

**UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
CERTIFICATE OF TYPE APPROVAL**

(EC Certificate of Type Examination-96/98/EC Directive Module B)

Certificate Number: 164.112/1121/EWC MED0492TE

Applicant:- **AFS BORU SANAYI A.S**

Manufacturer:- AFS BORU SANAYI
A.S

Address:- **Ivedik Organize Sanayi Bölgesi 1468.
Cadde No:153 OSTIM ANKARA**

Ivedik Organize Sanayi Bölgesi
1468. Cadde No:153 OSTIM
ANKARA

This is to certify that the applicant has submitted details of a Surface Material with Low flame-spread and low smoke and toxic fume characteristics (Item Number A.1/3.18 (f): combustible duct membrane) for use on board vessels, known and designated as:-


"ALUAFS.F MARINE"

having the technical specification given in the schedule of equipment on this certificate which has been tested and complies with the recommended criteria given in the following methods, published by the International Maritime Organisation, and which are contained in the relevant parts of the International Code for Application of Fire Test Procedures (FTP Code) namely:-

- IMO Resolution MSC 307(88) Annex 1 Part 5.
- Smoke and Toxicity is satisfied by meeting the total heat release (Q_t) and peak heat release (Q_p) requirement as stated Paragraph 2.2 of Annex 2 to IMO Resolution MSC 307(88).

This certificate is issued on behalf of the Maritime and Coastguard Agency (MCA). The system complies with the relevant international testing standards under which legislation (The Merchant Shipping Marine Equipment) Regulations 1999 and also the Marine Equipment Directive 2014/90/EU as amended, the certificate is issued.

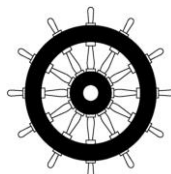
The manufacturer is allowed to affix the U.S. Coast Guard approval number 164.112/1121/EWC MED0492 as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 27th, 2004.



P Duggan
Manager
Warrington Certification
Holmesfield Road
Warrington WA1 2DS

Date of Original Issue 9th November 2016
This certificate is valid until 8th November 2021

**This certificate is not valid for equipment, the design or manufacture
of which, has been varied or modified from the specimens tested.**



Certificate of Type Approval Schedule of Equipment

The applicant declared that the following comprises an accurate description of the system type to which this certificate applies.

| | | |
|---|--|---|
| General description | | Non-insulated aluminium flexible air duct |
| Product reference of overall composite | | ALUAFS.F MARINE |
| Name of manufacturer of overall composite | | AFS Boru Sanayi A.S. |
| Thickness of overall composite | | 74 micron |
| Density / weight per unit area of overall composite | | 153 g/m ² |
| Aluminium | Generic type | Aluminium foil |
| | Product reference | See Note 1 |
| | Detailed description / composition details | Aluminium foil |
| | Name of manufacturer | See Note 1 |
| | Thickness | 16 micron |
| | Density / weight per unit area | 2.72 g/cm ³ |
| | Colour reference | Aluminium |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| Adhesive | Generic type | See Note 3 |
| | Product reference | See Note 1 |
| | Name of manufacturer | See Note 1 |
| | Colour reference | transparent |
| | Application rate / thickness | See Note 1 |
| | Application method | See Note 1 |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| | Curing process | See Note 1 |
| Poly | Generic type | Polyester film |
| | Product reference | See Note 1 |
| | Detailed description / composition details | Polyester film |
| | Name of manufacturer | See Note 1 |
| | Thickness | 9 micron |
| | Density / weight per unit area | 1.40 g/cm ³ |
| | Colour reference | Transparent |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| Adhesive | Generic type | See Note 3 |
| | Product reference | See Note 1 |
| | Name of manufacturer | See Note 1 |
| | Colour reference | transparent |
| | Application rate / thickness | See Note 1 |
| | Application method | See Note 1 |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| | Curing process | See Note 1 |
| Aluminium | Generic type | Aluminium foil |
| | Product reference | See Note 1 |



| | | |
|--|--|------------------------|
| | Detailed description / composition details | Aluminium foil |
| | Name of manufacturer | See Note 1 |
| | Thickness | 16 micron |
| | Density / weight per unit area | 2.72 g/cm ³ |
| | Colour reference | Aluminium |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| Adhesive | Generic type | See Note 3 |
| | Product reference | See Note 1 |
| | Name of manufacturer | See Note 1 |
| | Colour reference | transparent |
| | Application rate / thickness | See Note 1 |
| | Application method | See Note 1 |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| Aluminium | Amount of flame retardant | See Note 2 |
| | Curing process | See Note 1 |
| | Generic type | Aluminium foil |
| | Product reference | See Note 1 |
| | Detailed description / composition details | Aluminium foil |
| | Name of manufacturer | See Note 1 |
| | Thickness | 16 micron |
| | Density / weight per unit area | 2.72 g/cm ³ |
| | Colour reference | Aluminium |
| | Trade name of flame retardant | See Note 2 |
| | Generic type of flame retardant | See Note 2 |
| | Amount of flame retardant | See Note 2 |
| Brief description of manufacturing process | | See Note 1 |

Note 1 - The sponsor was unwilling to provide this information.

Note 2 - The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product / component.

Note 3 - The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

The under noted documents have been approved for compliance with the relevant requirements of International Conventions and European Union Legislation for the EC Type examination of Marine Equipment for use on Ships Registered in the European Economic Area.

Approved Documents - Test Reports

- (1) WARRES No. 369722 (dated August 2016). Surface Flammability test to IMO Resolution MSC 307(88) Annex 1 Part 5 and annex 2 of the Fire Test Procedures Code.
- (2) Smoke and Toxicity is satisfied by meeting the total heat release (Q_t) and peak heat release (Q_p) as stated in IMO Fire Test Procedures Code, Annex 2 Section 2.2

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