

REACTION TO FIRE CLASSIFICATION REPORT No. RA16-0279 ACCORDING TO THE EUROPEAN STANDARD NF EN 13501-1+A1:2013

Provided the Ordinance from the Ministry of the interior, November 21, 2002 modified
Pilot laboratory approved by the Ministry of the Interior (Ordinance of February 5, 1959, modified)
Seule la version française fait foi
Only the French version is legally acceptable

Valid 5 years from June 03rd, 2016

Sponsor:	SIG Air Handling International BV Eerste Tochtweg 11 NL-2913 LN NIEUWERKERK AAN DE IJSSEL THE NETHERLANDS
Commercial brand(s):	ISOFLEX 25 SONOFLEX 25 ISOSLEEVE 25 / ISOSLEEVE S25J / ISOSLEEVE S25YJ
Manufacturer:	DUTCH ENVIRONMENT CORPORATION® BV Ir. Hanlostraat 18-22 NL-7500AA ENSCHEDE THE NETHERLANDS
Brief description:	Flexible air ducts with insulating material (see detailed description in paragraph 2)
Date of issue:	May 23rd, 2017

This classification report certifies only the characteristics of the object submitted for testing but does not prejudice the characteristics of similar products. So it does not constitute a product certification in the sense of Articles L 115-27 to L 115-33 and R 115-1 to R 115-3 of the Consumer Code.

If this report is being issued by e-mail and/or on an electronic medium, only the hard copy of the report signed by CSTB shall prevail in the event of a dispute.

The reproduction of this classification report is only authorised in its integral form.
It comprises 11 pages.

Extension of the Report RA16-0279 dated November 10th, 2016 for addition of commercial brands.

1. Introduction

This classification report defines the classification assigned to the above-mentioned product(s) in accordance with the procedures given in the NF EN 13501-1+A1:2013 standard.

2. Product description

Flexible air ducts tested mechanically fixed on A2-s1,d0 class calcium silicate substrate.

Air ducts with insulating material constituted as follows (from the inside to the outside):

- An inner duct referenced "ALUFLEX B" for the references "ISOFLEX 25" and "SONOFLEX 25", supported by a steel wire spiral, consisting of a metalized polyester layer (outside) and 12 µm thick polyester films glued (fire-retarded glue) between 7 µm thick aluminium thin foils (inside). This inner duct is micro perforated for the reference "SONOFLEX 25".
 - For the reference "ISOFLEX 25", this inner duct has a nominal diameter ≥ 82 mm.
 - For the reference "SONOFLEX 25", this inner duct has a nominal diameter ≥ 102 mm.
- An interior barrier referenced "BARRIER" made of 12 µm thick polyester for the reference "SONOFLEX 25".
- An A1 class glass wool insulating material, with a nominal installed thickness of 25 mm and a nominal density of 16 kg/m³.
 - For the references "ISOFLEX 25" and "SONOFLEX 25", a pink insulating material referenced "STANDARD INSULATION 1.25".
 - For the references "ISOSLEEVE 25", "ISOSLEEVE S25J" and "ISOSLEEVE S25YJ", a pink insulating material referenced "STANDARD INSULATION 1.25" or a yellow insulating material referenced "FLEX N016".
- An outer jacket referenced "JACKET J".
 - For the references "ISOSLEEVE 25" and "SONOFLEX 25" and for an inner duct with a nominal diameter of 82 mm, the outer jacket is made of 12 µm thick polyester films and a 9 µm thick visible aluminum foil glued.
 - For the references "ISOFLEX 25" and "SONOFLEX 25" and for an inner duct with a nominal diameter > 82 mm, the outer jacket is made of 12 µm thick polyester films and a 7 µm thick visible aluminum foil glued.
 - For the references "ISOSLEEVE 25", "ISOSLEEVE S25J" and "ISOSLEEVE S25YJ", the outer jacket is made of 12 µm thick polyester films and a 7 µm thick visible aluminum foil glued.

Tested nominal diameters of the inner duct: 82, 102 and 160 mm.

Range of nominal weights per unit area of the inner duct (without spiral): from 68.78 to 70.86 g/m².

Range of nominal weights per unit area of the barrier: from 20.2 to 20.7 g/m².

Range of nominal weights per unit area of the outer jacket (7 µm thick aluminum version): from 76.7 to 79.8 g/m².

Nominal weight per unit area of the outer jacket (9 µm thick aluminum version): 87.3 g/m².

