

Badania naukowe | Prace rozwojowe | Akredytowany Zespół Laboratoriów | Jednostka notyfikowana nr 1488 | Członek EOTA | Certyfikowane systemy zarządzania ISO 9001, ISO 27001

CLASSIFICATION OF FIRE RESISTANCE BASED ON THE CRITERIA GIVEN IN EN 13501-2:2016

Sponsor:	Fischer Italia S.r.I.
	Corso Stati Uniti, 25
	35127 Padova
	Italia
Prepared by:	Fire Research Department
	Building Research Institute
	Filtrowa St. 1
	PL 00-611 Warsaw
Product name:	Linear joint seals – FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO and FISCHER PU FS SCHIUMA POLIURETANICA FUOCO
Classification report No.:	01062/17/Z00NZP
Issue number:	3
Date of issue:	2017.05.09
-	

This classification report consists of 11 pages and may only be used or reproduced in its entirety.

1 INTRODUCTION

This classification report defines the resistance to fire classification assigned to the elements – linear joint seals – FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO and FISCHER PU FS SCHIUMA POLIURETANICA FUOCO based on the criteria given in EN 13501-2:2016.

2 DETAILS OF CLASSIFIED PRODUCT

2.1 General

The element, linear joint seal – FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO and FISCHER PU FS SCHIUMA POLIURETANICA FUOCO is defined as vertical and horizontal linear joints seals in vertical building supporting construction.

2.2 Description

The element, linear joint seals – FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO and FISCHER PU FS SCHIUMA POLIURETANICA FUOCO by Fischer Italia S.r.l. is described below.

Linear joint seals are made of:

- a) fire protection polyurethane foam with fire retardant FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO (gun recipe adjusted to application by using application's gun), or
- b) fire protection polyurethane foam with fire retardant FISCHER PU FS SCHIUMA POLIURETANICA FUOCO (pipe recipe – adjusted to application by using application's elastic pipe).

View and cross section and construction details are presented on figures No. 1 and 2.

2.2.1 Type 1 – Vertical linear joints seals in vertical building supporting construction



Fig. 1 View and horizontal cross-section

2.2.2 Type 2 – Horizontal linear joints seals in vertical building supporting construction.





3 TEST REPORTS / EXTENDED APPLICATION REPORTS AND TEST RESULTS IN SUPPORT OF THE CLASSIFICATION

3.1 Test reports/extended application reports

Name of Laboratory	Test No.	Date	Test method		
Fire Research Laboratory of Building Research Institute Ksawerów St. 21 PL 02-656 Warsaw	LP-02393/09	10.07.2009	EN 1366-4:2006		

3.2 Test results

Test method, number and date	Parameter	Results						
EN 1366-4:2006	Linear joint seal Type 2 - see clause 2.2.2							
LP-02393/09	- PIPE VERSION - width of joint - $W = 30 \text{ mm}$							
10.07.2009	supporting construction	G = 20 cm trick wall made of aerated concrete blocks						
	integrity							
	cotton pad gap gauges	110 minutes no failure 110 minutes no failure						
	sustained flaming	110 minutes						
	insulation	110 minutes no failure						
	Linear joint seal Type 2 - see clause 2.2.2							
	- width of joint – $W = 30 \text{ mm}$							
	supporting construction	G = 20 cm trick wall made of aerated concrete blocks						
	integrity							
	cotton pad gap gauges	120 minutes no failure 120 minutes no failure						
	sustained flaming	120 minutes						
	insulation	120 minutes no failure						

