

CLASSIFICATION OF FIRE RESISTANCE ACCORDING TO EN 13501-2: 2016

Classification no.	2018-Efectis-R001280
Sponsor	Alert Isolatie BV P.O. Box 146 3100 AC SCHIEDAM THE NETHERLANDS
Product name	Alert Firetight® joint seals with steel plates
Prepared by	Efectis Nederland BV
Notified body no.	1234
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TABLE OF CONTENTS

1.	Introduction	3
2.	Details of classified product	3
2.1	General	3
2.2	Test specimen	3
2.3	Method of assembly	6
3.	Manufacturing of the construction	7
4.	Test report & test results in support of classification	7
4.1	Test report	7
4.2	Test results	7
5.	Classification	8
5.1	Reference of classification	8
5.2	Classification	8
6.	Field of application	8
6.1	General	8
6.2	Supporting construction	8
6.3	Seal position	9
6.4	Mechanically induced movement	9
6.5	Compression ratio	9
7.	Limitations	9
8.	Figures	10

1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to **Alert Firetight® linear joint seals with steel plates at the not fire side of the specimen**, in accordance with the procedures given in EN 13501-2:2016.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

For the dimensions and specifications of the materials and components of the examined construction, also see the figures in chapter 2 and 8. Details of the installation of the construction are given in the paragraphs below.

2.2 TEST SPECIMEN

The test specimen were **Alert Firetight® linear joint seals** mounted in a horizontal aerated concrete element.

2.2.1 General

The Alert Firetight® is a linear joint seal consisting of a vacuum sealed RockFit Premium Silver mineral wool core provided with intumescent carbon strips. The mineral wool and intumescent carbon strips are vacuum sealed in a PE foil with a red PE-nylon top layer.

The vacuum sealed product is put into a joint and installed by puncturing the PE foil. The Firetight® linear joint seal will expand and be fixed into its place by the expansion force within the joint.

The Firetight® linear joint seal has a compression ratio of 1.5. The specific recuperated product density is 70 kg/m³. The effective product density, placed in a joint, therefore will be 105 kg/m³ (1.5 times the recuperated product density).

The Firetight® linear joint seal can be described with three thicknesses. For example an Alert Firetight® product:

- Will at production have a fully recuperated thickness of 60 mm;
- Will be vacuumed to a thickness of approx. 20 mm;
- Will be used for a joint width of maximum 40 mm.

The product thicknesses as used for the test are described in table 1. below.

Tested linear joint width	Effective thickness Firetight® as tested in joint Density 105 [kg/m ³]	Recuperated thickness Density 70 [kg/m ³]
40 mm	40 mm	60 mm
100 mm (2 x 50 Firetight®)	50 mm	75 mm
160 mm (2 x 80 mm Firetight®)	80 mm	120 mm
90 mm	90 mm	135 mm

Table 1



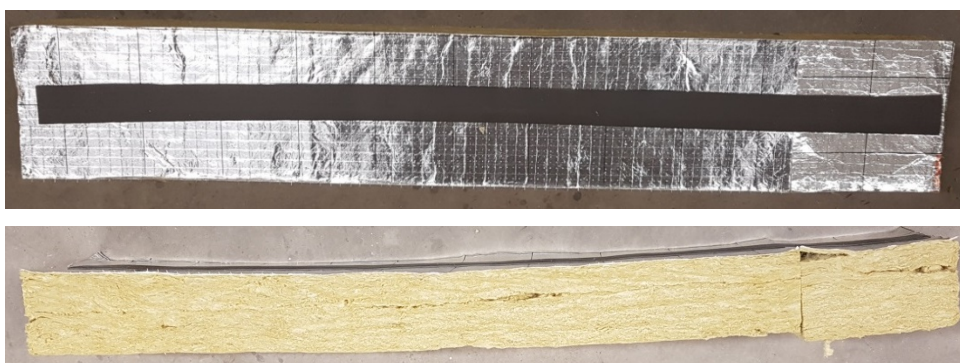
Picture 1: Firetight® specimen (front side)



Picture 2: Firetight® specimen (back side)



Picture 3: detail Firetight® specimen, left vacuumed, right recuperated



Picture 4: Intumescent carbon strip at the centre of the long edge

The mineral wool core is provided with an intumescent carbon strip (W x T: 50x2 mm) at the centre of the long edge and at the top edges.