3. Tests reports and tests results in support of this classification

3.1 Tests reports

Name of laboratory	Name of sponsor	Test identification	Extension test report No.	Test method
CSTB	SIG Air Handling International BV Eerste Tochtweg 11 NL-2913 LN NIEUWERKERK AAN DE IJSSEL THE NETHERLANDS	ES541160637	RA17-0096	NF EN ISO 11925 2:2013 NF EN 13823+A1:2015
CSTB	SIG Air Handling International BV Eerste Tochtweg 11 NL-2913 LN NIEUWERKERK AAN DE IJSSEL THE NETHERLANDS	ES541160458	RA16-0279	NF EN ISO 11925 2:2013 NF EN 13823+A1:2015

Name of laboratory	Name of sponsor	Test identification	Test report No.	Test method
CSTB	SIG Air Handling International BV Eerste Tochtweg 11 NL-2913 LN NIEUWERKERK AAN DE IJSSEL THE NETHERLANDS	ES541160458	RA16-0279	NF EN ISO 11925 2:2013
CSTB	SIG Air Handling International BV Eerste Tochtweg 11 2913 LN NIEUWERKERK AAN DE IJSSEL THE NETHERLANDS	ES541160044	RA16-0122	NF EN ISO 11925 2:2013 NF EN 13823+A1:2015

3.2 Tests results

Test method	Product	Number of tests	Parameters	Results
				Compliance parameters
NF EN ISO 11925-2 30s surface exposure	ISOFLEX 25 Internal diameter 102 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s surface exposure	SONOFLEX 25 Internal diameter 102 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s surface exposure	SONOFLEX 25 Internal diameter 160 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	ISOFLEX 25 Internal diameter 102 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	SONOFLEX 25 Internal diameter 102 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	SONOFLEX 25 Internal diameter 160 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s surface exposure	SONOFLEX 25 Internal diameter 102 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s surface exposure	SONOFLEX 25 Internal diameter 160 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	SONOFLEX 25 Internal diameter 102 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	SONOFLEX 25 Internal diameter 160 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited

3.2 Tests results (continuation)

Test method	Product	Number of tests	Parameters	Results
				Compliance parameters
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	ISOFLEX 25 Internal diameter 82 mm (JACKET J)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 102 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 102 mm (Pink glass wool insulating material)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 102 mm (JACKET J)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 102 mm (Internal barrier)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 160 mm (Micro-perforated ALUFLEX B)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 160 mm (Pink glass wool insulating material)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 160 mm (JACKET J)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	SONOFLEX 25 Internal diameter 160 mm (Internal barrier)	2	Fs > 150 mm Filter paper	Not reached Not ignited

3.2 Test results (continuation)

Test method	Product	Number of tests	Parameters	Results
				Compliance parameters
NF EN ISO 11925-2 30s surface exposure	ISOSLEEVE S25YJ Internal diameter 102 mm (Outer jacket)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s surface exposure	ISOSLEEVE S25YJ Internal diameter 160 mm (Outer jacket)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	ISOSLEEVE S25YJ Internal diameter 102 mm (Outer jacket)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure	ISOSLEEVE S25YJ Internal diameter 160 mm (Outer jacket)	6	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	ISOSLEEVE S25YJ Internal diameter 102 mm (Yellow glass wool insulating material)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	ISOSLEEVE S25YJ Internal diameter 102 mm (Outer jacket)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	ISOSLEEVE S25YJ Internal diameter 160 mm (Yellow glass wool insulating material)	2	Fs > 150 mm Filter paper	Not reached Not ignited
NF EN ISO 11925-2 30s edge exposure specimen turned at 90°	ISOSLEEVE S25YJ Internal diameter 160 mm (Outer jacket)	2	Fs > 150 mm Filter paper	Not reached Not ignited

3.2 Tests results (continuation)

Test method	Product	Number of tests	Parameters	Results	
				Continuous parameters Mean values	Compliance parameters
NF EN 13823+A1	SONOFLEX 25 Internal diameter 160 mm	3	FIGRA _{0.2MJ} (W/s)	45.3	-
			FIGRA _{0.4MJ} (W/s)	45.3	-
			LFS	-	Not reached
			THR _{600s} (MJ)	1.9	-
			SMOGRAM ² /s ²)	5.4	-
			TSP _{600s} (m ²)	49.6	-
			Flaming droplets or debris	-	None
NF EN 13823+A1	ISOSLEEVE S25YJ Internal diameter 160 mm	3	FIGRA _{0.2MJ} (W/s)	0.0	-
			FIGRA _{0.4MJ} (W/s)	0.0	-
			LFS	-	Not reached
			THR _{600s} (MJ)	0.6	-
			SMOGRAM ² /s ²)	0.0	-
			TSP _{600s} (m ²)	35.6	-
			Flaming droplets or debris	-	None