Linear joint seal Type 2 - see clause 2.2.2 – PIPE VERSION - width of joint – W = 11 mm	2
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
integrity	
cotton pad	240 minutes no failure
gap gauges	240 minutes no failure
sustained flaming	240 minutes no failure
insulation	240 minutes no failure
Linear joint seal Type 2 - see clause 2.2.2 – GUN VERSION - width of joint – W = 11 mm	2
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
integrity	
cotton pad	132 minutes
gap gauges	132 minutes no failure
sustained flaming	
insulation	132 minutes no failure
 – PIPE VERSION - width of joint – W = 10 mm 	
supporting construction	G = 20 cm trick wall made of
	aerated concrete blocks
integrity	
cotton pad gap gauges	240 minutes no failure 240 minutes no failure
sustained flaming	240 minutes no failure
insulation	240 minutes no failure
Linear joint seal Type 1 - see clause 2.2.1 – GUN VERSION	
- width of joint – W = 20 mm	
supporting construction	G = 20 cm trick wall made of
intogrity.	aerated concrete blocks
cotton pad	186 minutes no failure
gap gauges	186 minutes no failure
sustained flaming	186 minutes
insulation	184 minutes
Linear joint seal Type 1 - see clause 2.2.1 – PIPE VERSION	
- width of joint – W = 20 mm	
supporting construction	G = 20 cm LICK Wall made of
integrity	ACTALED CONCIECE DIOCKS
cotton pad	184 minutes no failure
	184 minutes no failure
sustained flaming	184 minutes
insulation	184 minutes no failure

Linear joint seal Type 1 - see clause 2.2 – GUN VERSION - width of joint – W = 10 mm	.1
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
integrity cotton pad gap gauges	240 minutes no failure 240 minutes no failure
sustained flaming	240 minutes no failure
insulation	240 minutes no failure
Linear joint seal Type 1 - see clause 2.2 – PIPE VERSION - width of joint – W = 32 mm	.1
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
integrity	
cotton pad gap gauges sustained flaming	145 minutes no failure 145 minutes no failure 145 minutes
insulation	145 minutes no failure
Linear joint seal Type 1 - see clause 2.2 – GUN VERSION - width of joint – W = 32 mm	.1
supporting construction	ściana o grubości G = 20 cm z bloków z betonu lekkiego
integrity	
cotton pad	125 minutes no failure 125 minutes no failure
sustained flaming	125 minutes
insulation	125 minutes no failure
Linear joint seal Type 2 - see clause 2.2 – PIPE VERSION	.2
- width of joint – $\mathbf{W} = 30 \text{ mm}$	G - 21 cm trick wall made of
supporting construction	aerated concrete blocks
cotton pad gap gauges	160 minutes no failure 160 minutes no failure
sustained flaming	160 minutes
insulation	160 minutes no failure
Linear joint seal Type 2 - see clause 2.2 – GUN VERSION - width of joint – W = 30 mm	.2
supporting construction	G = 24 cm trick wall made of aerated concrete blocks
integrity	
cotton pad gap gauges	183 minutes no failure 183 minutes no failure
sustained flaming	183 minutes
insulation	183 minutes no failure

	•							
Linear joint seal 1 ype 2 - see clause 2.2 – PIPE VERSION - width of joint – W = 11 mm 	.2							
	G - 24 cm trick wall made of							
supporting construction	aerated concrete blocks							
integrity								
cotton pad	240 minutes no failure							
gap gauges	240 minutes no failure							
sustained flaming	240 minutes no failure							
insulation	240 minutes no failure							
Linear joint seal Type 2 - see clause 2.2	.2							
- width of joint – W = 11 mm								
supporting construction	G = 24 cm trick wall made of							
integrity	aerated concrete blocks							
Integrity cotton pad	240 minutos no failuro							
dap dauges	240 minutes no failure							
sustained flaming	240 minutes no failure							
insulation	240 minutes no failure							
Linear joint seal Type 1 - see clause 2 2	1							
- PIPE VERSION	. 1							
supporting construction	aerated concrete blocks							
integrity								
cotton pad	240 minutes no failure							
gap gauges	240 minutes no failure							
sustained flaming	240 minutes no failure							
insulation	240 minutes no failure							
Linear joint seal Type 1 - see clause 2.2 – GUN VERSION	.1							
- width of joint – $W = 32 \text{ mm}$	O O are trial well reads of							
supporting construction	G = 24 cm trick wall made of aerated concrete blocks							
integrity								
cotton pad	192 minutes no failure							
gap gauges	192 minutes no failure							
sustained flaming	192 minutes							
insulation	192 minutes no failure							
Linear joint seal Type 1 - see clause 2.2.1								
- width of joint – W = 32 mm								
supporting construction	G = 24 cm trick wall made of aerated concrete blocks							
integrity								
cotton pad gap gauges	181 minutes no failure 181 minutes no failure							
sustained flaming	181 minutes							
insulation	181 minutes no failure							