2.2.2 Specification of materials

The material specification of a standard Firetight® product with a length of 1190 mm and width of 200 mm are described in the tables below.

Specifications Firetight®

Manufacturer	Alert Isolatie BV
Mineral wool	RockFit Premium Silver
Intumescent carbon strip	Sword-A Building materials, Fire seal-XS
PE foil	Karenco, KDM BF300R: PA/PE coextruded red film
Width (effective width as used in joints)	40 mm, 50 mm, 80 mm, 90 mm
Effective density	105 kg/m ³
Length	<ul style="list-style-type: none"> • Standard: 1190 mm • Semi brick bond configuration: 1190 / 595 mm
Height	200 mm

Specifications mineral wool

Manufacturer Insulation	Rockwool
Insulation type	RockFit Premium Silver
Material	Mineral wool
Density recuperated	70 kg/m ³

Specifications intumescent carbon strip

Manufacturer	Sword-A Building materials
Type	Fire seal-XS
Material	Carbon
Density	1673 kg/m ³
Width x thickness	50 x 2 mm
Length	1190 mm (application at the centre) 100 mm (application at the top edges)

Specifications PE foil

Manufacturer	Karenco
Type	KDM BF300R: PA/PE coextruded red film
Material	Base Poly ethylene / PA-nylon top layer
Thickness	Totally 300 µm <ul style="list-style-type: none"> • Base Poly ethylene 210 µm • PA-nylon top layer 90 µm
Surface density	297 g/m ²

The joints were tested with 1.25 mm thick steel plates at the top of the joint.

Specifications steel plates

Location	On top of the joint seals, not fire side
Material	Standard construction steel
Dimension steel plate	Thickness 1.25 mm
Mounting	One half of the steel plates was mounted to the supporting construction, the other half was put over the joint, until the edges.

2.2.3 Joint types

Four different types of joints have been tested to create the desired joint width ranges and to test joints covered with a steel plate, see table 2 below.

linear joint	width [mm]	length [mm]	height [mm]	specification
C	40	2380	200	Joint with Firetight® and covered with a steel plate
D	90	2380	200	Joint with Firetight® and covered with a steel plate
E	100	2380	200	Joint with Firetight®, and covered with a steel plate and semi-brick bond lay-out
F	160	2380	200	Joint with Firetight®, and covered with a steel plate and semi-brick bond lay-out

Table 2

To construct a joint width from 100 mm up to 160 mm, the linear joints have been provided with Firetight® joint seals in a semi-brick bond lay-out. Firetight® joint seals with a length of respectively 1190 mm and 595 mm and a height of 200 mm (joint height) have been used in a semi-brick bond lay-out for joints E and F.

To test a joint width of 100 mm, two Firetight® joint seals with an effective thickness of 50 mm have been used. To test a joint width of 160 mm, two Firetight® joint seals with an effective thickness of 80 mm have been used.

2.2.4 Joint ranges

A 40 to 160 mm range can be distinguished.

Four joints have been tested because the range is divided in a single layer Firetight, and a double layer Firetight in semi-brick bond lay-out.

- Single layer joints have been tested with joints C and D, width respectively 40 mm and 90 mm.
- Double layer joints have been tested with joints E and F, width respectively 100 mm and 160 mm.

2.3 METHOD OF ASSEMBLY

The method of assembly was as follows:

- Placing of the horizontal aerated concrete element slabs to form the width of the apertures;
- Mounting of aerated concrete elements at the edges of the aperture;
- Placing the penetration seals and services.
- Mounting of steel plates at the not fire side of four joints

3. MANUFACTURING OF THE CONSTRUCTION

Efectis Nederland BV

Supplying test frame with aerated concrete horizontal elements provided with joints

Alert Isolatie BV

Mounting of joint elements and steel plates at the top of the joints

4. TEST REPORT & TEST RESULTS IN SUPPORT OF CLASSIFICATION

4.1 TEST REPORT

Name of laboratory	Name of sponsor	Test report no.	Test method
Efectis Nederland BV THE NETHERLANDS	Alert Isolatie BV THE NETHERLANDS	2018-Efectis-R00417	EN 1366-4: 2006+A1:2010

4.2 TEST RESULTS

Test result		Failure criterion		Classification	
Linear joint seal		Integrity	flames > 10 sec		
C	40 mm, single element (steel plate)	246	246	E240-H-M7.5-F -w40	EI240-H-M7.5-F-w40
D	90 mm, single element (steel plate)	246	246	E240-H-M7.5-F -w90	EI240-H-M7.5-F-w90
E	100 mm, double element (steel plate)	246	246	E240-H-M7.5-F -w100	EI240-H-M7.5-F-w100
F	160 mm, double element (steel plate)	222*	246	E240-H-M7.5-F-w160	EI180-H-M7.5-F-w160
* Tc 52					
The heating was terminated after 246 minutes in concurrence with the sponsor.					

