

00-611 Warszawa, ul. Filtrowa 1, tel. (0-22) 825-04-71, fax (0-22) 825-52-86. Dyrektor: tel. (0-22) 825-13-03, 825-28-85, fax (0-22) 825-77-30 www.itb.pl

### Zakład Badań Ogniowych

02-656 Warszawa, ul. Ksawerów 21 tel. (0-22) 853-34-27 fax (0-22) 847-23-11 e-mail: lire@itb.pl

## CLASSIFICATION OF FIRE RESISTANCE IN ACCORDANCE WITH EN 13501-2:2007+A1:2009

Sponsor:

Selena Italia srl.

Via C. Battisti I6

35010 Limena (PD)

ITALY

Prepared by:

Fire Research Department

**Building Research Institute** 

Filtrowa St. 1

PL 00-611 Warsaw

Product name:

Linear joint seals - Schiuma Poliuretanica

Antifuoco El 240 Manuale and Schiuma

Poliuretanica Antifuoco El 240 Pistola

Classification report No.:

1203.2/10/Z00NP

Issue number:

1

Date of issue:

2010.03.30

This classification report consists of seventeen 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 – Schiuma Poliuretanica Antifuoco El 240 Manuale and Schiuma Poliuretanica Antifuoco El 240 Pistola in accordance with the procedures given in EN 13501-2:2007+A1:2009.

## 2. Details of classified product

### 2.1. General

The element, linear joint seal – Schiuma Poliuretanica Antifuoco El 240 Manuale and Schiuma Poliuretanica Antifuoco El 240 Pistola is defined as vertical and horizontal linear joints seals in vertical building supporting construction.

## 2.2. Description

The element, linear joint seals – Schiuma Poliuretanica Antifuoco El 240 Manuale and Schiuma Poliuretanica Antifuoco El 240 Pistola selling by Selena Italia srl. is described below.

Linear joint seals are made of:

- a) fire protection polyurethane foam with fire retardant Schiuma Poliuretanica Antifuoco El 240 Pistola - GUN VERSION (gun recipe – adjusted to application by using application's gun), or
- b) fire protection polyurethane foam with fire retardant Schiuma Poliuretanica Antifuoco El 240 Manuale - PIPE VERSION (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.

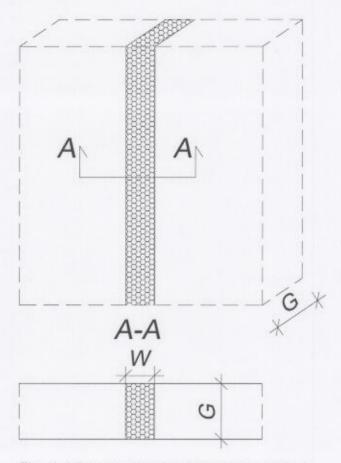


Fig. 1. View and horizontal cross-section.

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

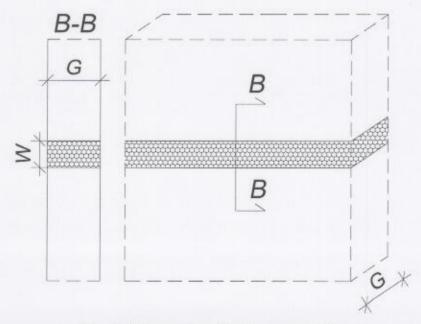


Fig. 1. View and vertical cross-section.

