessels, containers, cargo pallets, shelters, ballistic panels

PROCESSING

- Vacuum infusion
- Adhesive bonding
- Compression molding
- Contact molding (hand/spray)
- Pre-preg processing (up to 180 °C, 355 °F)
- Resin injection (RTM)

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MECHANICAL PROPERTIES						
Typical properties for BALTEK® SB and SBC		**Unit (metric)**	**50**	**80**	**100**	**150**
Nominal sheet density	ASTM C-271	kg/m³	109	132	148	285
Minimum sheet density	ASTM C-271	kg/m³	84	113	136	248
Compressive strength perpendicular to the plane	ISO 844	N/mm²	5.5	7.7	9.2	22
Compressive modulus perpendicular to the plane	ISO 844	N/mm²	1616	2187	2526	4428
Tensile strength perpendicular to the plane (polyester)	ASTM C-297	N/mm²	3.9	5.0	5.7	12.2
Tensile strength perpendicular to the plane (epoxy)	ASTM C-297	N/mm²	9	10.9	12	18.3
Tensile modulus perpendicular to the plane	ASTM C-297	N/mm²	1682	2337	2791	6604
Shear strength[1]	ASTM C-273	N/mm²	1.8	2.3	2.6	5.2
Shear modulus	ASTM C-273	N/mm²	136	166	187	362
Thermal conductivity at room temperature	ASTM C-177	W/m*K	0.048	0.059	0.066	0.084
Standard sheet	Width	mm ± 5	610	610	610	610
	Length	mm ± 10	1220	1220	1220	1220
	Thickness	mm +0.25 / -0.75	4.7 to 76	4.7 to 76	4.7 to 76	4.7 to 76
ContourKore (CK)	Thickness	mm +0.25 / -0.75	4.7 to 50	4.7 to 50	4.7 to 50	4.7 to 50

Please specify Lamprep surface treatment or AL600 coating (decreases porosity and increases bond strength) when ordering.
Perforations (breather holes), grooves and other finishing options are also available. Other sheet sizes are available on request.

[1)] All samples tested @ ¾" thick. Please apply appropriate shear strength reduction factors for greater thickness.

Fire Performance[+]	Standard		50	100	150
Aircraft	FAR 25.853	Flammability	Passed	Passed	Not tested
		Smoke density	Passed	Passed	
		Toxicity	Passed	Passed	
		Heat release	Failed	Failed	
Rail	ASTM E 162	Flame spread factor	2.22	2.22	Not tested
		Heat Evolution factor	6.24	6.24	
		Flame spread index	14	14	
Rail	ASTM E 662 (non-flaming mode)	Ds @ 90 sec	3	3	Not tested
		Ds @ 4min	39	39	
Rail	ASTM E 662 (flaming mode)	Ds @ 90 sec	8	8	Not tested
		Ds @ 4min	25	25	

[+] All samples tested with phenolic resin FRP skins.

MECHANICAL PROPERTIES

The data provided gives approximate values for the nominal density. Due to density variations these values can be lower than indicated above. Minimum values to calculate sandwich constructions can be provided upon request. The information contained herein is believed to be correct and to correspond to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.

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BALTEK

3A COMPOSITES CORE MATERIALS

Typical properties for BALTEK® SB and SBC		Unit (imperial)	50	80	100	150
Nominal sheet density	ASTM C-271	lb/ft³	6.8	8.2	9.3	17.8
Minimum sheet density	ASTM C-271	lb/ft³	5.2	7.1	8.5	15.5
Compressive strength perpendicular to the plane	ISO 844	psi	798	1117	1336	3184
Compressive modulus perpendicular to the plane	ISO 844	psi	234400	317198	366200	642000
Tensile strength perpendicular to the plane (polyester)	ASTM C-297	psi	558	725	831	1770
Tensile strength perpendicular to the plane (epoxy)	ASTM C-297	psi	1299	1581	1737	2654
Tensile modulus perpendicular to the plane	ASTM C-297	psi	243900	338954	404700	957600
Shear strength[1]	ASTM C-273	psi	267	334	378	761
Shear modulus	ASTM C-273	psi	19700	24076	27100	52600
Thermal conductivity at room temperature	ASTM C-177	BTU.in/ft².hr.°F	0.331	0.407	0.456	0.581
Standard sheet	Width	in ± 3/16	24	24	24	24
	Length	in ± 3/8	48	48	48	48
	Thickness	in +0.01 / -0.03	3/16 to 3	3/16 to 3	3/16 to 3	3/16 to 3
ContourKore (CK)	Thickness	in +0.01 / -0.03	3/16 to 2	3/16 to 2	3/16 to 2	3/16 to 2

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