5. CLASSIFICATION

5.1 REFERENCE OF CLASSIFICATION

This classification has been prepared in accordance with clause 7 of EN13501-2:2016.

5.2 CLASSIFICATION

The different ranges of **Alert Isolatie Firetight®** are classified according to EN 1366-4+A1:2010 the criteria and classes:

Range 40 mm to 160 mm

E240-H-M7.5-F-w40-160

Range 40 mm to 100 mm

EI240-H-M7.5-F-w40-100

Range 40 mm to 160 mm

EI180-H-M7.5-F-w40-100

6. FIELD OF APPLICATION

Any significant deviation with respect to size, constructional details, load stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method was not covered by this report.

6.1 GENERAL

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

Field of direct application for the joints as tested. The field of application regarding the orientation of the linear joint is:

- Linear joint in a horizontal test construction;
- Horizontal wall joint abutting a floor, ceiling or roof;
- Horizontal floor joint abutting a wall.

6.2 SUPPORTING CONSTRUCTION

Results obtained with autoclaved aerated concrete standard supporting constructions apply to concrete, block work and masonry separating elements of a thickness (≥ 200 mm) and density equal to or greater than that tested (≥ 650 kg/m³).

6.3 SEAL POSITION

Test results are valid only for the position in which the joint seal fills the joint or in which the joint height is greater than tested.

6.4 MECHANICALLY INDUCED MOVEMENT

The movement capability of the Firetight® linear joint seal is less than $\pm 7,5\%$, the linear joint seal therefore is tested without mechanically induced movement. The maximum mechanically induced movement is restricted to 7.5%.

6.5 COMPRESSION RATIO

The Firetight® linear joint seal has a compression ratio of 1.5. The specific recuperated product density is 70 kg/m^3 . The effective product density, placed in a joint, therefore will be 105 kg/m^3 (1.5 times the recuperated product density).

7. LIMITATIONS

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



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8. FIGURES

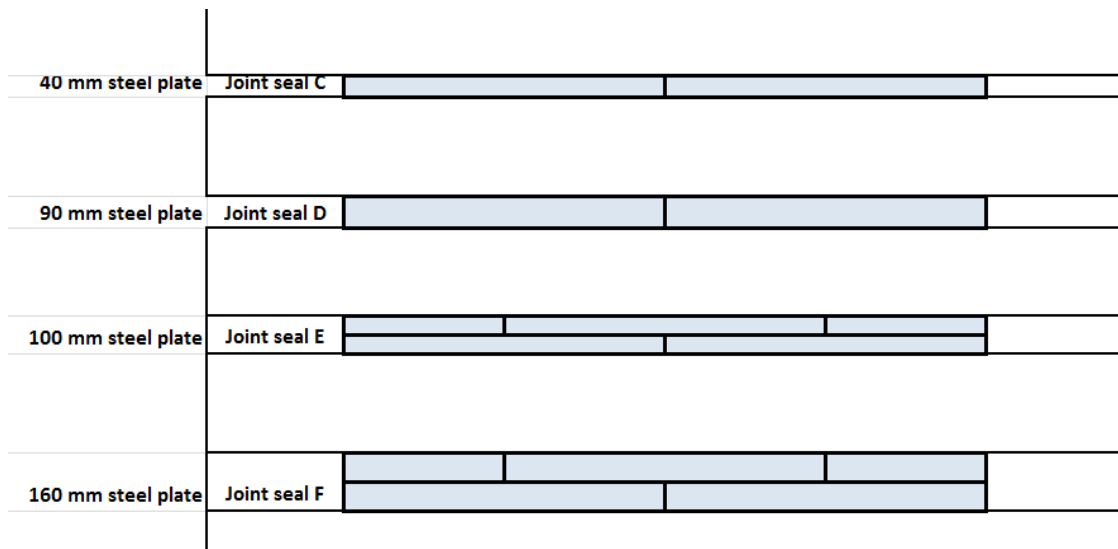


Figure 1 Lay-out of Alert Firetight® test

Dimensions Firetight®

	Recuperated	Effective thickness
D	60, 75, 120 & 135 mm	40, 50, 80 & 90 mm
B1	250 mm	250 mm
B2	200 mm	200 mm
L1	1250 mm	1250 mm
L2	1190 mm	1190 mm

