

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Vinyl Ester Resins**with type designation(s)
8802 with variants; 8803, 8804 and 8805

Issued to

**Qualipoly Chemical Corp.
Kaohsiung, Taiwan**

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 according to stated Rules/Standards.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2022-01-17**.Issued at **Høvik** on **2017-01-18**DNV GL local station: **Kaohsiung**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.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id:
Certificate No: **TAK00000MY**

Product description

8802 with variants; 8803, 8804 and 8805; Vinylester resin, for spray-up / hand lay-up.

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

Property	Test Method	8802		
Fracture Elongation	ISO 527	2.5	%	mean
Tensile Strength	ISO 527	66	MPa	mean
Tensile Modulus	ISO 527	3159	MPa	mean
Water Absorption	ISO 62	67	mg	msmv
HDT	ISO 75	92	°C	msmv
Barcol Hardness	ASTM D2583	36	-	mean
Density	ISO 1675	1.05	g/cm ³	msv
Curing Procedure used for Type Testing	24 hrs at room temperature, 24 hrs at 50°C			

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

mean = mean of Type Test results

Type Approval documentation Tests carried out

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

Marking of product

Product shall be marked with *manufacturer's name*; **Qualipoly Chemical Corp., Taiwan** and *type designation*; **8802, 8803, 8804 and 8805**.

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 DNV GL Type Approval Certificate.

END OF CERTIFICATE