

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Rudder Bearing Bushing Material, Synthetic**with type designation(s)
STARLITE Non-As. Selb #12673

Issued to

**Starlite Co., Ltd. Ritto Plant
Ritto, Shiga pref., Japan**is found to comply with
**DNV GL rules for classification – Ships
DNV GL class programme CP-0081 – Type Approval of non-metallic materials – Synthetic
bearing bushing materials****Application :****Max. surface pressure 5.5 MPa for the synthetic bearing against steel, non-lubricated, max. 10 MPa water lubricated. The Type Approval is valid only when the installation/application is according to the DNV GL Rules and the Manufacturer's Specification.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2021-04-10**.Issued at **Høvik** on **2016-04-11**DNV GL local station: **Kobe**Approval Engineer: **Gisle Hersvik**for **DNV GL**

**Arnstein Gloppen
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

STARLITE Non-As. Selb #12673; cotton fabric laminate with a phenolic resin.

Manufactured by

Starlite Co., Ltd. Ritto Plant, 2222 Kamitoyama Ritto City, Shiga Pref. 520-3004, Japan

DNV GL local office: Kobe

Starlite Plastic Products (Kunshan) Co., Ltd., No. 2 Yingbin West Road Luyang Zhoushi Town, Kunshan City, Jiangsu, China.

DNV GL local office: Shanghai

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

Maximum surface pressure:

- 5.5 MPa for the synthetic bearing against steel, non-lubricated (dry running).
- 10 MPa for the synthetic bearing against steel, water lubricated.

Area of application will be evaluated during approval of classified objects if the surface pressure exceeds 5.5 MPa.

The maximum surface pressure of 10 MPa will be subject to evaluation w.r.t. service experience etc. in connection with renewal of the certificate.

The Type Approval is valid only when the installation/application of the product is according to the specified Rules and the manufacturer's specification. Installation by freeze and press fitting.

Type Approval documentation Tests carried out

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

Marking of product

Product shall be marked with *manufacturer's name*; **Starlite Co., Ltd**, *place of manufacture*, and *type designation/information*; **#12673**.

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).



Job Id: **262.1-012330-2**
Certificate No: **TAS00000DM**

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