



# TYPE APPROVAL

Certificate No.:  
TA-DNV-CP-0084-06957-1

Issued:  
2022-07-08

Valid until:  
2024-02-29

Issued for:

**Balsa**

with type designation(s)

**G-Balsa – Series**

As specified in Annex 1

Issued to:

**Gurit (Tianjin) Composite Material Co., Ltd.**

No. 1 Hengtong Road, Yat Sen Park, Wu Qing District, Tianjin 301726, China

According to:

**DNV-SE-0436:2021-09 Shop approval in renewable energy**

and

**DNV-CP-0084:2021-09 Type approval – Sandwich core materials**

Applying:

**DNV-SE-0441:2021-10 Type and component certification of wind turbines**

Based on the documents listed in Annex 1.

This Type Approval supersedes the Type Approval TA-DNVGL-CP-0084-06957-0.

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

Hellerup, 2022-07-08  
For DNV Renewables Certification

Hamburg, 2022-07-08  
For DNV Renewables Certification

**Bente Vestergaard**  
Service Line Leader

**Bernhard Krüger**  
Project Manager

# TYPE APPROVAL – ANNEX 1

Certificate No.:  
TA-DNV-CP-0084-06957-1

Page 2 of 3

## 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

- G-Balsa™ 150 and G-Balsa™ Lite 150 with a nominal density of 155 kg/m<sup>3</sup>, approved range: 135 – 176 kg/m<sup>3</sup>
- G-Balsa™ 185 with a nominal density of 185 kg/m<sup>3</sup>, approved range: 176 – 210 kg/m<sup>3</sup>

## 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
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 Management System Certificate, 10000456610-MSD-DANAK-DNK-CC1, issued by DNV to Gurit Balsaflex Cia. Ltda., Ecuador, dated 2021-08-09

## Material properties

Variant	Nominal Density (1)	Compr. strength (2)	Compr. modulus (2)	Compr. strength (3)	Compr. modulus (3)	Shear strength (4)	Shear modulus (4)
G-Balsa™ 150 and G-Balsa™ Lite 150	155	13.0 (9.9)	3518 (2312)	0.75 (0.47)	57 (35)	2.8 (2.1)	163 (121)
G-Balsa™ 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/m<sup>3</sup>

(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.

Values without brackets: Average values based on nominal density ±5% and verified by testing.

Values in brackets: Minimum values based on average – 2 standard deviation.

## Approved Production Sites



# TYPE APPROVAL – ANNEX 1

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Certificate No.:

TA-DNV-CP-0084-06957-1

Page 3 of 3

Gurit Balsaflex Cia. Ltda.

KM, 19 Via a Vetanas  
120501 Quevedo  
Ecuador

Last workshop inspection: 2020-10-29

Gurit TianJin Composite Material Co., Ltd.

No. 1 Hengtong Road  
Yat Sen Park, Wuqing District, Tianjin  
China 301726

Last workshop inspection: 2020-11-05

## **Periodical assessment**

2.5 years after the initial issue date of the type approval, i.e. 2023-09-01, the client shall inform DNV about any modifications in production. An intermediate inspection might be needed based on the implemented changes.