

TYPE APPROVAL CERTIFICATE

Certificate No:
TAK000012X
Revision No:
2

This is to certify:

That the Sandwich Core Materials

with type designation(s)
PVC Mycell M - Series

Issued to

MARICELL S.R.L.
Longarone, Italy

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 **Hamburg** on **2020-12-22**

for **DNV GL**

This Certificate is valid until **2025-12-15**.

DNV GL local station: **Venice**

Approval Engineer: **Joachim Rehbein**

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.



Job Id: **262.1-026077-3**
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Product description

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

Approved variants

- Mycell M040
- Mycell M048
- Mycell M060
- Mycell M080
- Mycell M100
- Mycell M130
- Mycell M200
- Mycell M250

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) |
|---------|---------------------|-------------------|---------------------|--------------------|--------------------|-------------------|----------------------|----------------------|---------------------|---------|
| M040 | 40 | 35 - 47 | 0.52 (0.39) | 37 (24) | 0.47 (0.35) | 15 (12) | 6 | 0.71 (0.29) | 68 (9) | -- |
| M048 | 48 | 43 - 55 | 0.62 (0.49) | 44 (30) | 0.52 (0.44) | 16 (13) | 7 | 0.98 (0.55) | 71 (13) | -- |
| M060 | 60 | 54 - 69 | 0.98 (0.82) | 67 (46) | 0.79 (0.69) | 21 (17) | 18 | 1.82 (1.43) | 100 (46) | -- |
| M080 | 80 | 72 - 92 | 1.60 (1.40) | 97 (80) | 1.20 (1.05) | 30 (26) | 19 | 2.74 (2.22) | 146 (94) | -- |
| M100 | 100 | 90 - 115 | 2.05 (1.65) | 121 (99) | 1.48 (1.29) | 36 (31) | 25 | 3.18 (2.79) | 162 (101) | -- |
| M130 | 130 | 120 - 150 | 3.22 (2.83) | 183 (154) | 2.44 (2.17) | 55 (50) | 32 | 4.35 (3.47) | 227 (133) | -- |
| M200 | 200 | 180 - 250 | 5.07 (4.54) | 300 (243) | 3.44 (2.67) | 77 (62) | 35 | 6.26 (4.69) | 358 (195) | -- |
| M250 | 250 | 225 - 288 | 6.88 (5.83) | 384 (330) | 4.37 (3.47) | 98 (79) | 35 | 7.19 (5.53) | 439 (321) | 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 strength at RT.

All values are average values and verified by testing. The values within brackets are manufacturer specified minimum values(msmv)

Limitation

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 and / or quality of the material will render the approval invalid.

Type Approval documentation

- Technical Data Sheet, MYcell-TDS1, dated 2020-12-16
- Test Report No.11226, issued by DNV GL accepted testing laboratory (Approval No. GL-LZ 2312 HH) of Gurit Americas, dated 2017-11-24.
- Workshop Inspection Report issued by DNV GL Venice, dated 2020-09-25.
- Quality documentation
- Reports for renewal testing issued by Maricell S.l.r., Longarone, conducted 2020, witnessed by DNVGL, dated 2020-10-13;
- Summary of Maricell's proposal to DNV-GL for changing Mycell-M / Mycell-H minimum Values, Rev.1, dated 2020-12-01.

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Assessed production site

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

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.

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.

END OF CERTIFICATE