Certificate No: **2512121247291247**
TL Project No: **25-2875**

TYPE APPROVAL CERTIFICATE

This is to certify that the

Stern Tube Bearing Material - Rudder / Bracket Bearing Bushing Material

Manufacturer	:	**Permali Gloucester Ltd.**
Address	:	**270 Bristol Road, Gloucester, GL1, 5TT**
Product Type	:	**Feroform T12 / Feroform T14 / Feroform PR 18 - Railko RG 22 / Railko NF21/NF22**
Reference Rule	:	**TL Rules, Part A, Chapter 2, Material , 01.01.2021** **TL Rules, Part B, Chapter 4, Machinery, 01.01.2021** **TL Rules, Part A, Chapter 1, Hull, 01.01.2022**

Subject to the conditions referred to in the following pages, this certificate is valid until **14.05.2027**

Surveyor: **Sezer Mahir TUĞCU**

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Issued at **İSTANBUL** on **21.01.2026**

This document is electronically signed and does not require a manual signature

Click here for the verification website

Emrah SÖĞÜTÇÜ
New Building Division Manager
TÜRK LOYDU

Expire Date of Previous Certificate: -

For Information Only

This certificate is subject to terms and conditions described below:
Any significant change in design or construction may render this Certificate invalid. Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and relevant international instruments that apply to it.

Product	**: Stern Tube Bearing Material - Rudder / Bracket Bearing Bushing Material**
Type of Product	**: Feroform T12 / Feroform T14 / Feroform PR 18 - Railko RG 22 / Railko NF21/NF22**
Product Description	**: Feroform T12: A cured phenolic resin matrix reinforced with a synthetic fibre cloth and added MoS2** **Feroform T14: A cured phenolic resin matrix reinforced with a synthetic fibre cloth** **Feroform PR 18- Railko RG 22: A cured unsaturated polyester resin matrix reinforced with a woven synthetic fibre cloth with the addition of PTFE and graphite** **Railko NF21/NF22: cured phenolic resin matrix reinforced with a synthetic fibres mineral fillers and solid lubricant.** **NF22: Tube Form; NF21: Sheet, Half Shell, Staves**
Approval No / Date	**: PAE-EPAS/013269/22-0835/OAK , 22.07.2022**
Material Grade	**: As prescript on product description**
Performed Tests	**: T14** **- Compressive Strength [applied standards: ISO 604 and BS 2782-3 Method 345A:1979]** **- Bond Strength [applied procedure : TM075 issue 3]** **- Density [applied standards : ISO 1183 and BS 2782-6:Methods 620A]** **- Tensile Strength [applied standards: BS 2782-3: Methods 320A]** **PR 18-RG 22** **- Compressive Strength [applied standards: ISO 604 and BS 2782-3 Method 345A:1979]** **- Shore D [applied standards: ISO 7619-1:2010]** **- Density [applied standards : ISO 1183 and BS 2782-6:Methods 620A]** **- Tensile Strength [applied standards: BS 2782-3: Methods 320A]** **- Thermal Expansion [applied standards: BS 4618-3.1:1970]** **T12** **- Compressive Strength [applied standards: ISO 604 and BS 2782-3 Method 345A:1979]** **- Bond Strength [applied procedure : TM075 issue 3]** **- Density [applied standards : ISO 1183 and BS 2782-6:Methods 620A]** **- Tensile Strength [applied standards: BS 2782-3: Methods 320A]** **NF21/NF22** **- Flexural Strength [applied standards: ISO 1183 and BS 2782-3 Method 335A:1978]** **- Shore D [applied standards: ISO 7619-1:2010]** **- Compressive Strength [applied standards: ISO 604 and BS 2782-3 Method 345A:1979]** **- Bond Strength [applied procedure : TM075 issue 3]** **- Density [applied standards : ISO 1183 and BS 2782-6:Methods 620A]** **-Dimensional Control** **-Manufacturing control** **-Visual inspection**
Test Place	**: 270 Bristol Road, Gloucester, GL1, 5TT**
Last Inspection Date	**: 10.11.2025**
Others	**: The product shall be marked with manufacturer name and type designation.**

Approval Conditions	**: Application/Limitation:** **Feroform T12 and Feroform T14:** **Fields of Application; Bracket Bearing / Stern Tube Bearings / Rudder Bearings / Propeller Shaft / Steering Gear** **Lubricants;** **-Water, Dry, Oil, Grease**

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Operational Limits;
-Water lubricated stern tube bearing surface pressure 0.6 Mpa for minimum length to dia. ratio of 2:1
-Oil lubricated stern tube bearing surface pressure 0.6 Mpa for minimum length to dia. ratio of 1:5:1
-Rudder bearing surface pressure at hardness between 60-70 shores is to be 5.5 Mpa. Surface Pressures exceeding 5.5 Mpa may be accepted in accordance with bearing manufacturer's specification and tests, but in no case more than 10 Mpa.
Dimensions;
-Internal Dia: 20 mm - 1150 mm / External Dia: 30 mm - 1260 mm
-Lengths up to: 1200 mm
-Sheets, pametrada, half shells, staves sizes
-Each design of stern tube bearings and rudder bearings is to comply with the requirements of Turk Loydu Rules

Fereform PR 18 - Railko RG 22:
Fields of Application; Rudder Bearings / Steering Gear
Lubricants;
-Water, Dry, Oil, Grease
Operational Limits;
-Rudder bearig surface pressure at hardness between 60-70 shores is to be 5.5 Mpa. Surface Pressures exceeding 5.5 Mpa may be accepted in accordance with bearing manufacturer's specification and tests, but in no case more than 10 Mpa.
Dimensions;
-Internal Dia: 20 mm - 1150 mm / External Dia: 30 mm - 1260 mm
-Lengths up to: 950 mm
-Each design of stern tube bearings is to comply with the requirements of Turk Loydu Rules

Railko NF21/NF22:
Fields of Application; Bracket Bearing / Stern Tube Bearings / Rudder Bearings / Propeller Shaft / Steering Gear
Lubricants;
-Water, Dry, Oil
Operational Limits;
-Water lubricated stern tube bearing surface pressure 0.6 Mpa for minimum length to dia. ratio of 2:1
-Oil lubricated stern tube bearing surface pressure 0.6 Mpa for minimum length to dia. ratio of 1:5:1
-Rudder bearing surface pressure at hardness between 60-70 shores is to be 5.5 Mpa. Surface Pressures exceeding 5.5 Mpa may be accepted in accordance with bearing manufacturer's specification and tests, but in no case more than 10 Mpa.
Dimensions;
-Internal Dia: 20 mm - 1150 mm / External Dia: 30 mm - 1260 mm
-Lengths up to: 650 mm
-Sheets, pametrada, half shells, staves sizes
-Each design of stern tube bearings and rudder bearings is to comply with the requirements of Turk Loydu Rules

Any significant changes in design and/or quality of the material will render the approval invalid

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