Certificate No:
TAK0000289

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Sandwich Core Materials

with type designation(s)
AIREX® C70

Issued to
Airex AG
Sins, AG, Switzerland

is found to comply with
DNV class programme DNV-CP-0084 – Type approval – Sandwich core materials
DNV rules for classification – High speed and light craft
DNV standard DNV-ST-0342 – Craft

Application :

Manufacturing of sandwich-structured composites

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Hamburg** on **2023-07-11**
This Certificate is valid until **2028-07-10**.
DNV local unit: **Augsburg**

Approval Engineer: **Joachim Rehbein**

for **DNV**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

AIREX® C70 – series: Cross-linked, closed-cell PVC-foam core material for sandwich construction.

Approved variants:
- **AIREX® C70.55**
- **AIREX® C70.75**
- **AIREX® C70.90**
- **AIREX® C70.130**

The following manufacturer values have been verified by testing:

Property	Test standard	AIREX® C70.55	AIREX® C70.75	AIREX® C70.90	AIREX® C70.130	Unit	Type
Density	ISO 845	60	80	100	130	kg/m³	msv
		54	72	90	120	kg/m³	msmv
Compressive strength	ISO 844	0.90	1.45	2.0	3.0	MPa	msv
		0.75	1.10	1.7	2.6	MPa	msmv
Compressive modulus	ISO 844	69	104	130	170	MPa	msv
		55	80	110	145	MPa	msmv
Tensile Strength	ASTM C297	1.6	2.4	3.1	4.3	MPa	msv
		1.2	1.9	2.4	3.4	MPa	msmv
Tensile Modulus	ASTM C297	95	125	160	210	MPa	msv
		70	100	125	170	MPa	msmv
Shear strength	ISO 1922	0.85	1.2	1.7	2.4	MPa	msv
		0.70	1.0	1.4	2.1	MPa	msmv
Shear modulus	ISO 1922	19	26	35	47	MPa	msv
		16	21	29	39	MPa	msmv
Shear elongation	ISO 1922	16	18	23	30	%	msv
		9	10	12	20	%	msmv

Notes:
msmv = Manufacturer's Specified Minimum Value
msv = Manufacturer's Specified Value

Remarks:
Material has not been tested for slamming grade properties
Material has not been tested for fatigue grade properties

Manufactured by

Maricell Srl, Via Villanova 15, 32013 Longarone, Italy.

Responsibility

The holder of certificate takes the responsibility that design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

Area of application will be evaluated during approval of classified objects.

The foam complies with the applicable requirements of DNV 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

Tests carried out

Type Testing carried out according to **Type Approval documentation**.

Marking of product

Product and/or package shall be marked with *manufacturer's name*; **Airex AG, Sins, Switzerland** and *type designation*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV Type Approval Certificate.

Periodical assessment

Periodical assessments are required after two years and after 3.5 years (retention survey) and for renewal after 5 years (renewal survey). Refer to DNV-CP-0338, Sec.4.

A production site with a valid Approval of Manufacturer (AoM) certificate for material in question is exempted from the obligation concerning periodical and renewal assessments.

This certificate is only valid if required periodical assessments are carried out with satisfactory results or an AoM certificate for production site is in place. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com

END OF CERTIFICATE