

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Protective Coating Systems - Cargo Oil Tanks

with type designation(s)
Tankguard HB Classic

Issued to

Jotun A/S
SANDEFJORD, Norway

is found to comply with

DNV GL class programme CP-0139 – Type Approval of non-metallic materials – 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 :

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 **2021-02-17**.

Issued at **Høvik** on **2016-02-18**

for **DNV GL**

DNV GL local station: **Sandefjord**

Approval Engineer: **Helene Bjerke**

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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **TAK0000088**
File No: **335.22**
Job Id: **262.1-021525-1**

Product description

Tankguard HB Classic, 2-component epoxy based, chemical resistant coating for corrosion protection of steel and concrete substrates.

Manufactured by

Chokwang Jotun Ltd., 30th Block Jisa, Science Park, 1205 Jisa-dong, Gangseo-gu, 618-230 Busan, South Korea

DNV GL local office: Pusan

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.

Tankguard HB Classic is approved for application on blast cleaned surfaces and on shop primed surfaces. The following shop primers are prequalified:

Muki Z 2001	[Jotun A/S]
Cerabond 2000	[Chugoku Marine Paints]
KCI Zinc 1000	[Kunsul Chemical Industries.]
Hempel 1589	[Hempel A/S]
SigmaWeld 165 (Sigma Proferral MC)	[PPG / Sigma Coatings]
Galvany Shopprimer IZ182(J)	[KCC Corporation]
Galvany Shopprimer IZ182(S)	[KCC Corporation]

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 **Tankguard HB Classic** 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.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**. The tests reported in the COT by Technical Reports are carried out in accordance with the procedures in IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 259;

- COT by Report No. LAB15-0686-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on Muki Z 2001" of 2016-01-21.
- COT by Report No. LAB15-0687-REP, Issue 01, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on KCI Zinc 1000" of 2015-12-19.
- COT by Report No. LAB15-0688-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on Sigmaweld 165" of 2016-01-21.

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- COT bv Report No. LAB15-0689-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on Galvany IZ 182(S)" of 2016-01-21.
- COT bv Report No. LAB15-0690-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on Galvany IZ 182(J)" of 2016-01-21.
- COT bv Report No. LAB15-0691-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic + Tankguard HB Classic on Cerabond 2000" of 2016-01-21.
- COT bv Report No. LAB15-0692-REP, Issue 02, "Crude Oil Test, Tankguard HB Classic+ Tankguard HB Classic on Hempel 1589" of 2016-01-21.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **Chokwang Jotun Ltd., Busan, South Korea**, *type designation*; **Tankguard HB Classic**, 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 2.5 years (Certificate Retention) and at renewal after 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