



DET NORSKE VERITAS TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. K-2186

This Certificate consists of 3 pages

This is to certify that the

Sandwich Core Materials

332.40

with type designation(s)

AIREX R82.80

Manufactured by

Alcan Airex AG

Sins, Switzerland

is found to comply with

Det Norske Veritas' Tentative Rules for Certification and Classification of Boats 1997, Grade
1

Det Norske Veritas' Rules for Certification of Life Boats 1998, Grade 1
Det Norske Veritas' Rules for Classification of High Speed and Light Craft

Application

For use in marine vessels according to stated Rules.

Place and date
Høvik, 2002-09-09
for Det Norske Veritas AS

This Certificate is valid until
2006-06-30

John Olav Nøkleby
Head of Section

Local Office
DNV Essen

Gisle Hersvik
Surveyor

Product description

Polyetherimide (PEI) core material for sandwich construction - AIREX R82.80.

Tensile strength	DIN 53455	1.6	MPa	msmv
Tensile modulus	DIN 53457	55	MPa	msv
Tensile modulus	DIN 53457	47	MPa	msmv
Compressive strength	ISO 844	0.8	MPa	msmv
Compressive modulus	DIN 53421	62	MPa	msv
Compressive modulus	DIN 53421	54	MPa	msmv
Shear strength	ISO 1922	0.9	MPa	msmv
Shear modulus	ASTM C393	23	MPa	msv
Shear modulus	ASTM C393	20	MPa	msmv
Shear elongation	ISO 1922	15	%	msmv
Density	ISO 845	72	kg/m ³	msmv

msmv = Manufacturer's Specified Minimum Value

msv = Manufacturer's Specified Value (average value of test results)

Standards used for Type Testing are others than required in the DNV Rules.

Application/Limitation

The uses of core materials for hull applications are to be approved in each individual case.

Documentation of additional material properties may be required.

Type Approval documentation

Tests carried out

Type Testing as per **Type Approval documentation**.

Marking of product

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

Certificate Retention Survey

The scope of the Retention/Renewal Survey is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Survey to be performed after two (2) years (Certificate Retention Survey) and at renewal after four (4) years (Certificate Renewal Survey).

The main elements of the survey are:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV Type Approval Certificate.

END OF CERTIFICATE

Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

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