



MARINE DIVISION

Certificate number: 19300/B1 BV

File number: ACM 119/2207/001

Product code: 0720H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

ACM BEARINGS LTD.
ROTHERHAM - UNITED KINGDOM

for the type of product

BEARING MATERIALS

ACM L2 MARINE

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 04 Apr 2017

For BUREAU VERITAS,

At BV LONDON, on 20 Apr 2012,

Spencer Yule



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

ACM Grade L2 Marine

Rudder Bearing and Stern Tube Bearing Material

non-lubricated or seawater-lubricated or oil-lubricated

for shaft diameter up to 1000 mm, available as machined component, as tube or sheet form.

The material is a high load composite bearing material made of synthetic fabric reinforcement which is impregnated with a thermosetting resin and solid lubricant fillers (molybdenum disulphide & PTFE).

2. DOCUMENTS AND DRAWINGS:

ACM L2 Marine Engineering Manual.

3. TEST REPORTS:

Results of mechanical and thermal tests conducted at Sheffield Testing Laboratory.

Results of mechanical and wearing tests (report issue 1.3 dated 16 Feb 2012=

4. APPLICATION / LIMITATION:

4.1 - Application Limitation:

Type of use of the Bearing	Type of Lubrication	Max. Bearing Mean Pressure	Max. Service Temperature	Length & Diameter
Rudder Stock & Rudder Pintle	Seawater Oil Lubricated	10.0 MPa	60°C	L/D not to be less than 1 & greater than 1.2 As per Part B, Ch 10, Sec 1 [6.3.3] of BV Rules
Rudder Stock & Rudder Pintle	Non-lubricated	5.5 MPa	60°C	L/D not to be less than 1 & greater than 1.2 As per Part B, Ch 10, Sec 1 [6.3.3] of BV Rules

Type of use of the multi groove Bearing	Type of Lubrication	Max. Bearing Mean Pressure relative to shaft speed	Length & Diameter
Stern Tube	Seawater Lubricated	Shaft velocity in metres per minute (V) / Bearing Pressure in bar (P) $V/P = 25.5$ or greater.	As per part C, Ch 1, Sec 7, [2.4.4 b]) of BV Rules

4.2 - On board installation & Maintenance requirements:

- As per ACM instructions. May be freeze-fitted.
- As per ACM Bearings Limited L2 MARINE ENGINEERING MANUAL Revision 2C-3
- Operating clearance as per ACM instructions.
- Visual and dimensional control.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The ACM Grade L2 Marine is to be manufactured, examined and tested by **ACM BEARINGS LTD.**, in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.

5.2 - Production sites are to be recognized by Bureau Veritas as per NR320 for HBV products. To this end **ACM BEARINGS LTD.** has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.

5.3 - **ACM BEARINGS LTD.** has declared to Bureau Veritas that the type of product described in this certificate is manufactured at the following production site:

ACM BEARINGS LTD.
Derwent Way
Wath West industrial Estate
Wath Upon Dearne
ROTHERHAM
South Yorkshire
UNITED KINGDOM

6. MARKING OF PRODUCT:

- Weight and dimension.
- Manufacturing Data and lot number.
- Nominal Shaft Diameter.

7. OTHERS:

7.1 - It is understood that the herewith mentioned manufacturer will give the shipyards and related subcontractors all the relevant information for the proper fitting and uses of the product covered in this Type Approval Certificate. This information has to include the conditions stated in the Certificate.

It is also understood that Bureau Veritas remains rightfully entitled to perform any check or test on the product at any time.

7.2 - This Certificate supersedes the TAC 19300/B0 BV issued on 16 Feb 2012 by the Society.

***** END OF CERTIFICATE *****