Linear joint seal Type 1 - see clause 2.2 – GUN VERSION	.1
 width of joint – W = 11 mm 	
our porting construction	G = 24 cm trick wall made of
supporting construction	aerated concrete blocks
integrity	
cotton pad	240 minutes no failure
gap gauges	240 minutes no failure
sustained flaming	240 minutes no failure
insulation	240 minutes no failure
Linear joint seal Type 1 - see clause 2.2 – PIPE VERSION - width of joint – W = 22 mm	.1
,	G - 24 cm trick wall made of
supporting construction	aerated concrete blocks
intogrity	
cotton pad	240 minutes no failure
	240 minutes no failure
sustained flaming	240 minutes no failure
insulation	240 minutes no failure
Linear joint seal Type 1 - see clause 2 2	_1
– GUN VERSION	
- width of joint – W = 22 mm	
supporting construction	G = 24 cm trick wall made of
supporting construction	aerated concrete blocks
integrity	
cotton pad	172 minutes no failure
gap gauges	172 minutes no failure
sustained flaming	172 minutes
insulation	172 minutes no failure

4 CLASSIFICATION AND FIELD OF APPLICATION

4.1 Reference of classification

This classification has been prepared based on the criteria given in clause 7 of EN 13501-2:2016.

4.2 Classification

The element, linear joint seals – **FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO** and **FISCHER PU FS SCHIUMA POLIURETANICA FUOCO** is classified according to the following combinations of performance parameters and classes as appropriate.

R	Е		W		t	t	-	М	С	S	IncSlow	sn	ef	r
---	---	--	---	--	---	---	---	---	---	---	---------	----	----	---

4.2.1 Linear joint seals Type 1 according to 2.2.1

- **4.2.1.1** Linear joint seal **Type 1 according to 2.2.1** joints sealed with fire protection polyurethane foam **FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 1)
 - joint width from 6 to 10 mm

- minimum wall thickness - 20 cm



- joint width from 11 to 20 mm
- minimum wall thickness 20 cm

Resistance to fire class: El 180 – V – X – F – W 11 to 20 (*)

- joint width from 21 to 32 mm
- minimum wall thickness 20 cm

Resistance to fire class: El 120 – V – X – F – W 21 to 32

- **4.2.1.2** Linear joint seal **Type 1 according to 2.2.1** joints sealed with fire protection polyurethane foam **FISCHER PU FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 1)
 - joint width from 6 to 10 mm
 - minimum wall thickness 20 cm

Resistance to fire class: El 240 – V – X – F – W 6 to 10 (*)

- joint width from 11 to 20 mm
- minimum wall thickness 20 cm

Resistance to fire class: El 180 – V – X – F – W 11 to 20 (*)

- joint width from 21 to 32 mm
- minimum wall thickness 20 cm

- **4.2.1.3** Linear joint seal **Type 1 according to 2.2.1** joints sealed with fire protection polyurethane foam **FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 1)
 - joint width from 6 to 11 mm
 - minimum wall thickness 24 cm

Resistance to fire class: El 240 – V – X – F – W 6 to 11 (*)

- joint width from 12 to 22 mm

- minimum wall thickness - 24 cm

Resistance to fire class: El 120 – V – X – F – W 12 to 22

- joint width from 23 to 32 mm

- minimum wall thickness - 24 cm

*)

*)

*)

*)

*)

