DNV·GL

Certificate No:
TAK000005N

TYPE APPROVAL CERTIFICATE

This is to certify:

That the TBT-Free Anti-Fouling Systems

with type designation(s)
SeaQuantum Spectrum

Issued to
Jotun A/S
SANDEFJORD, Norway

is found to comply with
Det Norske Veritas' Type Approval Programme 1-602.3, 2012, Anti-Fouling Systems

Application :

Organo-tin free self-polishing hydrolysing type anti-fouling system.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-12-07**.

Issued at **Høvik** on **2015-12-08**

for **DNV GL**

DNV GL local station: **Sandefjord**

Approval Engineer: **Gisle Hersvik**

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.

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Job Id: **262.1-020648-1**
Certificate No: **TAK000005N**

Product description

Organo-tin free one-component self-polishing hydrolysing silyl acrylate type anti-fouling paint;
SeaQuantum Spectrum

Colours:
The product may be available in various colours. Please contact the local Jotun representative for details.

Active ingredients:

Cuprous oxide	CAS No. 1317-39-1
Zineb	CAS No. 12122-67-7
Cuprous Pyrithione	CAS No. 14915-37-8

Manufactured by

Jotun COSCO Marine Coatings (Qingdao) Co., Ltd., South of Chunyang Road and East of Huaguan Road, Qingdao National High-tech Industrial Development Zone, Qingdao, P.R.China

DNV GL local office: Qingdao

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

The issuance of this certificate is solely connected to the control of the Anti-Fouling System, AFS, with regard to compliance with the International Convention on the Control of Harmful Anti-Fouling Systems on Ships.

It does not cover verification of surface preparation, corrosion protection, fire, health and safety precautions, durability of the AFS or environmental properties other than regulated by the Convention.

Type Approval documentation
Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**, with the following test results from two samples, ref. Test Report from SINTEF of 2004-11-01:

- **SeaQuantum Spectrum** (Blue): 0,057% and 0,059% (No TBT-compounds detected)

Marking of product

Product shall be marked with manufacturer's name; **Jotun COSCO Marine Coatings (Qingdao) Co., Ltd., China** and *type designation*.

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