



CERTIFICATE NUMBER

04-HS419295-2-PDA

DATE

22 March 2010

ABS TECHNICAL OFFICE

Houston SED - Ship Equipment

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
Vesco Plastics - Virginia

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate. It will remain valid as noted below or until the Rules or specifications used in the assessment are revised (whichever occurs first).

PRODUCT: Bearing, Shaft Sleeve Marine, Rudder and Water Lubricated Propeller Shaft Bearings

MODEL: Vesconite and Vesconite Hilube bearings - Standard, Superclad, Staves & Superstaves.

ABS RULE: 2010 Steel Vessels Rules 1-1-4/7.7, 4-3-2/5.15.1, 7-5-2, 3-2-14/15.1.1, 3-2-14/15.1.2, 3-2-14/Table-6;
2006 Steel Vessels Rules under 90m 4-3-1/13.1.2., 3-2-11/15.1.1, 3-2-11/15.1.2, 3-2-11/Table 6

OTHER STANDARD: Manufacturer's Standards;

AMERICAN BUREAU OF SHIPPING

Tim Kimble

Engineering Type Approval Co-ordinator

Vescon Plastics

12 Artisan Street
P.O. Box 1747
Virginia
Free State 9430
South Africa
Telephone: 27-57-2120000
Fax: 27-57-2123355

Product: Bearing, Shaft Sleeve Marine, Rudder and Water Lubricated Propeller Shaft Bearings

Model: Vesconite and Vesconite Hilube bearings - Standard, Superclad, Staves & Superstaves.

Intended Service:

Marine & Offshore Application - Sea Water Lubricated Propeller Shaft Bearings for Struts, After Stern Tubes & Forward Stern Tubes. Rudder Stock Bearings, Wet or Dry. Bushings Fitted in Housing, in or out of Water.

Description:

Polymer based bushings for propeller shafts and rudder bearings are available in (4) options.

Option 1:

Standard Vesconite Bearings are machined from the cylindrical stock to the required inside and outside diameters.

Option 2:

Superclad Vesconite Bearings are based on the standard Vesconite bearings which have been built up on the outside diameters with reinforced epoxy resin laminate and finish machined to the required outside diameters.

Option 3:

Vesconite Staves are machined from the plate stock to standard specifications for fitting next to one another in a bearing housing. Option 4:

Vesconite Superstaves are interlocking staves which have been epoxy bonded to produce a cylindrical bushing with the required internal diameter and built up on the outside diameter with reinforced epoxy resin laminate.

The outer diameter may be built up with reinforced epoxy resin laminate to the required final outer diameter with a minimum built up thickness of 2 mm for bushings 100 mm outside diameter and upwards. The thickness of the Vesconite bushing will be in excess of 15 mm for grooved propeller shaft bearing and 10 mm for ungrooved rudder bearings.

In addition to the Vesconite bearings above, Vesconite Hilube bearings are also available in (4) options.

Ratings:

Rating Propeller Shaft Bearings:

The length of the synthetic bearing, next to and supporting the propeller, is to be not less than four times the required tail-shaft diameter. The length may be less than four times, but not less than two times the required tail-shaft diameter, provided that the bearing design is substantiated by experimental tests to the satisfaction of the Bureau. See 4-3-2/5.15.1 of the Rules and 4-3-1/13.1.2 of the Rules (under 90m).

Rating Rudder Bearings:

Allowable Surface Pressure for Rudder Bearings of synthetic material may be taken up to 5.5 N/mm² with the length / diameter ratio of the bearing surface not to be greater than 1.2. See 3-2-14/17.1.1 of the Rules and 3-2-11/17.1.1 of the Rules (under 90m). Higher maximum allowable bearing surface pressure may be taken provided that the bearing design is verified by experimental tests to the satisfaction of the Bureau. See 3-2-14/Table-2 of the Rules and 3-2-11/Table-2 of the Rules (under 90m).

Consult Manufacturer for sizes, material properties, friction and wear.

Service Restrictions:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

The operating environment is expected to be generally dry in housing or wet in contact with fresh/sea water and at temperatures not exceeding 60°C.

Vesco Plastics
12 Artisan Street
P.O. Box 1747
Virginia
Free State 9430
South Africa
Telephone: 27-57-2120000
Fax: 27-57-2123355

Comments:

- a) Type approval of these bearings for propeller shafts and rudder stocks is based on compliance, in all respects, with ABS Rules in association with the intended service and is limited to the ratings as indicated above.
- b) Propeller shaft bearings are to be designed for adequate water circulation and hydrodynamic lubrication in accordance with manufacturer's recommendations.
- c) Propeller shaft bearing clearances are to be in accordance with manufacturer's recommendations. Also, see 7.5.2 of the Rules for allowable bearing wear down.
- d) The clearance of non-metallic rudder bearings is to be specially determined considering the material's swelling and thermal expansion properties. See 3-2-14/17.1.2 of the Rules and 3-2-11/17.1.2 of the Rules (under 90m).
- f) For all bearings, wall thickness, machining allowance, interference fit of the bushing into a housing, installation procedure including the locking of the bushing in position within the housing are to be in accordance with manufacturer's recommendations.

Notes / Drawings / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This product/model is covered under Product Design Assessment (PDA) Certificate # 04-HS419295-2-PDA, dated 22/Mar/2010. This PDA Certificate expires 21/Mar/2015. It will remain valid for 5 years from date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first). It is valid for all vessels contracted on or before the date of the Rules used in this evaluation.

STANDARDS

ABS Rules:

2010 Steel Vessels Rules 1-1-4/7.7, 4-3-2/5.15.1, 7-5-2, 3-2-14/15.1.1, 3-2-14/15.1.2, 3-2-14/Table-6;
2006 Steel Vessels Rules under 90m 4-3-1/13.1.2., 3-2-11/15.1.1, 3-2-11/15.1.2, 3-2-11/Table 6

National:

NA

International:

NA

Government Authority:

NA

EUMED:

NA

Others:

Manufacturer's Standards