(-) means: not applicable

3.3 Additional tests

Test method	Product	Number of tests	Parameters	Results		
				Continuous parameters Mean values	Compliance parameters	
NF EN 13823+A1	SONOFLEX 25 Internal diameter 102 mm	1	FIGRA _{0.2MJ} (W/s)	0.0	-	
			FIGRA _{0.4MJ} (W/s)	0.0	-	
			LFS	-	Not reached	
				THR _{600s} (MJ)	0.8	-
				SMOGRA(m ² /s ²)	0.0	-
				TSP _{600s} (m ²)	36.8	-
				Flaming droplets or debris	-	None
	ISOFLEX 25 Internal diameter 160 mm	1	FIGRA _{0.2MJ} (W/s)	0.0	-	
			FIGRA _{0.4MJ} (W/s)	0.0	-	
			LFS	-	Not reached	
				THR _{600s} (MJ)	0.7	-
				SMOGRA(m ² /s ²)	0.0	-
			TSP _{600s} (m ²)	26.7	-	
			Flaming droplets or debris	-	None	
ISOFLEX 25 Internal diameter 102 mm	1	FIGRA _{0.2MJ} (W/s)	0.0	-		
		FIGRA _{0.4MJ} (W/s)	0.0	-		
		LFS	-	Not reached		
			THR _{600s} (MJ)	0.5	-	
			SMOGRA(m ² /s ²)	0.0	-	
			TSP _{600s} (m ²)	24.7	-	
			Flaming droplets or debris	-	None	
ISOFLEX 25 Internal diameter 82 mm	1	FIGRA _{0.2MJ} (W/s)	0.0	-		
		FIGRA _{0.4MJ} (W/s)	0.0	-		
		LFS	-	Not reached		
			THR _{600s} (MJ)	0.8	-	
			SMOGRA(m ² /s ²)	8.4	-	
			TSP _{600s} (m ²)	49.4	-	
			Flaming droplets or debris	-	None	

(-) means: not applicable

3.3 Additional tests (continuation)

Test method	Product	Number of tests	Parameters	Results	
				Continuous parameters Mean values	Compliance parameters
NF EN 13823+A1	ISOSLEEVE S25YJ Internal diameter 102 mm	3	FIGRA _{0.2MJ} (W/s)	0.0	-
			FIGRA _{0.4MJ} (W/s)	0.0	-
			LFS THR _{600s} (MJ)	- 0.9	Not reached -
			SMOGRA(m ² /s ²) TSP _{600s} (m ²)	0.0 28.8	- -
			Flaming droplets or debris	-	None

(-) means: not applicable

4. Classification and direct field of application

4.1 Reference of the classification

This classification has been carried out in accordance with clauses 11.6, 11.9.2 and 11.10.1 of the NF EN 13501-1+A1:2013 standard.

4.2 Classification

Fire behaviour		Smoke production		Flaming droplets or debris
B	-	s1	,	d0

Classification: B - s1, d0

4.3 Field of application

This classification is valid for the following product parameters:

- The products described in paragraph 2.
- For the references "**ISOFLEX 25**" and "**SONOFLEX 25**", an inner duct referenced "ALUFLEX B".
- For the product referenced "**ISOFLEX 25**", a nominal diameter of the inner duct ≥ 82 mm.
- For the product referenced "**SONOFLEX 25**", a nominal diameter of the inner duct ≥ 102 mm.
- For the products referenced "**ISOSLEEVE 25**", "**ISOSLEEVE S25J**" and "**ISOSLEEVE S25YJ**", an internal nominal diameter ≥ 102 mm (products without inner duct).
- A range of nominal weights per unit area of the inner duct (without spiral) from 68.78 to 70.86 g/m².
- A range of nominal weights per unit area of the internal barrier from 20.2 to 20.7 g/m².
- A range of nominal weights per unit area of the outer jacket referenced "JACKET J" from 76.7 to 79.8 g/m² (7 μ m thick aluminum version)
- A nominal weight per unit area of the outer jacket referenced "JACKET J" of 87.3 g/m² (9 μ m thick aluminum version)

This classification is valid for the following end use conditions:

- Without substrate or with any A1 or A2-s1,d0 class substrate with a density ≥ 652 kg/m³ and with a thickness ≥ 9 mm.
- With or without air gap.

5. Limitation

The present document does not represent type approval or certification of the product.

Champs-sur-Marne, May 23rd, 2017

**The Head of Reaction to Fire
Laboratory**

Nicolas ROURE

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