

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coating Systems - Cargo Oil Tanks**

with type designation(s)

BANNOH 1500 and BANNOH 1500 QD

Issued to

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

is found to comply with

**Det Norske Veritas' Type Approval Programme 1-602.4, 2011, Protective Coating Systems-
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 :****For use in cargo oil tanks of crude oil tankers. 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 **2018-06-30**.Issued at **Høvik** on **2015-08-05**DNV GL local station: **Gimhae MC & FIS**Approval Engineer: **Gisle Hersvik**for **DNV GL**

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.



Job Id: **262.1-018981-3**
Certificate No: **TAK000001V**

The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

BANNOH 1500 and **BANNOH 1500 QD**; 2-component epoxy based coating for corrosion protection of steel surfaces.

BANNOH 1500 (summer type) and **BANNOH 1500 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 259. 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 1500 and **BANNOH 1500 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]
Galvany Shopprimer IZ182(J)	[KCC Corp.]
SigmaWeld 165 (Sigma Proferral MC)	[PPG / Sigma Coatings]
HEMPEL'S SHOPPRIMER ZS 15890	[Hempel A/S]

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 1500** and **BANNOH 1500 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 Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**. The tests carried out at JPIA and DNV Bergen are in accordance with procedures in IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 259;

- JPIA Technical Report No. 112523, "Cargo Oil Tank Coating Test of 2x160µm BANNOH 1500 on CERABOND 2000 Shop Primer" of 2012-03-30.
- JPIA Technical Report No. 121502, "Cargo Oil Tank Coating Test of 2x160µm BANNOH 1500 QD on CERABOND 2000 Shop Primer" of 2012-11-30.
- DNV Technical Report No. 2011-5176 / 12R5QYR-13, Rev. 00 "Crossover test of BANNOH 1500 (M2-43000A) on SIGMAWELD 165 (Sigma Proferral MC) shop primer" of 2011-10-07.
- DNV Technical Report No. 2011-5177 / 12R5QYR-14, Rev. 00 "Crossover test of BANNOH 1500 (M2-43000A) on GALVANY SHOPPRIMER IZ182 (J)" of 2011-10-07.
- DNV Technical Report No. 2011-5178/12R5QYR-15, Rev. 00 "Crossover test of BANNOH 1500 (M2-43000A) on HEMPEL'S SHOPPRIMER ZS 15890" of 2011-10-07.
- DNV Technical Report No. 2011-5188 / 12R5QYR-25, Rev. 00 "Crossover test of BANNOH 1500 QD (M2-43010A) on SIGMAWELD 165 (Proferral MC) shop primer" of 2011-10-10.
- DNV Technical Report No. 2011-5189 / 12R5QYR-26, Rev. 00 "Crossover test of BANNOH 1500 QD (M2-43010A) on GALVANY SHOPPRIMER IZ182 (J)" of 2011-10-11.
- DNV Technical Report No. 2011-5190/12R5QYR-27, Rev. 00 "Crossover test of BANNOH 1500 QD (M2-43010A) on HEMPEL'S SHOPPRIMER ZS 15890" of 2011-10-11.

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Marking of product

Product/package shall be marked with *manufacturer's name and address*; **Chugoku Samhwa Paints Ltd., Korea**, *type designation*; **BANNOH 1500 / 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 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 four (4) 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