



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **M-12537**

This is to certify that the
Stern Tube Bearing Material

with type designation(s)
ACM L2 Marine

Issued to
ACM Bearings Ltd
ROTHERHAM, SOUTH YORKSHIRE, United Kingdom

is found to comply with
Det Norske Veritas' Rules for Classification of Ships/High Speed and Light Craft

Application
**The bearing material is approved for use as water lubricated non-metallic stern tube bearing
with a minimum L/D ratio of 2:1. Maximum nominal bearing pressure: 6 bar.**

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-03-13**

DNV local station: **Manchester**

Approval Engineer: **Gisle Hersvik**

for **Det Norske Veritas AS**

Martin Strande
Head of Section

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.

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

The bearing material is approved for use as water lubricated non-metallic stern tube bearing with a minimum L/D ratio of 2:1.

Maximum nominal bearing pressure 0.6 N/mm² and unlimited diametrical size.

To be fitted in accordance with the Manufacturer's recommendations in compliance with all relevant DNV Rules.

Stave type bearing is to be provided with longitudinal supporting ring or similar.

Type Approval documentation

1. Assessment Report from DNV Manchester, Nos. SHF-13-088868 and SHF-13-088868a of 2014-02-07,
2. Email from ACM of 2014-02-03, including Smithers Rapra Test Report, Proposal No. 123154MM, "Composite Testing (ACM L2 Marine)" of 2014-01-30,
3. Application for Type Approval of 2013-10-08,
4. ACM L2 Marine Engineering Manual Rev 3.6, ACM L2 Marine Rudder Fact Sheet, ACM L2 Marine Workboat Shaft Fact Sheet, ISO 9001 Certificate,
5. Email from ACM of 2010-06-10, including test data and calculations.

Type Testing

Type Testing has been carried out in accordance with **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**.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV Type Approval Certificate.

Periodical Assessment

The scope of the Periodical Assessment 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.

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

The main elements of the Periodical Assessment are to:

- 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