



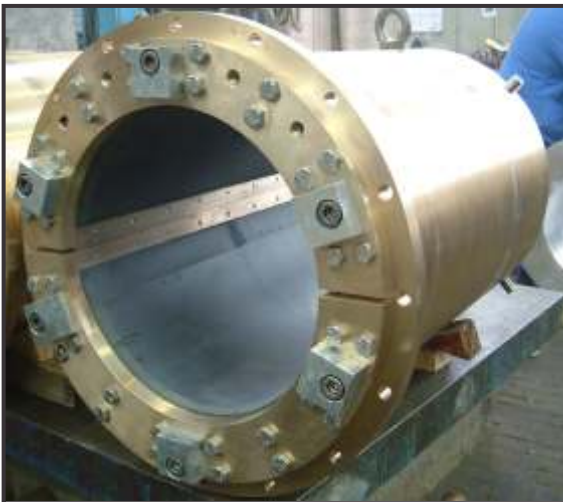
**TENMAT**

**RAILKO**

# marine bearings

*specified, installed and supported*

## Proven technologies for water-lubricated propeller shaft bearings.



Railko has, for over forty years, been one of the world's major suppliers of water-lubricated propeller-shaft bearings to the world's navies, providing bearings technology for capital warships and submarines of many nations. These include IPV and OPV vessels for high-speed interdiction and protection of Exclusive Economic Zones (EEZ).

Increasingly stringent worldwide controls on marine pollution, and consequently greater penalties in the event of oil leaking into the sea, have encouraged many merchant fleets to consider the water-lubricated option for their ships' propeller shafts. Railko's immense experience in water-lubricated bearing technology is readily available to advise engineers anywhere in the world.

Two separate but related Railko technologies are available for water-lubricated propeller shaft bearings.



**AMT ENVIRACLEAN TECHNOLOGIES PVT. LTD.**

## RAILKO NF21/NF22

### HIGH PERFORMANCE WATER LUBRICATED STERN TUBE BEARING MATERIAL



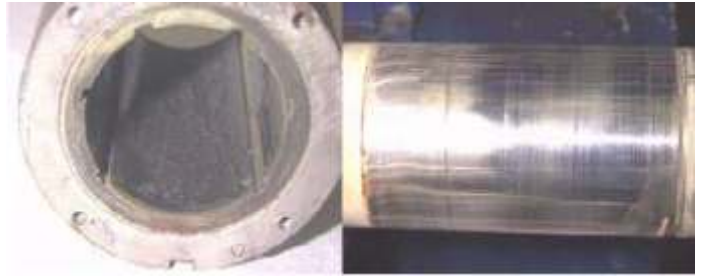
RAILKO grades NF21/NF22 are the chosen bearing materials for many marine applications, particularly in stern tube applications. RAILKO NF21/NF22 offer low wear and friction rates, and are approved by all the major Navies worldwide with over 25 years proven service.

Tests carried out in sand laden seawater show that RAILKO NF grades offers greater wear resistance than alternative materials. In addition, it promotes smoother running and reduced shaft wear.

RAILKO NF is offered as staves bearings, fully cylindrical bearings, segment bearings and split bearings. Split bearings can be removed without the need for removing the propeller shaft, and therefore saving time and money for the end user.



*Elastomeric bearing wiped & Shaft Condition*



**Railko NF22 bearing and shaft**

Tests conducted in sand laden waters shows that Railko NF material took twice as long to reach the same wear down level as a rubber bearing.

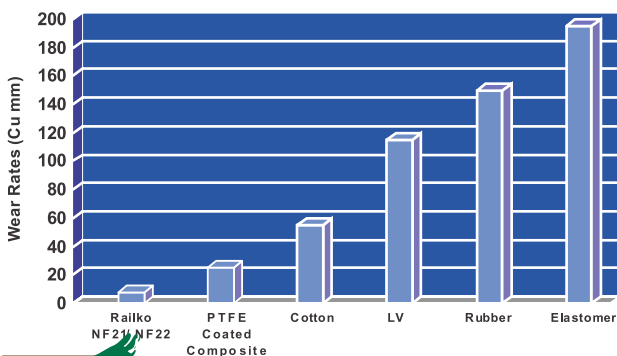
Significant scoring on the shaft can be seen above left when rubber cutlass is used in comparison to the shaft condition when used with Railko NF bearing material. On the picture on the left, the wear is caused by the silica particles embedding in the rubber material which score the shaft, and wear down the bearing material.

