



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **S-6208**

This is to certify that the
Rudder Bearing Bushing Material, Synthetic

with type designation(s)
ACM L2 Marine

Manufactured by
ACM Bearings Ltd.
ROTHERHAM, SOUTH YORKSHIRE, United Kingdom

is found to comply with
Det Norske Veritas' Type Approval Programme 1-501.5, 2009, Synthetic Rudder Bearing Bushing Materials
Det Norske Veritas' Rules for Classification of Ships

Application
Max. surface pressure 5.5 MPa for the synthetic bearing against steel, non-lubricated, max. 10 MPa water or oil lubricated. The Type Approval is valid only when the installation/application of the product is according to the DNV Rules and the manufacturer's specification.

Høvik, 2010-06-21
for Det Norske Veritas AS



This Certificate is valid until
2013-12-31

Rikard Törnqvist
Head of Section

DNV local office:
Sheffield

Gisle Hersvik
Surveyor

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. If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: S-6208
File No.: 681.62
Job Id.: 262.1-008417-1

Product description

ACM L2 Marine: A polyester resin bonded, polyester fibre reinforced Rudder Bearing Bushing Material with added friction modifiers (Molybdenum Disulphide and PTFE).

Application/Limitation

Maximum surface pressure:

- 10 N/mm² for the synthetic bearing against steel, water or oil lubricated.
- 5.5 N/mm² for the synthetic bearing against steel, non-lubricated (dry running).

Area of application will be evaluated during approval of classified objects if the surface pressure exceeds 5.5 N/mm².

The maximum surface pressure of 10 N/mm² will be subject to evaluation w.r.t. service experience etc. in connection with renewal of the certificate.

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

Type Approval documentation

1. Previous Type Approval Certificate No. S-4521.
2. Email from ACM of 2010-06-10, incl. test data and calculations.
3. Letter from DNV Sheffield of 2009-11-30, including Survey Report w/enclosure of 2009-11-23, ACM L2 Marine Engineering Manual and Product Catalogue.

Tests carried out

Type Testing carried out according to **Type Approval documentation**.

Marking of product

Product/package shall be marked with *manufacturer's name*; **ACM Bearings Ltd., UK** and *type designation* **ACM L2 Marine**.

Certificate Retention/Renewal Survey

The scope of the Retention/Renewal Survey 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.

Survey to be performed after two (2) years (Certificate Retention Survey) and at renewal after four (4) years (Certificate Renewal Survey).

The main elements of the survey are:

- 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 Type Approval Certificate.

END OF CERTIFICATE