

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Rudder Bearing Bushing Material, Synthetic**with type designation(s)
RISHOLITE Type PR-2123

Issued to

Risho Kogyo Co., Ltd.
Osaka, Osaka Pref, Japanis found to comply with
DNV GL rules for classification – Ships
Det Norske Veritas' Type Approval Programme 1-501.5, 2011, Synthetic Rudder Bearing Bushing Materials**Application :****Maximum surface pressure 10 MPa for the synthetic bearing against steel, water lubricated and self-lubricated. The approval is valid only when the installation of the product is according to the specified 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 **2021-01-18**.Issued at **Høvik** on **2016-01-19**DNV GL local station: **Kobe**Approval Engineer: **Gisle Hersvik**for **DNV GL**-----
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.

Job Id: **262.1-008544-5**
Certificate No: **TAS00000AF**

Product description

RISHOLITE Type PR-2123; Cured Phenolic Resin Cotton Calico Cloth Based Laminated Tubes.

- Production by Roll Press Process
- Material contains Graphite/Molybdenum

Manufactured by

Risho Kogyo Co., Ltd., Konan Factory, Konan Industrial Park, No.2-4, Takamatsu-Cho, Konan City, Shiga. Japan

Supplier of pre-material:
Risho Kogyo Ltd., Amagasgi Factory

Application/Limitation

Maximum surface pressure 10 MPa for the synthetic bearing against steel, water lubricated and self-lubricated.

Area of application will be evaluated during approval of classified objects if the surface pressure exceeds 7.5 MPa and/or for dry running (self-lubrication) installations.

The Type Approval is valid only when the installation/application of the product is according to the specified DNV GL Rules and the Manufacturer's specification.

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*; **Risho Kogyo Co., Ltd., Japan** 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 2.5 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