



中國驗船中心
CR Classification Society

Certificate No. 913-21-007

Date August 05, 2021

型式認可證書
TYPE APPROVAL CERTIFICATE

This is to certify that the undernoted product(s) has/have been approved by CR Classification Society in accordance with the requirements given in *Rules for the Construction and Classification of Steel Ships: Part IV Chapter 3* as an approved type for use in ships classed or intended to be classed with the Society.

Manufacturer : Trelleborg Sealing Solutions Rotherham

Approved Product(s) : Bearing

Model Name : ORKOT "TLM Marine"
ORKOT "TXM Marine"

This certificate is valid until May 30, 2026

CHTIEN-HUA HUANG

中國驗船中心 總驗船師

Chief Surveyor

CR Classification Society

(See next page for further details regarding the approval.)

This certificate evidences that the type of the products of the Manufacturer has been assessed to be in compliance with the specified CR Rules or Guidelines and to be capable of providing the listed products. This Certificate may be cancelled by CR Classification Society if the applicant makes any changes or modifications relevant to the approval, which have not been notified to, and agreed in writing with the Society. Any person not a party to the contract pursuant to which this document is delivered may not assert a claim against CR Classification Society for any liability arising out of errors or omissions which may be contained in said documents, or for errors of judgment, fault or negligence committed by personnel of the Society.

Please refer to the CR website for the latest status of this approval: www.crclass.org/aw0/aw0.htm

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Name of Manufacturer:

Trelleborg Sealing Solutions Rotherham

Address of Manufacturer:

Bradmarsh Business Park, Rotherham, S60 1BX, United Kingdom

Product Specification:**Description:**

ORKOT "TLM Marine": A fiber reinforced thermosetting resin composite material with molybdenum disulphide and PTFE as additional lubricants.

ORKOT "TXM Marine": A fiber reinforced thermosetting resin composite material with additional lubricant.

ORKOT "TLM Marine" and "TXM Marine": Synthetic stern tube bearing material for water-lubricated tailshafts.

Application / Limitation:

The approval is valid for rudder bearing bushing and water lubricated propeller shaft bearing materials.

1. Rudder bearing bushing material:

Maximum service temperature: 65°C

Maximum surface pressure:

- 5.5 MPa for the synthetic bearing against steel, non-lubricated.
- 10 MPa for the synthetic bearing against steel, water, grease or oil lubricated.

2. Water lubricated propeller shaft bearing material:

Length/breadth ratio of not less than 2:1 for the aft most bearing.

Maximum service temperature: 65°C

Maximum nominal bearing pressure: 6 bar.

Related Documents & Remarks:

1. Type approval documentation and data:
 - 1.1 CCS Works Approval Certificate No.: LD18W00002 valid until Apr. 09, 2022.
 - 1.2 ABS Product Design Assessment Certificate No.: 17-LD1598879-1-PDA valid until Jan. 18, 2022, and 17-LD1598878-1-PDA valid until Jan. 17, 2022.

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- 1.3 BV Type Approval Certificate No.: 04050/G0 BV and 09445/E0 BV valid until Aug. 29, 2024.
- 1.4 DNVGL Type Approval Certificate No.: TAM00000GD, TAS00000ZC and TAS00000ZD valid until Apr. 24, 2022.
- 1.5 ORKOT "TLM Marine" and "TXM Marine" test report by Trelleborg Sealing Solutions Rotherham on July 2006 and September 2010 respectively.
2. The product is to be marked with manufacturer's name or trademark, date of manufacture and expiration, storage condition and serial number.
3. Product Survey Requirement:
The above products are to be manufactured, examined and tested by Trelleborg Sealing Solutions Rotherham in accordance with the type described in this certificate and CR Rules for the Classification of Steel Ships.
4. Certificate retention survey:
The Surveyor of this Society shall be given admission to the manufacturer's premises every five years in order to verify the conditions for the type approval are complied with. In case where the certificate retention surveys are not practical, considerations will be given by the Society on a case-by-case basis.
5. Periodical assessment:
The intermediate audit is to be carried out within 3 months before or after the second anniversary date or within 3 months before or after the third anniversary date of the certificate. The intermediate audit will include, but not be limited to, confirmation of operation of the manufacturer's quality system, compliance of production procedures with the technical documents accepted at the time of type approval, purchase control of raw materials, components and parts, use of survey marks and approved product logos, languages required to be used in nameplates and operation instructions, product quality feedback. In case where the intermediate audit items mentioned above are not practical, considerations will be given by the Society on a case-by-case basis.

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