#### APPROVALS

Railko NF is approved by all major marine classifications societies and is specified on vessels for the following Navies: Argentina, Australia, Brazil, Canada, Chile, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Korea, Malaysia, Morocco, Netherlands, Nigeria, Norway, Pakistan, Peru, Portugal, Singapore, Saudi Arabia, Spain, Taiwan, Turkey, UAE, United Kingdom, United States and Uruguay.

Railko NF21/NF22 can be supplied as cylindrical bearings, split bearings, stave bearings, or complete assembly packages.

Comparison of Railko NF grades against Competitor Materials



PROPERTIES	UNITS	NF21
Density	g/cm <sup>3</sup>	1.64
Ultimate Compressive Strength	MPa	220
Normal Working Pressure	MPa	55
Shear Strength	MPa	41
%Swell in Water	@ 20 <sup>0</sup> C	<1
Coefficient of Friction (dry)	μ	0.25-0.4
Coefficient of Thermal Expansion	10 <sup>-6</sup> / <sup>0</sup> C	35
Maximum Continuous Operating Temperature	<sup>0</sup> C	120 <sup>0</sup>

**Feroform materials give excellent life when subjected to the small fretting movements associated with rudders and steering gear.**

**FEROFORM PR18 - Cost Effective Solution for RUDDER BEARING**

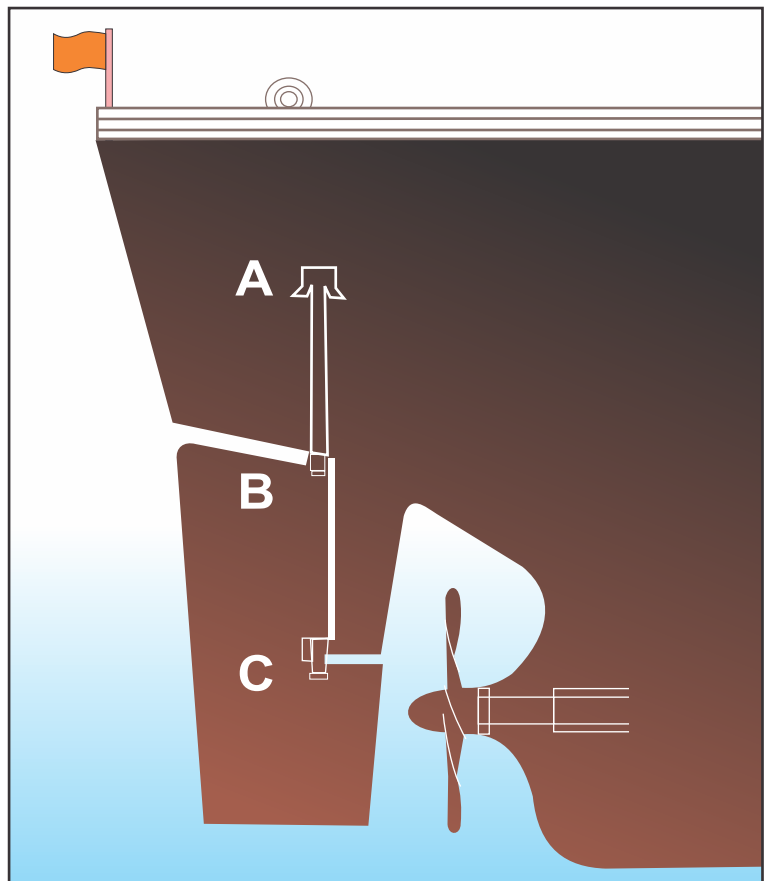
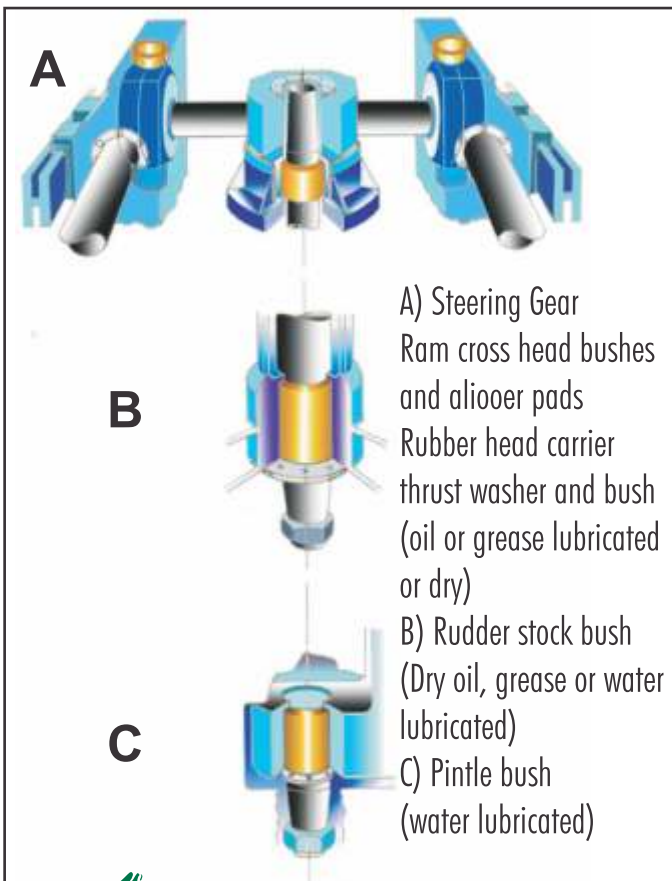
**FEROFORM PR18** is a composite material made from Cured Polyester resin Matrix reinforced with Woven Synthetic Fibre cloth + Friction Modifier.

**FEROFORM PR18** contains high performance resins and specially selected friction modifiers making it a thermally stable and high wear resistant material.

- Dry running but can also be used with all common lubricants