*)

*)

*)

- **4.2.1.4** Linear joint seal **Type 1 according to 2.2.1** joints sealed with fire protection polyurethane foam **FISCHER PU FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 1)
 - joint width from 6 to 10 mm
 - minimum wall thickness 24 cm

Resistance to fire class: El 240 – V – X – F – W 6 to 10
$$(*)$$

- joint width from 11 to 22 mm
- minimum wall thickness 24 cm

- joint width from 22 to 32 mm
- minimum wall thickness 24 cm

4.2.2 Linear joint seals Type 2 according to 2.2.2

- **4.2.2.1** Linear joint seal **Type 2 according to 2.2.2** joints sealed with fire protection polyurethane foam **FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 2)
 - joint width from 6 to 30 mm
 - minimum wall thickness 20 cm

- **4.2.2.2** Linear joint seal **Type 2 according to 2.2.2** joints sealed with fire protection polyurethane foam **FISCHER PU FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 2)
 - joint width from 6 to 11 mm
 - minimum wall thickness 20 cm

Resistance to fire class: El 240 – T – X – F – W 6 to 11
$$(*)$$

- joint width from 12 to 30 mm

- minimum wall thickness - 20 cm

Resistance to fire class: El 90 – T – X – F – W 12 to 30

- **4.2.2.3** Linear joint seal **Type 2 according to 2.2.2** joints sealed with fire protection polyurethane foam **FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 2)
 - joint width from 6 to 11 mm
 - minimum wall thickness 24 cm

- joint width from 12 to 30 mm
- minimum wall thickness 24 cm

Resistance to fire class: EI 180 – T – X – F – W 12 to 30 (*)

- **4.2.2.4** Linear joint seal **Type 2 according to 2.2.2** joints sealed with fire protection polyurethane foam **FISCHER PU FS SCHIUMA POLIURETANICA FUOCO** (according to Fig. 2)
 - joint width from 6 to 11 mm
 - minimum wall thickness 24 cm

Resistance to fire class: El 240 – T – X – F – W 6 to 11

- joint width from 12 to 30 mm
- minimum wall thickness 24 cm

Resistance to fire class: El 120 – T – X – F – W 12 to 30 (*)

***)** Key:

- E fire integrity
- I fire insulation
- V orientation: vertical construction vertical joint
- T orientation: vertical construction horizontal joint
- X movement capacity no movement
- F type of splices field
- W joint widths range (in mm)

4.3 Field of application

This classification is valid for the following end use applications in accordance with EN 1366-4:2006+A1:2010:

4.3.1 The possible orientation of the linear joint seals is:

- pos. **B** in accordance with fig. 3 vertical linear joint seals in vertical building elements joints classified in 4.2.1.1 4.2.1.4,
- pos. C in accordance with fig. 3 horizontal linear joint seals in vertical building elements – joints classified in 4.2.2.1 - 4.2.2.4.



Fig. 3 Possible orientation of linear joint seals

*)

- **4.3.2** Classification is valid for linear joint seals in aerated concrete, concrete, block work and masonry wall separating elements with full filled mortar density at least 600 kg/m³ and thickness given in 4.2
- **4.3.3** Application to straight linear joints with parallel surfaces of elements sealed edges in accordance with Fig. 4.



Fig. 4 Edge surfaces of sealing elements

4.3.4 Classification given in p. 4.2 is valid only for linear joint seals with movement capability ± 7,5%.

5 LIMITATIONS

Classification of fire resistance given in section 4.2 remains valid till 31st of May 2020, provided the material or constructional solutions of the linear joint seals FISCHER PUP FS SCHIUMA POLIURETANICA FUOCO and FISCHER PU FS SCHIUMA POLIURETANICA FUOCO by Fischer Italia S.r.I. described in section 2 remain unchanged.

SIGNED

Bartłomiej Sędłak, M. Sc. Civil Eng.

APPROVED Paweł Sulik, Ph. D. Civil Eng.