

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Vinyl Ester Resins**with type designation(s)
DION® FR 9300 Series with variants

Issued to

Polynt Composites Norway AS.
SANDEFJORD, Norway

is found to comply with

DNV GL class programme DNVGL-CP-0083 – Type approval – Polyester resin, vinylester resin, gelcoat and topcoat**DNV GL rules for classification – High speed and light craft****Det Norske Veritas Standards' for Certification No. 2.21, Craft, 2010****Application :****Grade 1 resin for use in marine vessels in accordance with stated Rules/Standards.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2018-11-19**This Certificate is valid until **2023-11-18**.DNV GL local station: **Sandefjord**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.



Job Id: **262.1-010706-3**
Certificate No: **TAK00001CR**

Product description

DION® FR 9300 Series; Brominated fire retardant epoxy based vinyl ester resin.

Variants:

DION® FR 9300, DION® FR 9300-00, DION® FR 9300-01, DION® FR 9300-02, DION® FR 9300-10, DION® FR 9300-50, DION® FR 9300-54, DION® FR 9300-700, DION® FR 9300-800, DION® FR 9300-890, DION® IMPACT FR 9300-00

The following properties have been verified by Type Testing of cured resin samples:

Property	Test Method	DION® FR 9300		
Fracture Elongation	ISO 527	4,0 / 3,4	%	mean / msmv
Tensile Strength	ISO 527	74,8	MPa	msmv
Water Absorption	ISO 62	48,3	mg	msmv
HDT	ISO 75	89,4	°C	mean
Barcol Hardness	ASTM D2583	25 - 30	-	msv
Density	ISO 1675	1,23	g/cm ³	msv
Curing Procedure used for Type Testing		24 hrs at 60°C		

Legend:

mean: mean of Type Test results.

msv: manufacturer's specified value, verified to be within $\pm 10\%$ of mean of Type Test results.

msmv: manufacturer's specified minimum value, verified to be below mean - 2 x standard deviation of Type Test results.

Manufactured by

Reichhold AS, Øraveien 8/19, 1630 Gamle Fredrikstad, Norway

DNV GL local station: Sandefjord

Reichhold UK Limited, 54 Willow Lane, Mitcham, Surrey, United Kingdom CR4 4NA

DNV GL local station: London

Reichhold Srl, Via Romagnoli 23, 43056 San Polo di Torrile (Parma), Italy

DNV GL local station: Milan

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

The approval covers variants as listed above.

Type Approval documentation

Tests carried out

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

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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 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