DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM0000055
Revision No:
2

This is to certify:

That the Pourable Compound for Foundation Chocking

with type designation(s)
CHOCKFAST® Orange PR 610 TCF

Issued to
ITW Performance Polymers
Shannon, Ireland

is found to comply with
DNV GL rules for classification – Ships
DNV GL rules for classification – High speed and light craft
DNV GL class programme DNVGL-CP-0432 – Type Approval – Pourable compounds for foundation chocking

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:	**80°C**
Max. total surface pressure:	**4.5 N/mm²**
Max. pressure/weight:	**0.9 N/mm²**

Issued at **Hamburg** on **2018-12-19**

This Certificate is valid until **2023-12-31**.
DNV GL local station: **Manchester**

Approval Engineer: **Joachim Rehbein**

for **DNV GL**
Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 2019-01-15 , on behalf of

Thorsten Lohmann
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: **262.1-002285-7**
Certificate No: **TAM0000055**
Revision No: **2**

Product description

CHOCKFAST® Orange PR 610 TCF: Two-component epoxy based resin.

Place of production

1. ITW Performance Polymers, 130 Commerce Drive, Montgomeryville, Pennsylvania 18936, USA
2. ITW Performance Polymers, Bay 150, Shannon Industrial State, Co. Clare, Ireland
3. ITW Performance Polymers (Wujiang) Co., Ltd, No. 4680 Pangjin Rd, Wujiang, China
4. ITW Polymers and Fluids - Australia, 100 Hassall Street, Wetherill Park, NSW 2164, Australia

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

Max. service temperature (°C):	90	80	70	60	50	40	30	20
Max. total surface pressure (N/mm^2):	2.3	4.5	5.9	7.0	8.0	8.7	9.4	10.0

Specific load due to by dead weight: 0.7 N/mm^2.

In exceptional cases the specific load by dead weight is permitted up to 0.9 N/mm² (e.g. low speed two-stroke engines).

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 DNVGL-RU-OU-0101 Rules for Classification of Offshore Drilling and Support Units.

Any significant change in design and/or quality of the material will render the approval invalid.

Type Approval documentation

1. Re-issuance of Type Approval Certificate No. TAM0000055.
2. Email from ITW, Germany of 2016-01-18.
3. Periodical Assessment Report from DNV GL New York of 2015-03-25.
4. Technical Bulletin 659H (03/2010) and MSDS for Resin and hardener (source: www.chockfast.com)
5. Technical Bulletin 632C (1998) CHOCKFAST Installation Guidelines for Sterntubes.
6. Technical Bulletin 692D (08/2005) General Guidelines for Marine Chock Designers
7. Philadelphia Resins Corp. CHART I PRC 5.5.86 and letters of 19.6.86, 21.8.86 from Philadelphia Resins Corporation.

Renewal 2018

- Type Approval Assessment Report, issued 2018-10-18 (survey at production place 3)
- Type Approval Assessment Report and Addendum, issued 2017-06-20 (survey at production place 2)
- TDS Technical Bulletin 659H, revision 05/2018
- Technical Bulletin 692G (08/2018) General Guidelines for Marine Chock Designers
- Technical Bulletin 632G (08/2018) Installation Guidelines for stern tubes
- MSDS for resin, revision 11, dated 018-04-05

- MSDS for hardener, revision 13, dated 2018-04-06

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 bi-yearly (Certificate Retention) and at renewal after five (5) years (Certificate Renewal).
Each production place shall be assessed once during the validity of the certificate.

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.

Other conditions
Seating of propulsion plants on cast resin chocks with the primary components as diesel engines, turbines, generators for propulsion, gear boxes, power-take-off drives, thrust bearings, shaft bearings, shaft generators, stern tubes, steering gears and windlasses is subject to approval by the Society in any case.

The manufacturer's instructions to casting and curing of the compound are to be followed.
Application has to be carried out under supervision of the cast resin manufacturer or an authorized representative.
The representatives, trained and authorized staff performing foundation work, have to be stated to the Society in writing including the list of the responsible persons. Evidence for training shall be available on demand of local surveyor to the Society.

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

A sample shall be taken on site. Batch number of the used material (resin and hardener) has to be recorded.

A sign plate has to be fitted near the chocks, indicating the name of the cast resin type, name of the responsible company, date of pouring, and holding-down bolts' tightening torque respectively hydraulic pressure and piston area of tensioning device.

For mounting of the components, the latest edition of CLASS GUIDELINE DNVGL-CG-0372 "Foundation and mounting of machinery" shall be observed.

END OF CERTIFICATE