



MARINE DIVISION

Certificate number: 21665/A0 BV

File number: ACM 135/2669/02

Product code: 2080H

*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*

**Thermaflex Isolatie B.V.**  
Waalwijk - NETHERLANDS

*for the type of product*

### THERMOPLASTIC MATERIAL PIPES AND FITTINGS

Pre-Insulated pipes Flexalen 600 / Flexalen 1000+ / Flexalen 60

**Requirements:**

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- FTP Code, Resolution MSC.61(67), IMO Resolution A.753(18)

*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: 22 May 2014**

**For BUREAU VERITAS,**

At BV ROTTERDAM, on 22 May 2009,

Erwin Poortvliet



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

**Pre-Insulated pipes Flexalen 600 / Flexalen 1000+ / Flexalen 60 (PB pipe + TPE foam + Plastic casing)**

#### 1.1 Technical Characteristics

Type	Flexalen 600 (1)	Flexalen 1000+ (2)	Flexalen 60
DN (mm)	20 to 100	15 to 50	16 to 32
Casing Pipe O.D. (mm)	125 to 200	125 to 200	Insulation (13 mm)
Min. Wall thickness of Pipe (mm)	2,3 to 10,0	2,3 to 5,8	2,2 to 3,0
Temperature range (°C)	-15 to + 95	-15 to + 95	-15 to + 95
Service Pressure at 20 °C (bar)	16	16	16

(1) Single pipe (25 mm - 110 mm O.D.) or twin pipe (25 mm - 63 mm O.D.)

(2) Multi pipe

#### 1.2 Raw material specification

Pipe	Polybutene PB
Insulation	Polyurethane / Extruded polyolefin TPE Foam (colour: Anthracite)
Outer casing	Polyethylene / ribbed HDPE (colour: Black)

### 2. DOCUMENTS AND DRAWINGS

- Manufacturer catalogue: Flexalen Product guide
- Technical document
- Installation manual

### 3. TEST REPORTS

- Product approval type testing in accordance with IMO Resolution A.753 (18) without fire endurance test
- Flame spread test reports (Flexalen 60) N° 2007-Efectis-R0501 and -R0502 of July 2007 according to ASTM D-635-06
- Flame spread test report (Flexalen 600/1000+) N° 2007-Efectis-R0503 of July 2007 according to ASTM D-635-06

### 4. APPLICATION / LIMITATION

4.1 Pre-insulated pipes systems are approved for use in locations and for non-essential applications where no fire endurance test is required according to Pt C, Ch 1, App 3 [2.3.1] of Bureau Veritas Rules or appendix 4 of IMO Resolution A.753 (18) when the abbreviations "O or NA" are specified:

- Domestic water system (cold sea and fresh water), chilled and potable water systems, heating systems, non-essential systems

4.2 The use of PB pipes and fittings with Flexalen pre-insulated system is restricted to cold service piping less than 15°C as stated in SOLAS 74 Convention, as amended.

4.3 Detailed drawings of piping system for each application on board ships are to be submitted for review of compliance with the Bureau Veritas Rules and the applicable regulations.

4.4 The pipes and fittings assembly is to be carried out in accordance with the manufacturer's instructions and the person performing these tasks is to be qualified to the satisfaction of the Society Surveyor.

4.5 The integrity of watertight bulkheads and fire division is not to be impaired.

4.6 Behaviour in case of fire (smoke generation and toxicity) is to be deemed satisfactory by the flag authorities of the vessel on board which the piping system is fitted.

### 5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be manufactured, examined and tested by the manufacturer in accordance with the approved type described in this certificate and Bureau Veritas Rules and Regulations stated on the front page of this certificate.

5.2 Production sites are to be recognized by Bureau Veritas as per NR 320 for HBV products. To this end, the manufacturer has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.

5.3 The manufacturer has declared to Bureau Veritas that the products detailed in this certificate are manufactured at the production site stated on the front page of this certificate.

5.4 Each pipe and fitting is to be tested by the manufacturer at a hydrostatic pressure not less than 1.5 times the nominal pressure.

5.5 Bureau Veritas certificate is not required for the product to be fitted on board units to be classed with Bureau Veritas.

**6. MARKING OF PRODUCT**

Pre-insulated pipes system shall be marked with at least:

- Manufacturer's name or logo
- Type and size of the product
- Pressure rating
- Design standard
- Raw material

The permanent label for the product shall remain legible under normal handling and installation practices.

**7. OTHERS**

This approval is given with the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper method of fitting and general maintenance of the products and of the conditions of this approval.

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