

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

BANNOH 2000 and BANNOH 2000 QD

Issued to

Chugoku Samhwa Paints, Ltd.**Gimhae-si Gyeongsangnam-do, Republic of Korea**

is found to comply with

DNV GL class programme DNVGL-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 :****For use in ballast tanks, double-skin spaces, cofferdams and similar areas. Surface preparation and coating application as per PSPC or manufacturer's recommendations, whichever is stricter.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2021-09-12**.Issued at **Høvik** on **2016-09-13**for **DNV GL**DNV GL local station: **Gimhae MC & FIS**Approval Engineer: **Stefan Marion**

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

BANNOH 2000 (ID No. M2-42000B) and **BANNOH 2000 QD** (ID No. M2-42110B); 2-component epoxy based coating for corrosion protection of steel surfaces.

BANNOH 2000 (summer type) and **BANNOH 2000 QD** (winter type) coatings are considered as the same product with Infrared (IR) identification and Specific Gravity (SG) demonstrating that they are the same according to IACS UI SC 223. Hence, overlapping applications between summer and winter type coatings can be acceptable.

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 2000 and **BANNOH 2000 QD** are approved for application on blast cleaned surfaces and on shop primed surfaces. The following shop primers are prequalified:

CERABOND 2000	[Chugoku Marine Paints/Chugoku Samhwa Paints]
GALVANY SHOPPRIMER IZ182J	[KCC Corporation]
GALVANY SHOPPRIMER IZ182S	[KCC Corporation]
SIGMAWELD 165	[PPG / Sigma Coatings]
KCI ZINC 1000	[Kangnam Jevisco 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 coatings **BANNOH 2000** and **BANNOH 2000 QD** are 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.

Type Approval documentation

- 1.
- 2.
- 3.

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**. The tests carried out at Japan Paint Inspection and Testing Association (JPIA) and Korea Testing and Research Institute (KTR) are in accordance with procedures in IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 223;

- Test Report from JPIA Report No. 144225 of 2015-03-20
- Test Report from JPIA Report No. 143946 of 2015-03-20
- Test Report from JPIA Report No. 150014 of 2015-04-30
- Test Report from JPIA Report No. 143947 of 2015-03-20
- Test Report from JPIA Report No. 160413 of 2016-06-10
- Test Report from JPIA Report No. 144226 of 2015-03-20
- Test Report from JPIA Report No. 143948 of 2015-03-20
- Test Report from KTR Report No. KTR-PSPC-161 of 2016-04-27
- Test Report from JPIA Report No. 143949 of 2015-03-20

Job Id: **262.1-023328-1**
Certificate No: **TAK00000G3**

- Test Report from JPIA Report No. 160414 of 2016-06-10

Marking of product

Product/package shall be marked with manufacturer's name and address; **Chugoku Samhwa Paints Ltd., Korea**, type designation; **BANNOH 2000 / BANNOH 2000 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 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 five (5) 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