

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coatings for Propeller Shaft**

with type designation(s)

ThorShield Marine Shaft Coating System

Issued to

Thordon Bearings Inc.**Burlington ON, Canada**

is found to comply with

DNV GL class programme DNVGL-CP-0428 – Type approval – Coating systems for protection of propeller shafts**Application :****Coating system for protection of propeller shafts. Surface preparation and coating system application as per manufacturer's recommendations.**This Certificate is valid until **2021-08-28**.Issued at **Høvik** on **2016-08-29**for **DNV GL**DNV GL local station: **Montreal**Approval Engineer: **Karl Weinreich**

Tuva Kristine Flagstad-Andersen
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

ThorShield Marine Shaft Coating System, a four-component system which includes;

- **TS-101** (ThorShield Transition Sealant)
- **TS-102** (ThorShield Transition Reinforcement Polymer)
- **TS-103** (ThorShield Coating)
- **TS-104** (ThorShield Transition Reinforcement Polymer)

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.

ThorShield Marine Shaft Coating System is approved for application on blast cleaned or finished surfaces

Surface preparation and coating system application as per Thorshield Marine Shaft Coating System Application Instruction Manual.

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 any of the components of the **ThorShield Marine Shaft Coating System** is changed to a degree deemed significant by DNV GL.

The information of each application shall be submitted as part of the documentation for approval to DNV GL.

Type Approval documentation

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Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

Job Id: **262.1-020933-1**
Certificate No: **TAM000009X**

Product/package shall be marked with *manufacturer's name; **Thordon Bearings Inc., Canada**, type designation (ref. above listed components TS-10x) 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 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