

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coating Systems - Seawater Ballast Tanks**

with type designation(s)

BANNOH 5000 x BANNOH 1500 QD and BANNOH 5000 QD x BANNOH 1500 QD

Issued to

Chugoku Samhwa Paints, Ltd.**322, Gimhae-daero 927beon-gil, Hallim-myeon, Gimhae-si, Gyeongsangnam-do, ,
Republic of Korea**

is found to comply with

**DNV class programme DNV-CP-0108 – Type approval – Protective coating systems for seawater ballast tanks
and double-side skin spaces****IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC)****IACS Unified Interpretations SC223. For Application of SOLAS Regulation II-1/3-2 Performance Standard for
Protective Coatings (PSPC) for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin
Spaces of Bulk Carriers.**

Application :**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**Issued at **Hamburg** on **2021-11-01**This Certificate is valid until **2026-10-31**.for **DNV**DNV local station: **Gimhae**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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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

BANNOH 5000 (ID No. M2-42240A) x BANNOH 1500 QD (ID No. M2-43010B), and BANNOH 5000 QD (ID No. M2-42260A) x BANNOH 1500 QD (ID No. M2-43010B), are 2-component epoxy based coat for corrosion protection steel surface

Manufactured by

CHUGOKU SAMHWA PAINTS, LTD. 322, Gimhae-daero 927beon-gil, Hallim-myeon, Gimhae-si, Gyeongsangnam-do, Korea

DNV local office: Gimhae

Responsibility

The holder of 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.

BANNOH 5000 x BANNOH 1500 QD and BANNOH 5000 QD x BANNOH 1500 QD is approved for application on blast cleaned surfaces and on prequalified shop primed surfaces. The following shop primer has been prequalified:

- | | |
|---------------------------------|--------------------------------------|
| - CERABOND 2000 | [Chugoku Marine/Samhwa Paints, Ltd.] |
| - GALVANY SHOP PRIMER IZ 182(J) | [KCC Corporation Ltd.] |
| - GALVANY SHOP PRIMER IZ 182(S) | [KCC Corporation Ltd.] |

Surface preparation and coating application according to 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 **BANNOH 5000 x BANNOH 1500 QD and BANNOH 5000 QD x BANNOH 1500 QD** is changed to a degree deemed significant by DNV. If the formulation of the listed pre-qualified shop primer is changed to a degree deemed significant by DNV the shop primer cannot be used as part of the Protective Coating System.

Tests carried out

Type Testing carried out in accordance with DNV CP-0108. The tests are carried out according to the procedures in IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC223:

- Korea Testing & Research Institute Report No. KTR-PSPC-378, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 + BANNOH 1500 QD ON CERABOND 2000", dated 2021-08-10.
- Korea Testing & Research Institute Report No. KTR-PSPC-379, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 QD + BANNOH 1500 QD ON CERABOND 2000", dated 2021-08-10.
- Korea Testing & Research Institute Report No. KTR-PSPC-382, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 + BANNOH 1500 QD ON IZ 182(J)", dated 2021-08-10.
- Korea Testing & Research Institute Report No. KTR-PSPC-384, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 QD + BANNOH 1500 QD ON IZ 182(J)", dated 2021-08-10.
- Korea Testing & Research Institute Report No. KTR-PSPC-383, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 + BANNOH 1500 QD ON IZ 182(S)", dated 2021-08-10.
- Korea Testing & Research Institute Report No. KTR-PSPC-385, "BALLAST TANK PROTECTIVE COATING TEST OF 2 * 160 µm BANNOH 5000 QD + BANNOH 1500 QD ON IZ 182(S)", dated 2021-08-10.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **CHUGOKU SAMHWA PAINTS, LTD.** Korea, *type designation* **BANNOH 5000 x BANNOH 1500 QD** and **BANNOH 5000 QD x BANNOH 1500 QD**, 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 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 CP-0338.

END OF CERTIFICATE