

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Sandwich Core Materials**with type designation(s)
BALTEK SB - Series

Issued to

Baltek Inc.
Colfax NC, USA

is found to comply with

DNV GL class programme DNVGL-CP-0084 – Type approval – Sandwich core materials**Application :****Manufacturing of sandwich-structured composite**Issued at **Freie und Hansestadt Hamburg** on **2018-01-18**This Certificate is valid until **2023-01-17**.for **DNV GL**DNV GL local station: **Hamburg Materials & Welding**Approval Engineer: **Guido Michalek**

Thorsten Lohmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

End Grain Balsa Wood Sheets with and without Forest Stewardship Council (FSC) Certification

Approved variants

- BALTEK SB(C).50
- BALTEK SB(C).80
- BALTEK SB(C).100
- BALTEK SB(C).100 SX*)

(C) stands for FSC Certification

*) SealX is a variant with sealed surface for reduced resin consumption and a demonstrated saving of 1.93 kg/m² based on 1" thick specimens.

Material Properties

Variant	Nominal Density (1)	Nominal Density (2)	Compr. Strength (3)	Compr. Modulus (3)	Compr. Strength (4)	Compr. Modulus (4)	Shear Strength (5)	Shear Modulus (5)
SB(C).50	109 (84)	113 (87)	5.50 (4.70)	1616 (964)	0.53 (0.44)	37.7 (28.4)	1.79 (1.36)	113.0 (86.3)
SB(C).80	132 (113)	136 (117)	7.70 (5.25)	2187 (1163)	0.60 (0.46)	46.3 (29.5)	2.19 (1.86)	138.0 (117.8)
SB(C).100	148 (136)	153 (140)	9.2 (5.7)	2526 (1321)	0.66 (0.47)	52.2 (30.3)	2.46 (2.25)	156.0 (142.7)
SB(C).100 SX**)	148 (136)	153 (140)	9.2 (5.7)	2254 (1321)	0.92 (0.67)	76.8 (57.8)	2.04 (1.95)	156.0 (142.7)

(1) Nominal Density according to ISO 845 in kg/m³ based on a moisture content of 8%

(2) Nominal Density according to ISO 845 in kg/m³ based on a moisture content of 12%

(3) Compressive behavior parallel to the grain according to ISO 844:2014, procedure B in MPa.

(4) Compressive behavior perpendicular to the grain according to ISO 844:2014, procedure B in MPa.

(5) Shear behavior measured on 1" thick specimens according to ISO 1922 in MPa.

**) Densities are of only the balsa core without SX coating

All values are average values based on nominal sheet density and verified by testing. The values within brackets are minimum values based on minimum sheet density and verified by testing.

The core shear strength might be adjusted according to the table below.

Core thickness [mm]	Multiply specified core shear strength by the following factor:
12.7	1.11
19.0	1.00
25.4	0.92
38.1	0.83
50.8	0.77

Limitation

The balsa wood complies with the applicable requirements of DNV GL and is compatible to the laminating resin and/or adhesive. Any significant changes in design and / or quality of the material will render the approval invalid.

Job Id: **262.1-028057-1**
Certificate No: **TAK000013V**

Type Approval documentation

- Technical Data Sheet
- Technical Service Report No. AP 17-09 issued by 3A Composites, dated on 2017-10-13
- Test Report No. TR0055r3 issued by Gateway Materials Test Center, dated on 2017-09-05.
- Workshop Inspection Report, issued by Germanischer Lloyd, dated on 2011-01-28.

Assessed production site

Baltek Inc.
5240 National Center Drive
Colfax, NC 27235
United States of America

Periodical assessment

A production site with a valid Approval of Manufacturer (AoM) certificate for material in question is exempted from the obligation concerning retention and renewal assessments.
For manufacturer without a valid AoM a periodical assessment after 2.5 years and at renewal after 5 years is required.

END OF CERTIFICATE