

TYPE APPROVAL

Certificate No.:
TA-DNVGL-CP-0084-07089-0

Issued:
2020-12-18

Valid until:
2025-12-17

Issued for:

PVC

with type designation

PVC - HT - Series

Issued to:

Gurit Composite Materials AG

Zürich, ZH, Switzerland

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 TAK000012W 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, 2020-12-18

Hamburg, 2020-12-18

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

A cross-linked, closed-cell PVC (Polyvinyl Chloride)-foam core material for sandwich construction

Approved variants

- Gurit PVC 60 HT
- Gurit PVC 80 HT

Material Properties

| Variant | Nominal Density (1) | Density Range (1) | Compr. Strength (2) | Compr. Modulus (2) | Shear Strength (3) | Shear Modulus (3) | Shear Elongation (4) | Tensile Strength (5) | Tensile Modulus (5) | HRT (6) |
|-----------|---------------------|-------------------|---------------------|--------------------|--------------------|-------------------|----------------------|----------------------|---------------------|---------|
| PVC 60 HT | 60 | 54 - 69 | 1.01 (0.84) | 65 (50) | 0.86 (0.73) | 21 (17) | 29 | 1.98 (1.15) | 97 (22) | -- |
| PVC 80 HT | 80 | 72 - 92 | 1.63 (1.44) | 96 (74) | 1.26 (1.09) | 29 (24) | 32 | 2.84 (1.91) | 138 (58) | 47 |

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

(2) Compressive properties according to ISO 844:2014, procedure B in MPa.

(3) Shear properties according to ISO 1922 in MPa.

(4) Shear elongation at break according to ISO 1922 in %.

(5) Tensile properties according to ASTM D 1623 in MPa.

(6) Heat resistance temperature (HRT) in °C where the shear strength is > 80% of the shear at RT.

Values without brackets: msv = manufacturers specified value

Values in brackets: msmv = manufacturers specified minimum value

Type Approval documentation

Technical data sheet(s): Technical Data Sheets

Test report: Gurit PVC and PVC HT foams DNVGL 2020 certification renewal with no. 12124 rev. 1 issued on 2020-12-02

Inspection report: Approved variants / layer structure with no TA 401 issued on 2020-09-25

Quality control documentation: ISO 9001:2015, 58949-1-01, 2020-11-06

Several CoAs

Limitations

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

Any significant changes in design or quality of the material will render the approval invalid.

Approved Production Sites

Maricell S.r.l.
Via Villanova 15
Longarone I-32013
Italy

Last workshop inspection was performed on 2020-09-25.

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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.

For renewal, an inspection 5 years after the last workshop inspection is due.

Remarks

ASTM D 1621-73 procedure B and ISO 844:2014 procedure B work on the same technical principle and provide comparable test results.

ASTM C 273 and ISO 1922 work on the same technical principle and provide comparable test results.

This certificate supersedes the type approval TAK000012W Rev. 1.