

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coating Systems - Cargo Oil Tanks**with type designation(s)
HEMPADUR QUATTRO XO 17870

Issued to

Hempel A/S
Kgs. Lyngby, Hovedstaden, Denmark

is found to comply with

DNV GL class programme DNVGL-CP-0139 – Type approval – Protective coating systems for cargo oil tanks**IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC)****IACS Unified Interpretations SC259. For Application of SOLAS Regulation II-1/3-11****Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers (PSPC-COT), adopted by Resolution MSC.288(87).****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2020-11-24**This Certificate is valid until **2025-11-23**.for **DNV GL**DNV GL local station: **Denmark**Approval Engineer: **Enno Brück**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

HEMPADUR QUATTRO XO 17870, two-component, epoxy based coating for corrosion protection of steel surfaces.

Manufactured by

Hempel (Guangzhou) Coatings Ltd. No.3 Cang Hai 4th Road, Yong He District, Guangzhou Economic & Technology Development District, Guangzhou P.R. China.

DNV GL local station: Guangzhou

Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

This approval is solely connected to the corrosion prevention properties of the coating material. The approval does not include any evaluation of toxicity, contamination, pollution, or fire technical properties.

HEMPADUR QUATTRO XO 17870 is approved for application on blast cleaned surfaces and on prequalified shop primed surfaces. The following shop primers have been prequalified

- | | |
|----------------------------|--|
| - F-6001 | [Jiangxi Jingcheng Zhibang Paint Co., Ltd.] |
| - CD-SG906 | [Ningbo Haidun Coating Co., Ltd.] |
| - 725-E47 | [Xiamen Sunrui Ship Coating Co., Ltd.] |
| - SD Zinc Primer 1000HA(S) | [COSCO KANSAI Paint & Chemicals (Tianjin) Co., Ltd.] |

Surface preparation and coating application as per PSPC or manufacturer's recommendations, whichever is stricter.

The durability of the applied coating system will depend on the steel surface preparation, coating application and the environmental conditions.

The Type Approval Certificate is invalid if the formulation of the epoxy coating **HEMPADUR QUATTRO XO 17870** is changed to a degree deemed significant by DNV GL. If the formulation of any of the listed pre-qualified shop primers is changed to a degree deemed significant by DNV GL that shop primer cannot be used as part of the Protective Coating System.

Tests carried out

Type Testing carried out in accordance with DNV GL CP-0139. The tests are carried out in accordance with procedures in IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 259;

- COT by Report No LAB15-0119-Rep: "Crude Oil test HEMPADUR QUATTRO XO 17870+ HEMPADUR QUATTRO XO 17870", dated 2015-03-13.
- CCS-DNV Technology Institute Report No. CDTI-CL-17B004: "Ballast Tank Coating Test of 2X160µm Epoxy-Based HEMPADUR QUATTRO XO 17870 on F-6001", dated 2017-01-03.
- CCS-DNV Technology Institute Report No. CDTI-CL-17B010: "Ballast Tank Coating Test of 2X160µm Epoxy-Based HEMPADUR QUATTRO XO 17870 on CD-SG906", dated 2017-02-10.
- CCS-DNV Technology Institute Report No. CDTI-CL-17B006: "Ballast Tank Coating Test of 2X160µm Epoxy-Based HEMPADUR QUATTRO XO 17870 on 725-E47", dated 2017-01-03.

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Certificate No: **TAK00001Z7**

- CCS-DNV Technology Institute Report No. CDTI-CL-17B008: "Ballast Tank Coating Test of 2X160µm Epoxy-Based HEMPADUR QUATTRO XO 17870 on SD Zinc Primer 1000HA (S)", dated 2017-01-03.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **Hempel (Guangzhou) Coatings Ltd.**, Guangzhou, P.R. China, *type designation*; **HEMPADUR QUATTRO XO 17870**, and *date of production/batch number*.

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 (Certificate Retention) and renewal after 5 years (Certificate Renewal) shall be performed acc. DNV GL CP-0338.

END OF CERTIFICATE