## 3. Test reports/extended application reports and test results in support of the classification

## 3.1. Test reports/extended application reports

Name of Laboratory	Name of sponsor	Test and date	Test method
Fire Research Laboratory of Building Research Institute Ksawerów St. 21 PL 02-656 Warsaw	ORION Sp. z o.o.	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 LP-02393/09	Linear joint seal Type 2 - see clause 2.2.2  - PIPE VERSION  - width of joint - W = 30 mm							
10.07.2009	- width of joint – W = 30 mm							
	supporting construction	G = 20 cm trick wall made of aerated concrete blocks						
	integrity							
	cotton pad	110 minutes no failure						
	gap gauges	110 minutes no failure						
	sustained flaming	110 minutes						
	insulation	110 minutes no failure						
	Linear joint seal Type 2 - see clause 2.2.2  – GUN VERSION	2						
	- width of joint - W = 30 mm							
	supporting construction	G = 20 cm trick wall made of aerated concrete blocks						
	integrity							
	cotton pad	120 minutes no failure						
	gap gauges	120 minutes no failure						
	sustained flaming	120 minutes						
	insulation	120 minutes no failure						

- width of joint – W = 11 mm	
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	
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	132 minutes no failure
insulation	132 minutes no failure
Linear joint seal Type 1 - see clause 2.2.1 - PIPE VERSION	
- width of joint – W = 10 mm	
-	G = 20 cm trick wall made of aerated concrete blocks
supporting construction	
supporting construction	
- width of joint – W = 10 mm  supporting construction  integrity  cotton pad gap gauges	
supporting construction integrity cotton pad	aerated concrete blocks 240 minutes no failure
supporting construction integrity  cotton pad gap gauges	aerated concrete blocks  240 minutes no failure  240 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION - width of joint - W = 20 mm	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION - width of joint - W = 20 mm  supporting construction	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure  240 minutes no failure  340 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION - width of joint - W = 20 mm  supporting construction	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure  240 minutes no failure  340 minutes no failure
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 20 mm  supporting construction integrity	aerated concrete blocks  240 minutes no failure  240 minutes no failure  240 minutes no failure  240 minutes no failure  340 minutes no failure  G = 20 cm trick wall made of aerated concrete blocks
supporting construction integrity  cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION - width of joint - W = 20 mm  supporting construction integrity  cotton pad	aerated concrete blocks  240 minutes no failure 240 minutes no failure 240 minutes no failure 240 minutes no failure  G = 20 cm trick wall made of aerated concrete blocks  186 minutes no failure

width of joint $-W = 20 \text{ mm}$	
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
integrity	
cotton pad	184 minutes no failure
gap gauges	184 minutes no failure
sustained flaming	184 minutes
insulation	184 minutes no failure
Linear joint seal <b>Type 1 - see clause 2.2.1</b> - GUN VERSION	
- width of joint – W = 10 mm	
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
– PIPE VERSION - width of joint – <b>W = 32 mm</b>	
supporting construction	G = 20 cm trick wall made of aerated concrete blocks
supporting construction integrity	
integrity	aerated concrete blocks
integrity cotton pad	aerated concrete blocks  145 minutes no failure
integrity cotton pad gap gauges	aerated concrete blocks  145 minutes no failure  145 minutes no failure
cotton pad gap gauges sustained flaming	aerated concrete blocks  145 minutes no failure  145 minutes no failure  145 minutes  145 minutes no failure
cotton pad gap gauges sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1	145 minutes no failure 145 minutes no failure 145 minutes 145 minutes
cotton pad gap gauges sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1	aerated concrete blocks  145 minutes no failure  145 minutes no failure  145 minutes  145 minutes
cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 32 mm	aerated concrete blocks  145 minutes no failure  145 minutes no failure  145 minutes  145 minutes  145 minutes no failure
cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 32 mm  supporting construction	aerated concrete blocks  145 minutes no failure  145 minutes no failure  145 minutes  145 minutes  145 minutes no failure
cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 32 mm supporting construction integrity	aerated concrete blocks  145 minutes no failure  145 minutes no failure  145 minutes  145 minutes  145 minutes no failure  2 bloków z betonu lekkiego
cotton pad gap gauges sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 32 mm supporting construction integrity  cotton pad	aerated concrete blocks  145 minutes no failure 145 minutes no failure 145 minutes 145 minutes 145 minutes no failure  ściana o grubości G = 20 cm z bloków z betonu lekkiego  125 minutes no failure

