



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **M-11587**

This is to certify that the
Pourable Compound for Foundation Chocking

with type designation(s)
Chockfast Orange PR 610 TCF.

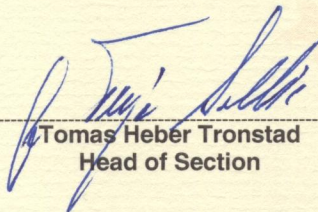
Manufactured by
ITW Polymer Technologies
MONTGOMERYVILLE PA, United States

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.

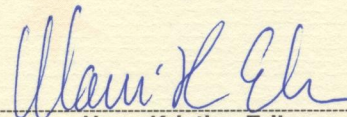
Høvik, 2010-12-16
for Det Norske Veritas AS


Tomas Heber Tronstad
Head of Section



DNV local office:
New York

This Certificate is valid until
2014-12-31


Hans-Kristian Eriksen
Surveyor

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. 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 acting on behalf of Det Norske Veritas.



Certificate No.: M-11587
File No.: 702.72
Job Id.: 262.1-002285-3

Product description

Epoxy based resin.

Place of production

ITW Polymer Technologies Inc., Montgomeryville, United States

ITW Performance Polymers Europe Shannon Co. Clare, Ireland

ITW Performance Polymers (Wujiang) Co.Ltd., Wujiang, China

ITW Polymers & Fluids Pty, Ltd., Wetherhill Park, Australia

Application/Limitation

The approval is valid for foundation chocking of diesel engines, reduction gears, thrust bearings, rudder actuators, sterntubes 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, Technical Bulletin No. 692 General Guidelines for Marine Designers and Technical Bulletin No. 632 Chockfast Installation Guidelines for Sterntubes.

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.

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