

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pourable Compound for Foundation Chocking**with type designation(s)
UNICHOCK

Issued to

Uni-Tech Co., Ltd.
Ansan-si, Gyeonggi-do, Republic of Koreais found to comply with
DNV GL class programme DNVGL-CP-0432 – Type Approval – Pourable compounds for foundation chocking**Application :****The approval is valid for foundation chocking of combustion engines, reduction gears, thrust bearings, rudder actuators 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: 3.5 MPa
Max. pressure/weight: 0.7 MPaIssued at **Hamburg** on **2019-03-04**This Certificate is valid until **2024-02-04**.DNV GL local station: **Seoul**for **DNV GL**Approval Engineer: **Joachim Rehbein****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.



Product description

UNICHOCK: Epoxy based resin and hardener.

Application/Limitation

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

Maximum load caused by weight of plant component and bolt preloading force: 3.5 N/mm².

Maximum specific load due to weight: 0.7 N/mm².

In exceptional cases a surface pressure caused by dead weight of machinery is permitted up to 0.9 N/mm² (e.g. low speed two-stroke engines).

Hardness of chocks: min. 40 Barcol.

Height of chocks: min. 12 mm, max. 150 mm.

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

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

Other conditions

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

The documentation, which has been established by the shipyard for an actual mounting, shall be checked, confirmed and as far as necessary made up by the cast resin manufacturer or the authorized application company.

Drawings and calculations have to be submitted to the Society for approval exclusively by the cast resin manufacturer an authorized representative.

The tightening of engine and reduction gear holding down bolts, controlled at installation, is to be checked after sea trial when cooled down. Information about this is to be given at the delivery of the compound.

For chocking of primary components of propulsion plants at least four measuring pins per component are to be arranged on foundation to verify the vertical position.

The gap between measuring pin and bed plate of machinery has to be measured on regular basis. The results of measurements shall be recorded and surveyed along with the seating at least after six month by a surveyor to the Society.

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 name 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 our rules "Foundations for machinery (DNVGL-RU-SHIP-Pt.4 Ch.2 Sec.1 [1.6])" in application of our class guideline "Foundation and mounting of machinery (DNVGL-CG-0372)" has to be observed.

END OF CERTIFICATE