and the second second	
- width of joint – W = 30 mm	-75 +390 VVN 46 -
supporting construction	G = 24 cm trick wall made of aerated concrete blocks
integrity	
cotton pad	160 minutes no failure
gap gauges	160 minutes no failure
sustained flaming	160 minutes
insulation	160 minutes no failure
Linear joint seal Type 2 - see clause 2.2.2 - GUN VERSION	
- width of joint – W = 30 mm	
supporting construction	G = 24 cm trick wall made of aerated concrete blocks
integrity	
cotton pad	183 minutes no failure
gap gauges	183 minutes no failure
sustained flaming	183 minutes
insulation	183 minutes no failure
Linear joint seal Type 2 - see clause 2.2.2  - PIPE VERSION  - width of joint - W = 11 mm	
supporting construction	G = 24 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
- GUN VERSION	
- GUN VERSION	
- GUN VERSION - width of joint - W = 11 mm supporting construction	
- GUN VERSION - width of joint - W = 11 mm supporting construction	G = 24 cm trick wall made of
- GUN VERSION - width of joint - W = 11 mm supporting construction	G = 24 cm trick wall made of
gap gauges	G = 24 cm trick wall made of aerated concrete blocks  240 minutes no failure  240 minutes no failure
- GUN VERSION - width of joint – W = 11 mm supporting construction integrity cotton pad	G = 24 cm trick wall made of aerated concrete blocks  240 minutes no failure

- width of joint – W = 10 mm	
supporting construction	G = 24 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 1 - see clause 2.2.1  - GUN VERSION  - width of joint - W = 32 mm	
supporting construction	G = 24 cm trick wall made of aerated concrete blocks
integrity	400
cotton pad	192 minutes no failure 192 minutes no failure
gap gauges	192 minutes no failure
sustained flaming insulation	192 minutes 192 minutes
- PIPE VERSION - width of joint - W = 32 mm	
supporting construction integrity	G = 24 cm trick wall made of aerated concrete blocks
cotton pad	181 minutes no failure
	181 minutes no failure
gap gauges	
gap gauges sustained flaming	181 minutes
sustained flaming	181 minutes 181 minutes no failure
sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1 – GUN VERSION	181 minutes no failure
sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint – W = 11 mm	181 minutes no failure
sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 11 mm supporting construction	181 minutes no failure  G = 24 cm trick wall made of
sustained flaming insulation Linear joint seal Type 1 - see clause 2.2.1 - GUN VERSION - width of joint - W = 11 mm supporting construction	181 minutes no failure  G = 24 cm trick wall made of
sustained flaming insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION  - width of joint - W = 11 mm  supporting construction integrity	G = 24 cm trick wall made of aerated concrete blocks
insulation  Linear joint seal Type 1 - see clause 2.2.1  - GUN VERSION  - width of joint – W = 11 mm  supporting construction integrity  cotton pad	G = 24 cm trick wall made of aerated concrete blocks  240 minutes no failure

Linear joint seal Type 1 - see clause 2.2.1	
- PIPE VERSION	
- width of joint - W = 22 mm	
supporting construction	G = 24 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 1 - see clause 2.2.1	
- GUN VERSION	
- width of joint – W = 22 mm	
supporting construction	G = 24 cm trick wall made of 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 carried out in accordance with Clause 7 of EN 13501-2:2007+A1:2009.

## 4.2. Classification

The element, linear joint seals – Schiuma Poliuretanica Antifuoco El 240 Manuale and Schiuma Poliuretanica Antifuoco El 240 Pistola is classified according to the following combinations of performance parameters and classes as appropriate.

