

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Sandwich Core Materials**

with type designation(s)

Divinycell® Matrix 7-7, Divinycell® Matrix 10-8 and Divinycell® Matrix 11-9

Issued to

**DIAB International AB
Laholm, Sweden**

is found to comply with

Det Norske Veritas' Rules for Classification of High Speed, Light Craft and Naval Surface Craft**Det Norske Veritas' Type Approval Programme 1-501.10, 2009, Sandwich Core Materials****Det Norske Veritas Standards' for Certification No. 2.21, Craft, 2010****Det Norske Veritas' Standards for Certification No. 2.20, Lifeboats and Rescue Boats, 2007****Application :****Core material for sandwich construction. Area of application will be evaluated during approval of classified objects.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2019-08-30**.Issued at **Høvik** on **2015-08-31**DNV GL local station: **Gothenburg**Approval Engineer: **Gisle Hersvik**for **DNV GL**

Martin Strande
Head of Section

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



Job Id: **262.1-020221-1**
Certificate No: **TAK000002D**

The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Divinycell® Matrix 7-7, Divinycell® Matrix 10-8 and Divinycell® Matrix 11-9

Core material for sandwich construction. A resilient, closed cell, foam sheet consisting of a polymeric alloy of a cross-linked aromatic polyurea and a linear vinyl polymer with dimensional stability at temperatures up to 85°C.

The following manufacturer's specified values are confirmed by type testing:

Properties	Test Method	Matrix 7-7	Matrix 10-8	Matrix 11-9		
Tensile strength ¹⁾	ASTM D1623	1,5	2,1	2,2	MPa	msv
Tensile strength ¹⁾	ASTM D1623	1,2	1,7	1,8	MPa	msmv
Tensile modulus ¹⁾	ASTM D1623	65	100	87	MPa	msv
Tensile modulus ¹⁾	ASTM D1623	52	75	64	MPa	msmv
Compressive strength ¹⁾	ASTM D1621	0,8	1,0	1,1	MPa	msv
Compressive strength ¹⁾	ASTM D1621	0,65	0,84	0,86	MPa	msmv
Compressive modulus ¹⁾	ASTM D1621-B-73	60	95	83	MPa	msv
Compressive modulus ¹⁾	ASTM D1621-B-73	50	72	65	MPa	msmv
Shear strength, 23°C	ASTM C273	0,70	0,84	0,96	MPa	msv
Shear strength, 23°C	ASTM C273	0,60	0,71	0,75	MPa	msmv
Shear modulus, 23°C	ASTM C273	17	22	23	MPa	msv
Shear modulus, 23°C	ASTM C273	15	18	18	MPa	msmv
Shear elongation, 23°C	ASTM C273	14	25	35	%	msv
Density	ISO 845	55	60	68	kg/m ³	msv
Density	ISO 845	52	55	63	kg/m ³	msmv

¹⁾ Perpendicular to the plane. All values measure at 23°C

Remarks:

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

Manufactured by

DIAB AB, Norra Sofieroleden 8, 312 32 Laholm, Sweden

DNV GL local station: Gothenburg

DIAB S.p.A., Via Alemagna, 29, 32013 Faè di Longarone BL, Italy

DNV GL local station: Venice

Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both 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.

Job Id: **262.1-020221-1**
Certificate No: **TAK000002D**

DIAB AB, Laholm, Sweden – Manufacturer of **Divinycell® Matrix 7-7**, **Divinycell® Matrix 10-8** and **Divinycell® Matrix 11-9**
DIAB S.p.A., Longarone, Italy – Manufacturer of **Divinycell® Matrix 7-7** and **Divinycell® Matrix 10-8**

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

Product shall be marked with *manufacturer's name, place of production 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 GL Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment 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.

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

The main elements of the Periodical Assessment are to:

- 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 GL Type Approval Certificate.

END OF CERTIFICATE