

TYPE APPROVAL CERTIFICATE

This is to certify:**That the TBT-Free Anti-Fouling Systems**

with type designation(s)

Astra Sea Speed Tin-Free SPC

Issued to

Philadelphia Coatings LLC**780 Third Avenue, Floor 22, New York, NY 10017, USA**

is found to comply with

DNV GL class programme DNVGL-CP-0110 – Type approval – Anti-fouling systems**Application :****Organotin-free self-polishing anti-fouling system****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2019-02-05**This Certificate is valid until **2024-02-04**.for **DNV GL**DNV GL local station: **Houston**Approval Engineer: **Christine Löll**

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Thorsten Lohmann
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.



Job Id: **262.1-030173-1**
Certificate No: **TAK00001HT**

Product description

Astra Sea Speed Tin-Free SPC: advanced hybrid, low-friction, self-polishing SPC antifouling

Colour(s): Pink, Light Red, Oxide Red, Brown

Active ingredients:

Copper(1)oxide CAS No. 1317-39-1

Manufactured by:

Philadelphia Coatings LLC c/o **Wuxi Hailun Coatings Co., Ltd.**, Yangjiabang, Houzhai, Hongshan Town, New District, Wuxi City, Jiangsu Province, 214145, P.R. China Product

DNV GL local station: Jiangyin

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 result, ref. report No. 1338/013/000 from General Chemical State Laboratory, Athens, Greece of 2010-11-23:

— **Astra Sea Speed Tin-Free SPC:** 0.07 % tin

Marking of product

Product shall be marked with *manufacturer's name; place of production 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 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:



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- 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 DNV GL Type Approval Certificate.

END OF CERTIFICATE