

**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 MED0495TE**

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 bulkheads and decks, known and designated as:-

**"ISOAFS-ALU.F ECOSOFT 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.

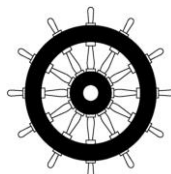
The manufacturer is allowed to affix the U.S. Coast Guard approval number 164.112/1121/EWC MED0495 as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 27<sup>th</sup>, 2004.



P Duggan  
Manager  
Warrington Certification  
Holmesfield Road  
Warrington WA1 2DS

Date of Original Issue 9<sup>th</sup> November 2016  
This certificate is valid until 8<sup>th</sup> 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		Thermally insulated aluminium flexible air duct	
Product reference of overall composite		<b>ISOAFS-ALU.F ECOSOFT MARINE</b>	
Name of manufacturer of overall composite		AFS BORU SANAYI A.S.	
Thickness of overall composite		25 – 50 mm	
Weight per unit area of overall composite		618 g/m <sup>2</sup>	
Product configuration		<ul style="list-style-type: none"> <li>• Flexible air duct (ALUAFS.F MARINE)</li> <li>• Insulation</li> <li>• Jacket</li> </ul>	
Flexible air duct	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 <sup>2</sup>	
	Aluminium	Generic type	Aluminium foil
		Product reference	<b>See Note 1</b>
		Detailed description / composition details	Aluminium foil
		Name of manufacturer	<b>See Note 1</b>
		Thickness	16 micron
		Density / weight per unit area	2.72 g/cm <sup>3</sup>
		Colour reference	Aluminium
		Trade name of flame retardant	<b>See Note 4</b>
		Generic type of flame retardant	<b>See Note 4</b>
		Amount of flame retardant	<b>See Note 4</b>
	Adhesive	Generic type	<b>See Note 3</b>
		Product reference	<b>See Note 1</b>
		Name of manufacturer	<b>See Note 1</b>
		Colour reference	transparent
		Application rate / thickness	<b>See Note 1</b>
		Application method	<b>See Note 1</b>
		Trade name of flame retardant	<b>See Note 4</b>
		Generic type of flame retardant	<b>See Note 4</b>
		Amount of flame retardant	<b>See Note 4</b>
		Curing process	<b>See Note 1</b>
	Poly	Generic type	Polyester film
		Product reference	<b>See Note 1</b>
		Detailed description / composition details	Polyester film
		Name of manufacturer	<b>See Note 1</b>
		Thickness	9 micron
		Density / weight per unit area	1.4 g/cm <sup>3</sup>



	Colour reference	Transparent
	Trade name of flame retardant	<b>See Note 4</b>
	Generic type of flame retardant	<b>See Note 4</b>
	Amount of flame retardant	<b>See Note 4</b>
Adhesive	Generic type	<b>See Note 3</b>
	Product reference	<b>See Note 1</b>
	Name of manufacturer	<b>See Note 1</b>
	Colour reference	transparent
	Application rate / thickness	<b>See Note 1</b>
	Application method	<b>See Note 1</b>
	Trade name of flame retardant	<b>See Note 4</b>
	Generic type of flame retardant	<b>See Note 4</b>
	Amount of flame retardant	<b>See Note 4</b>
	Curing process	<b>See Note 1</b>
Aluminium	Generic type	Aluminium foil
	Product reference	<b>See Note 1</b>
	Detailed description / composition details	Aluminium foil
	Name of manufacturer	<b>See Note 1</b>
	Thickness	16 micron
	Density / weight per unit area	2.72 g/cm <sup>3</sup>
	Colour reference	Aluminium
	Trade name of flame retardant	<b>See Note 4</b>
	Generic type of flame retardant	<b>See Note 4</b>
	Amount of flame retardant	<b>See Note 4</b>
Adhesive	Generic type	<b>See Note 3</b>
	Product reference	<b>See Note 1</b>
	Name of manufacturer	<b>See Note 1</b>
	Colour reference	transparent
	Application rate / thickness	<b>See Note 1</b>
	Application method	<b>See Note 1</b>
	Trade name of flame retardant	<b>See Note 4</b>
	Generic type of flame retardant	<b>See Note 4</b>
	Amount of flame retardant	<b>See Note 4</b>
	Curing process	<b>See Note 1</b>
Aluminium	Generic type	Aluminium foil
	Product reference	<b>See Note 1</b>
	Detailed description / composition details	Aluminium foil
	Name of manufacturer	<b>See Note 1</b>
	Thickness	16 micron
	Density / weight per unit area	2.72 g/cm <sup>3</sup>
	Colour reference	Aluminium
	Trade name of flame retardant	<b>See Note 4</b>



		Generic type of flame retardant	<b>See Note 4</b>
		Amount of flame retardant	<b>See Note 4</b>
	Brief description of manufacturing process		<b>See Note 1</b>
Insulation		Generic type	Glass wool insulation
		Product reference	<b>See Note 2</b>
		Name of manufacturer	KNAUF INSULATION
		Colour reference	Brown
		Thickness	25 mm
		Density	16 kg/m <sup>3</sup>
		Flame retardant details	<b>See Note 4</b>
JACKET	Poly	Generic type	Polyester
		Product reference	<b>See Note 1</b>
		Name of manufacturer	<b>See Note 1</b>
		Thickness	12 micron
		Density	1.40 g/cm <sup>3</sup>
		Colour reference	Transparent
		Flame retardant details	<b>See Note 4</b>
	Poly	Generic type	Polyester
		Product reference	<b>See Note 1</b>
		Name of manufacturer	<b>See Note 1</b>
		Thickness	12 micron
		Density	1.40 g/cm <sup>3</sup>
		Colour reference	Transparent
		Flame retardant details	<b>See Note 4</b>
	Aluminium	Generic type	Aluminium foil
		Product reference	<b>See Note 1</b>
		Name of manufacturer	<b>See Note 1</b>
		Colour reference	Aluminium
		Thickness	9 micron
		Density / weight per unit area	2.72 g/cm <sup>3</sup>
		Flame retardant details	<b>See Note 4</b>
Brief description of manufacturing process			<b>See Note 1</b>

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

**Note 2.** - The sponsor was unable to provide this information.

**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.

**Note 4** - The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product / component.

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. 369728 (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) 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.



- (3) 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

Warrington Certification  
Holmesfield Road  
Warrington  
WA1 2DS

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