

MARINE DIVISION

67/71 Boulevard du Château
92200 Neuilly-sur-Seine - France

Tel. 33 1 55 24 70 00
Fax. 33 1 55 24 70 45
www.veristar.com



Certificate number: 20945/A0 BV

File number : ACM198/803/1

Product code : 0012H

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

TYPE APPROVAL CERTIFICATE

This certificate is issued to

Henkel Corporation
Rocky Hill, CT - UNITED STATES OF AMERICA

for the type of product

POURABLE COMPOUNDS FOR ENGINE CHOCKING

POURABLE COMPOUNDS FOR ENGINE CHOCKING

Henkel Fixmaster Marine Chocking - Green;

Henkel Fixmaster Marine Chocking - Orange

Regulations and standards :

BUREAU VERITAS Rules for Classification of Steel Ships,
BUREAU VERITAS Rules for Classification of Offshore Units.

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 of the Regulations and standards mentioned above.

This certificate is valid until : 11 Dec 2013

At Neuilly, on : 11 Dec 2008

For BUREAU VERITAS,
By order of the Secretary

Approval office

Local office : BV PORT EVERGLADES
CENTRE

Surveyor : F. Rosas

L.COURREGELONGUE



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. 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 :

Henkel Fixmaster Marine Chocking - Green, Henkel Fixmaster Marine Chocking - Orange

Self-leveling two -component pourable castable resin intended for chocking of engines, machinery mounting, anchoring and grouting.

2. DOCUMENTS AND DRAWINGS :

As per Manufacturer's technical data.

3. TEST REPORTS :

Following tests have been carried out:

- Coefficient of thermal expansion (STM-767),
- Immersion test (ISO 175:2000),
- Tensile Properties (ASTM D638),
- Measuring Volume & Linear Shrinkage (STM-753 (ASTM D752),
- Compression resistance (ASTM D 695),
- Linear Mold Shrinkage (ASTM D2566),
- Barcol (ASTM D2583),
- Wear Rate (ASTM D3702),
- Burn Rate (ASTM D635),
- V-Notch beam Shear (ASTM D5379),
- Durometer Hardness,
- Brittleness Temperature (ASTM D746).

4. APPLICATION / LIMITATION :

The pressure on the chocks is not to exceed the following values:

- pressure due to motor or reduction gears weight: 0.7 MPa
- maximum total pressure depending on the maximum allowable temperature according to the following table:

<u>Temperature</u> (°C)	<u>Stress</u> (MPa)
80	4.5
70	6.0
60	7.1
50	8.1
40	8.9
30	9.6
20	10.3

Chocking design of engines and / or reduction gears shall take into account, if necessary, the mechanical reaction to torque and thrust.

A calculation note must be submitted for each application.

The calculation note is to take into account the following parameters:

- For diesel engines:
 - weight of engine,
 - bolts tightening,
 - value of upsetting moment,
 - loads due to ship motions (rolling, pitching, ramming).

- For reduction gears or thrust bearings:
 - weight of reduction gear or thrust bearing,
 - bolts tightening,
 - values of upsetting and rocking moments,
 - propeller thrust.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The **Henkel Fixmaster Marine Chocking - Green** and **Henkel Fixmaster Marine Chocking - Orange** are to be manufactured, examined and tested by **HENKEL CORPORATION** 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 **HENKEL CORPORATION** has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.

5.3 - **HENKEL CORPORATION** has declared to Bureau Veritas that the type of product described in this certificate are manufactured at the following manufacturing facilities:

- **HENKEL CORPORATION**
Cleveland manufacturing Facility
Cranwood Parkway 18731
Cleveland, Ohio 44128
UNITED STATES OF AMERICA
- **HENKEL LOCTITE (China) Co. Ltd.,**
No. 90 Zhujiang Road
264006 Yantai ETDZ
P. R. CHINA

5.4 - The working up of this product is to be carried out under supervision of the Manufacturer or a qualified Agent.

6. MARKING OF PRODUCT :

The product containers are to be at least labelled with:

- Manufacturer identification
- Product identification
- Date of manufacture and expiration date
- Storage conditions
- Serial number.

7. OTHERS :

7.1 - This approval is given on the understanding that **HENKEL CORPORATION - United States of America** will accept full responsibility for informing shipbuilders or their sub-contractors of the proper method of fitting and general maintenance of the Fixmaster Green or Orange and of the conditions of this approval.

*** END OF CERTIFICATE ***