

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Thermal and sound insulation material with low flame-spread characteristics

with type designation(s)
AF/ARMAFLEX

Issued to

Armacell GmbH
Münster Nordrhein-Westfalen, Germany

is found to comply with

Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Interpretation of SOLAS 1974 Convention as Amended

Application :

Approved for use as insulation material of low flame-spread characteristics, not generating excessive quantities of smoke nor toxic products in fire.

The material is not defined as non-combustible.

This certificate is recognized by Transport Canada.

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

Issued at **Høvik** on **2014-11-07**

DNV GL local station: **Essen**

Approval Engineer: **Marius Mørner**

for **DNV GL**

Petter Langnes
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 proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **F-20926**
File No: **471.61**
Job Id: **262.1-013832-2**

Product description

"AF/Armaflex"

Composed of elastimeric foam based on a synthetic rubber basis.

Density: 45 - 65 kg/m³

Thickness (with Armaflex adhesive based on polychloroprene): 6 - 50 mm

Thickness (equipped as self-adhesive): 6 - 32 mm

Pipes insulated with AF/Armaflex may be supported using "Armafif" composed of AF/Armaflex with two PUR/PIR cubes cut into Armaflex and then covered by aluminium plates.

Application/Limitation

The product may be used on cold service pipework/fittings for refrigeration systems everywhere onboard, and for pipework, fittings, air ducts and tanks insulation in cargo areas, mail rooms, baggage rooms and refrigerated compartments of service spaces, and exterior locations (SOLAS II-2/5.3.1.1). (Piping for hot and cold sanitary water can not be considered "cold service pipework/fittings".)

The product satisfies the requirement for maximum calorific value (ref. Solas Chapter II-2, Reg 5.3.2.2) without further testing.

Any adhesive used, other than the one used during testing, has to be tested for low flame spread characteristics according to IMO 2010 FTP Code part 5.

Extent of application is to be considered and accepted for each case/project.

Each product is to be supplied with its manual for application and use.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, January 2013.

Test reports from SP Technical research Institute of Sweden, Fire Research, Sweden:

Size (mm)	Adhesive	Test report no.	Dated
32	Adhesive based on polychloroprene	4P03534	2014-06-04
50	Adhesive based on polychloroprene	4P03534-1	2014-06-04
6	Adhesive based on polychloroprene	4P03534-2	2014-06-25
6	Self-adhesive	4P03534-3	2014-06-25
32	Self-adhesive	4P03534-4	2014-06-25

Tests carried out

Tested according to IMO 2010 FTP Code part 5 and Annex 2 item 2.3.

Marking of product

The product or packing is to be marked with name of manufacturer and type designation.

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)", Det Norske Veritas confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

Periodical assessment

DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Standard for certification No. 1.2 Type Approval Item 4.