

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**nidaplast® 8, nidaplast® 8 DB, nidaplast® 8 R and nidaplast® 8 RI,
nidaplast® 8HP,
nidaplast® 8FR,
Techcore 8.65,
Premscore 8.65**

Issued to

**NIDAPLAST-HONEYCOMBS SAS
THIANT, France**

is found to comply with

**DNV GL class programme DNVGL-CP-0084 – Type approval – Sandwich core materials
DNV GL rules for classification – High speed and light craft
DNV GL standard DNVGL-ST-0342 – Craft****Application :****Polypropylene honeycomb core material for use in sandwich constructions. Area of application will be evaluated during approval of classed objects.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2019-01-25**This Certificate is valid until **2024-01-24**.DNV GL local station: **Le Havre**for **DNV GL**Approval Engineer: **Gisle Hersvik**

**Rikard Törnqvist
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.



Product description

nidaplast® 8 and **nidaplast® 8HP**; Extruded polypropylene honeycomb (hexagonal shape) core material with polypropylene film (of various thickness) melted on to the open faces in order to close the cells. A polyester non-woven 45 g/m² is also added to get adhesion to resin/adhesive.

The following product variants are covered by this Type Approval Certificate;

- **nidaplast® 8, nidaplast® 8 DB, nidaplast® 8 R, nidaplast® 8 RI** and
- **nidaplast® 8HP** (density without facing; msv 100 kg/m³)
- **nidaplast® 8FR** (density without facing; msv 65 kg/m³)
- **Techcore 8.65** (density without facing; msv 65 kg/m³)
- **Premscore 8.65** (density without facing; msv 65 kg/m³)

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

Properties	Test Method	nidaplast® 8		nidaplast® 8HP			
		20 mm	40 mm	20 mm	40 mm		
Density, without facing ¹⁾	ISO 845	60	60	95	95	kg/m ³	msmv
Density, without facing ¹⁾	ISO 845	65	65	100	100	kg/m ³	msv
Cell size	-	8	8	8	8	mm	mean
Tensile strength, 20°C	ASTM C297	0.5	0.5	0.5	0.5	MPa	msmv
Tensile strength, 20°C	ASTM C297	0.8	0.8	0.8	0.8	MPa	msv
Tensile modulus, 20°C	ASTM C297	40	40	50	50	MPa	msv
Tensile modulus, 20°C	ASTM C297	30	30	40	40	MPa	msmv
Compressive strength, 20°C	ISO 844	0.9	0.9	2.4	2.4	MPa	msmv
Compressive strength, 20°C	ISO 844	1.2	1.2	2.6	2.6	MPa	msv
Compressive modulus, 20°C	ISO 844	40	50	70	70	MPa	msv
Compressive modulus, 20°C	ISO 844	30	30	50	50	MPa	msmv
Shear strength, 20°C – L/W	ISO 1922	0.3	0.3	0.6	0.5	MPa	msmv
Shear strength, 20°C – L/W	ISO 1922	0.4	0.35	0.7	0.6	MPa	msv
Shear modulus, 20°C – L/W	ISO 1922	9.0	8.0	14.0	12.0	MPa	msv
Shear modulus, 20°C – L/W	ISO 1922	7.0	6.0	12.0	10.0	MPa	msmv
Shear elongation, 20°C – L/W ²⁾	ISO 1922	20	20	20	20	%	msmv
Heat resistance, % retention of shear strength, 45°C ³⁾	ASTM C393	70	70	80	80	%	
Water resistance, % retention of shear strength, 20°C ⁴⁾	ASTM C393	~100	~100	~100	~100	%	

Remarks:

¹⁾ The product is tested with facings, but the density given is calculated without facing.

²⁾ Figures are elongation at break.

³⁾ Calculated based on minimum specified values for shear strength at 20°C and 45°C.

⁴⁾ It is assumed that the material does not absorb water (or just absorb very small amounts).

Legends:

L = Length direction of panel

W = Width direction of panel

msmv = Manufacturer's Specified Minimum Value

msv = Manufacturer's Specified Value (average value at average density)

mean = Mean of Type Test results

Application/Limitation

Construction of FRP sandwich laminates of components, at the condition that the resins comply with the applicable requirements of the DNV GL and are compatible to the core material.

Job Id: **262.1-030178-1**
Certificate No: **TAK00001HB**

Approved maximum thickness: 40 mm. if larger thickness is to be used, documentation of additional material properties may be required.

Any significant changes in design and/or quality of the material may render the approval invalid.

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*; **NIDAPLAST-HONEYCOMBS SAS, Thiant, France** 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 2 and 3.5 years (Certificate Retention) and at renewal after 5 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