

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pourable Compound for Foundation Chocking**

with type designation(s)

CHOCKFAST® Orange (PR-610TCF)

Issued to

ITW Engineered Polymers

,

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – High speed and light craft****TYPE APPROVAL OF POURABLE COMPOUNDS FOR FOUNDATION CHOCKING, (DRAFT 2001)****Application :****The approval is valid for foundation chocking of diesel engines, reduction gears, thrust bearings, rudder actuators, stern tubes and other auxiliary machinery.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Max. service temperature: 90 °C
Max. total surface pressure: 2.3 N/mm²
Max. pressure/weight: 0.9 N/mm²

This Certificate is valid until **2018-12-31**.Issued at **Høvik** on **2016-01-19**DNV GL local station: **New York**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.

Product description

CHOCKFAST® Orange (PR-610TCF); Two-component epoxy based resin.

Place of production

ITW Engineered Polymers, 130 Commerce Drive, Montgomeryville, Pennsylvania 18936, USA

DNV GL local station: New York

ITW Engineered Polymers Europe, Bay 150, Shannon Industrial State, Co. Clare, Ireland

DNV GL local station: London

ITW Performance Polymers (Wujiang) Co., Ltd, No. 4680 Pangjin Rd, Wujiang, China

DNV GL local station: Shanghai

ITW Polymers and Fluids - Australia, 100 Hassall Street, Wetherill Park, NSW 2164, Australia

DNV GL local station: Sydney

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 Manufacturer's recommendations, which include the following pressure/temperature relations:

Max. service temperature (°C):	90	80	70	60
Max. total surface pressure (N/mm ²):	2.3	4.4	5.9	7.0
Max. service temperature (°C):	50	40	30	20
Max. total surface pressure (N/mm ²):	8.0	8.7	9.4	10.0

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

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.

The approval is also valid for offshore use with reference to DNV Offshore Service Specification DNV OSS-101 Rules for Classification of Offshore Drilling and Support Units.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

Product/package shall be marked with *manufacturer's name/trademark, place of production and type designation/type number identification*.

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 two (2) years (Certificate Retention) and at renewal after four (4) 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