## \*) Key:

E - fire integrity

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)

- 4.2.1.1. Linear joint seal Type 1 according to 2.2.1 joints sealed with fire protection polyurethane foam Schiuma Poliuretanica Antifuoco El 240 Pistola GUN VERSION (according to Fig. 1)
  - joint width from 6 to 10 mm
  - minimum wall thickness 20 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	Е	1	W	t	t	-	M	С	S	IncSlow	sn	ef	г
	180												
		180											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	120												
		120											

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 Schiuma Poliuretanica Antifuoco El 240 Manuale PIPE VERSION (according to Fig. 1)
  - joint width from 6 to 10 mm
  - minimum wall thickness 20 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	г
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	180												
		180											

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

R	E	- 1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	120												
		120											

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

\*)

- 4.2.1.3. Linear joint seal Type 1 according to 2.2.1 joints sealed with fire protection polyurethane foam Schiuma Poliuretanica Antifuoco El 240 Pistola GUN VERSION (according to Fig. 1)
  - joint width from 6 to 11 mm
  - minimum wall thickness 24 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	120												
		120											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	180												
		180											

Resistance to fire class: El 180 - V - X - F - W 22 to 32

\*)

- 4.2.1.4. Linear joint seal Type 1 according to 2.2.1 joints sealed with fire protection polyurethane foam Schiuma Poliuretanica Antifuoco El 240 Manuale PIPE VERSION (according to Fig. 1)
  - joint width from 6 to 10 mm
  - minimum wall thickness 24 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

Resistance to fire class: El 240 - V - X - F - W 12 to 22

\*)

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	180												
		180											

Resistance to fire class: El 180 - V - X - F - W 22 to 32

\*)

- 4.2.2.1. Linear joint seal Type 2 according to 2.2.2 joints sealed with fire protection polyurethane foam Schiuma Poliuretanica Antifuoco El 240 Pistola GUN VERSION (according to Fig. 2)
  - joint width from 6 to 30 mm
  - minimum wall thickness 20 cm

R	E	I	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	120												
		120											

Resistance to fire class: El 120 - T - X - F - W 6 to 30

- 4.2.2.2. Linear joint seal Type 2 according to 2.2.2 joints sealed with fire protection polyurethane foam Schiuma Poliuretanica Antifuoco El 240 Manuale PIPE VERSION (according to Fig. 2)
  - joint width from 6 to 11 mm
  - minimum wall thickness 20 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	90												
		90											

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 Schiuma Poliuretanica Antifuoco El 240 Pistola GUN VERSION (according to Fig. 2)
  - joint width from 6 to 11 mm
  - minimum wall thickness 24 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	180												
		180											

Resistance to fire class: El 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 Schiuma Poliuretanica Antifuoco El 240 Manuale PIPE VERSION (according to Fig. 2)
  - joint width from 6 to 11 mm
  - minimum wall thickness 24 cm

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	r
	240												
		240											

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

R	E	1	W	t	t	-	M	С	S	IncSlow	sn	ef	Г
	120												
		120											

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

## 4.3. Field of application

This classification is valid for the following end use applications:

- 4.3.1. Permitted orientation in accordance with PN-EN 1366-4:2008:
- B vertical linear joint seals in vertical building elements joints classified in 4.2.1.1 4.2.1.4,
- C vertical linear joint seals in vertical building elements joints classified in 4.2.2.1 4.2.2.4,
- 4.3.2. Application to supporting constructions elements in accordance with 13.2 of EN 1366-4:2006 made of aerated concrete blocks, concrete, concrete works and masonry with full filled mortar density at least 600 kg/m<sup>3</sup> 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. 3.

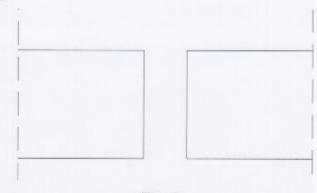


Fig. 3.

## 5. Limitations

This classification document does not represent type approval or certification of the product.

SIGNED

Marek Łukomski M.Sc. Civil Eng.

**APPROVED** 

Head of Fire Research Department

Andrzej Borowy Ph.D.