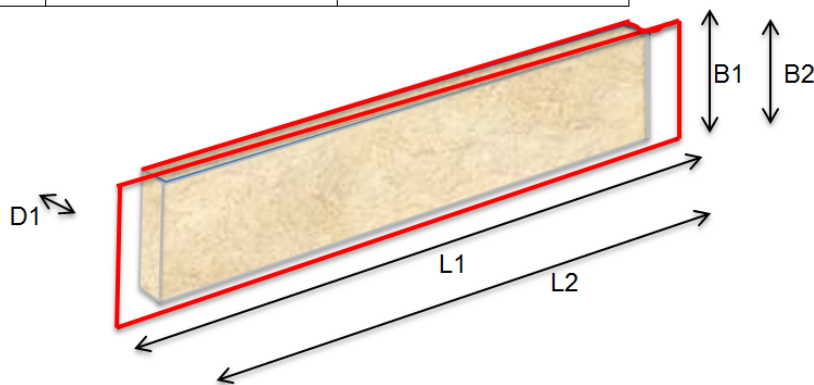


Figure 2 Dimensions of Firetight® specimen

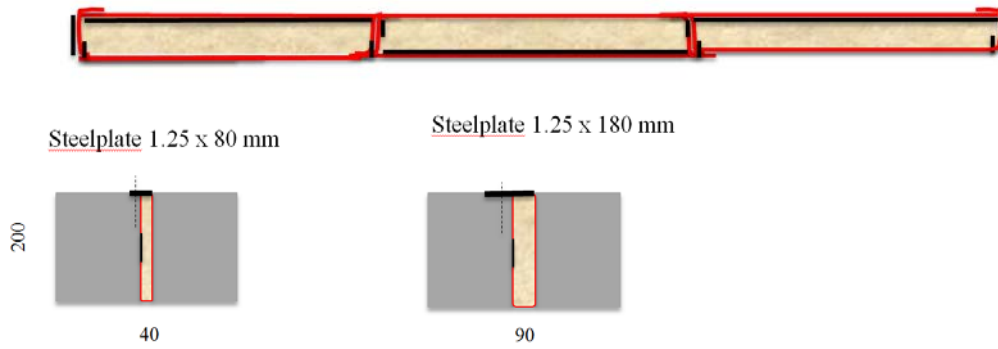


Figure 3 Top view and cross sections of single applied Firetight® (with steel plates)

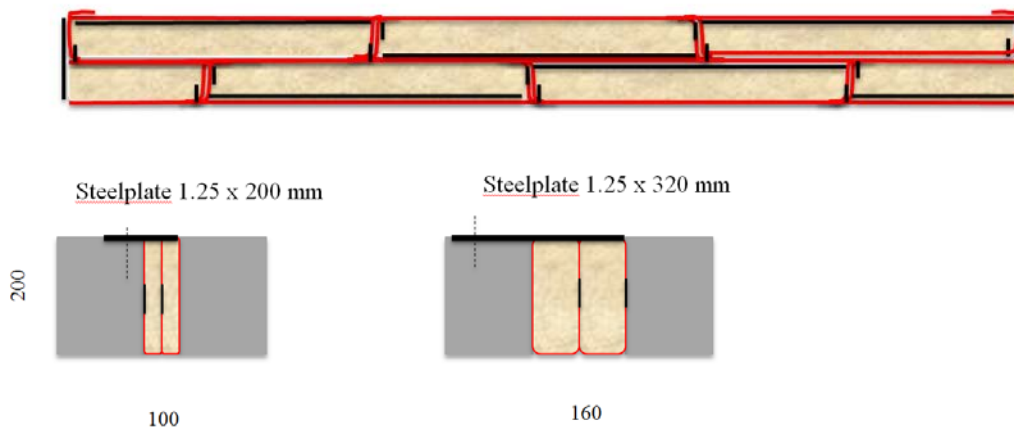


Figure 4 Top view and cross sections of semi-brick bond lay-out applied Firetight® (with steel plates).