

TYPE APPROVAL

Certificate No.:
TA-DNVGL-CP-0084-06890-0

Issued:
2021-03-01

Valid until:
2024-02-29

Issued for:

Balsa

with type designation(s)

BALSAFLEX - Series

for variants specified in annex 1

Issued to:

Gurit Balsa, S.L.

Girona, 17001, Spain

According to:

DNVGL-SE-0436:2018-04 Shop approval in renewable energy

and

DNVGL-CP-0084:2016-03 Type approval – Sandwich core materials

Applying:

DNVGL-SE-0441:2016-06 Type and component certification of wind turbines

Based on the documents listed in Annex 1:

This Type Approval supersedes the Type Approval TAK0000132 Rev. 1 and consists of this page and Annex 1 which is integral part of the approval.

Any significant change in design or quality of the material will render this Type Approval invalid.

Hellerup, 2021-03-01

Hamburg, 2021-03-01

For DNV GL Renewables Certification
Bente Vestergaard
Service Line Leader

For DNV GL Renewables Certification
Florian Willers
Senior Project Manager

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Product description and application

End Grain Balsa Wood with and without surface coating. The purpose of the coating is the reduction of resin uptake while mechanical properties remain unchanged. Variants with coating are marked as Lite.

Approved variants

- Balsaflex™ 150 and Balsaflex™ Lite 150 with a nominal density of 155 kg/m³, approved range: 135 – 176 kg/m³
- Balsaflex™ 185 with a nominal density of 185 kg/m³, approved range: 176 – 210 kg/m³

Type Approval documentation

Technical data sheet(s): Full General Datasheet Gurit G-Balsa - Balsa WOOD CORE MATERIAL, G-Balsa 110 and G-Balsa 150, PDS-G-Balsa-3-0321

Full General Datasheet Gurit G-Balsa - Balsa WOOD CORE MATERIAL, G-Balsa 185, PDS-G-Balsa185-1-0321

Full General Datasheet Gurit Balsaflex - Balsa WOOD CORE MATERIAL, Balsaflex 110 and Balsaflex 150, PDS-Balsaflex-11-0321

Full General Datasheet Gurit Balsaflex - Balsa WOOD CORE MATERIAL, Balsaflex 185, PDS-Balsaflex185-1-0321

Test report(s): Test Report No. 527511 issued by DNV GL approved testing laboratory of TPI dated October 2016.

Test Report No. COLE041816-49 issued by NTA Nappanee IN dated 2016.08.22.

Test Report No. COLE041816-45 issued by NTA Nappanee IN dated 2016.08.22.

Test Report No. 11239 issued by Gurit Americas Testing Laboratory

Technical Report No. 12006 rev. 3.0, issued by Gurit Americas Testing Laboratory dated 2021-03-11

Inspection report(s): Workshop Inspection Report no. WIR-06890_06957-000-Rev.0 for Gurit Balsaflex Cia. Ltda, Ecuador

Workshop Inspection Report no. WIR-06890_06957-001-Rev.1 for Gurit Tianjin Composite Material Co., Ltd., China

Quality control documentation: ISO 9001:2015 Management System Certificate, 113936-2012-AQ-RGC-RvA, issued by DNVGL to Gurit TianJin Composite Material Co., Ltd., China, dated 2020-04-21

ISO 9001:2015 Certificate of Approval, SGI 3050042/11B, issued by Lloyd's Register to Gurit Balsaflex Cia. Ltda., Quevedo, Ecuador, dated 2018-08-09

ISO 9001:2015 Certificate of Approval, SGI 3050042/11, issued by Lloyd's Register to Gurit Balsa S.L., Girona, Spain, dated 2018-08-09

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Material properties

Variant	Nominal Density (1)	Compr. strength (2)	Compr. modulus (2)	Compr. strength (3)	Compr. modulus (3)	Shear strength (4)	Shear modulus (4)
Balsaflex™ 150 and Balsaflex™ Lite 150	155	13.0 (9.9)	3518 (2312)	0.75 (0.47)	57 (35)	2.8 (2.1)	163 (121)
Balsaflex™ 185	185	19.2 (15.5)	4474 (3339)	1.5 (0.90)	95 (60)	3.2 (3.1)	197 (143)

(1) Nominal Density according to ISO 845 in kg/m³

(2) Compressive behaviour parallel to the grain in accordance with ISO 844:2014, procedure B in MPa.

(3) Compressive behaviour perpendicular to the grain in accordance with ISO 844:2014, procedure B in MPa.

(4) Shear behaviour in accordance with ISO 1922 in MPa.

All values are average values based on nominal density $\pm 5\%$ and verified by testing. The values within brackets are minimum values based on average – 2 standard deviation.

Limitation

The balsa wood complies with the applicable requirements of DNV GL and is compatible to the laminating resin or adhesive.

Approved Production Sites

Gurit Balsaflex Cia. Ltda.
KM, 19 Via a Vetanas
120501 Quevedo
Ecuador

Gurit TianJin Composite Material Co., Ltd.
No. 1 Hengtong Road
Yat Sen Park, Wuqing District, Tianjin
China 301726

Last workshop inspection: 2020-10-29

Last workshop inspection: 2020-11-05

Periodical assessment

2.5 years after the last workshop inspection, the client shall inform DNV GL about any modifications in production. An intermediate inspection might be needed based on the implemented changes.