

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Sandwich Core Materials**with type designation(s)  
**LYcell - 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.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2020-05-12**for **DNV GL**This Certificate is valid until **2023-05-06**.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: **262.1-025706-2**  
Certificate No: **TAK000017U**  
Revision No: **1**

## Product description

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

## Approved variants

- LYcell L060
- LYcell L080
- LYcell L100
- LYcell L130

## Material Properties

Variant	Nominal Density (1)	Density Range (1)	Compr. Strength (2)	Compr. Modulus (2)	Shear Strength (3)	Shear Modulus (3)	Elongation at Peak (4)
L060	60	50 - 69	0.77 (0.60)	55 (40)	0.65 (0.60)	19 (17)	18
L080	80	68 - 92	1.30 (1.10)	90 (70)	1.13 (1.07)	30 (26)	28
L100	100	86 -115	1.93 (1.50)	100 (80)	1.44 (1.29)	41 (31)	14
L130	130	116 - 150	2.77 (2.20)	174 (139)	2.17 (1.80)	56 (50)	26

(1) Density according to ISO 845 in kg/m<sup>3</sup>

(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 peak according to ISO 1922 in %.

All values are average values and verified by testing. The values within brackets are minimum values.

## 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 LYcell-TDS1 20200123;
- Test Report No.87181/09, issued by SKZ Würzburg, dated 2010-02-22;
- Test Report No. 622-17, issued by Linset & Co. S.r.l. and based on tests witnessed by DNV GL, dated 2017-07-24;
- Workshop Inspection Report issued by DNV GL Venice, dated 2020-05-05;
- Test Report No. 1536-20, issued by Linset & Co. S.r.l., dated 2020-02-12;
- Quality documentation.


## Assessed production site

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

## Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.

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.



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**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