- Approved by all major classification societies for up to 10 Mpa
- Thermally stable
- Lower operating costs for ship operator
- Reduced bearing length



PROPERTIES	UNITS	PR18
Density	g/cm <sup>3</sup>	1.3
Ultimate Compressive Strength	MPa	300
Normal Working Pressure	MPa	75
Compressive Yield @68.9MPa	%	2.5
Brinell Hardness		23
% Swell in Water	@ 20°C	0.15
Average Coefficient of Friction	Dry Wet	0.08 0.12
Coefficient of	10 <sup>-6</sup> /°C normal	110
Thermal Expansion	parallel	40
Maximum Continuous	°C	100
Operating Temperature		
Maximum Intermittent	°C	110
Operating Temperature		



As Used By Over 40 Navies Worldwide.



*'Hamburg' Type 124 frigate.*



*'HMS Vigilant'*



*INS ARIHANT - Indian Navy*



*Berlin class replenishment ship*



*Collins class*



*Aircraft Carrier  
Clemenceau Class Sao Paulo*

## TECHNICAL SUPPORT AND AFTER SALES & SERVICES

AMT Marine have full fledge technical team, who can provide technical support like selection of right grade of bearing , helping bearing design & calculation, providing guidance in installation of bearing and also do fitment of bearing.



## MACHINING

AMT Marine have up-to-date machining facility, where we can provide fully machined bearing as per customer requirement and design at short possible time.

## OFF THE SHELF DELIVERY

AMT Marine hold a large stock of different grades & sizes of tubes in Mumbai to meet any urgent requirement.



Agents & Distributors in India



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