



DET NORSKE VERITAS TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. M-9903
This Certificate consists of 3 pages

This is to certify that the
Pourable Compound for Foundation Chocking
with type designation
Chockfast Orange PR 610 TCF.

Manufactured by
ITW Philadelphia Resins
Montgomeryville, Pennsylvania 18936, United States
and
ITW Philadelphia Resins
Shannon, County Clare, Ireland

is found to comply with
Det Norske Veritas' Rules for Classification of Ships/High Speed and Light Craft

Application
The approval is valid for foundation chocking of diesel engines, reduction gears, thrust bearings, rudder actuators and other auxiliary machinery.

Max service temp.: see page 2
Max tot. surf. press see page 2
Max press./weight: 0.9 N/mm²

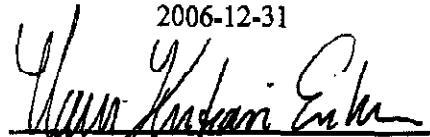
Place and date
Høvik, 2003-10-07
for DET NORSKE VERITAS AS


Medhat Bahgat
Head of Section



Local Office
DNV New York

This Certificate is valid until
2006-12-31


Hans-Kristian Eriksen
Surveyor

Notice: 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.

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 person on behalf of Det Norske Veritas.



Cert. No.: M-9903

File No.: 702.72

Product description

Epoxy based resin.

Application/Limitation

The approval is valid for foundation chocking of diesel engines, reduction gears, thrust bearings, rudder actuators, stern tubes and other auxiliary machinery.

The permitted chock stress is in accordance with Philadelphia Resins Corp. Chart I PRC 5.5.86, which include the following pressure/temperature relations:

Max. service temp. (deg. C):	90	80	70	60
Max. tot. surf. press. (N/mm ²):	2.3	4.4	5.9	7.0
Max. service temp. (deg. C):	50	40	30	20
Max. tot. surf. press. (N/mm ²):	8.0	8.7	9.4	10.0

Max. specific load due to weight: 0.9 N/mm².

The approval is also valid for offshore use with reference to DNV Offshore Service Specification DNV-OSS-101.

Type Approval documentation

Philadelphia Resins Corp. CHART I PRC 5.5.86 and letters of 19.6.86, 21.8.86 from Philadelphia Resins Corporation and Technical Bulletin No. 632C Chockfast Installation Guidelines for Stern tubes.

Marking of product

The product to be marked with manufacturer's name or trademark and type number identification.

Certificate retention survey

For retention of the Type Approval, a DNV surveyor shall perform survey every second year and before expiry date of this certificate to verify that the conditions of the type approval is complied with.



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Other conditions

Chocking plan with boltstress-calculation to be submitted for approval in each particular case.

The tightening -up of engine and reduction gear holding down bolts, controlled at installation, is to be checked after trial trip when cooled down. Information about this is to be given at the delivery of the compound
The manufacturer's instructions to casting and curing of the compound are to be followed.

After hardening of the chocks and prior to tightening of the holding-down bolts a Barcol hardness test has to be performed with a result of at least 24.

END OF CERTIFICATE