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Testing. Advising. Assuring.

Title:

Classification of Fire
Resistance Performance In
Accordance With
EN 13501-3:2005+ A1:
2009

Notified Body No:

0833

Product Name:

'3M™ Fire Barrier Duct
Wrap 615+'

Report No:

WF 326004

Prepared for:

3M Nederland B.V.
Postbus 193
2300 AD LEIDEN
Netherlands.

Date:

8th February 2013

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

1. Introduction

This classification report defines the classification assigned to the element '3M™ Fire Barrier Duct Wrap 615+' ducting in accordance with the procedures given in EN 13501-3:2005+ A1: 2009.

2. Details of classified product

2.1 General

The element '3M™ Fire Barrier Duct Wrap 615+' is defined as a fire resisting duct system.

2.2 Product description

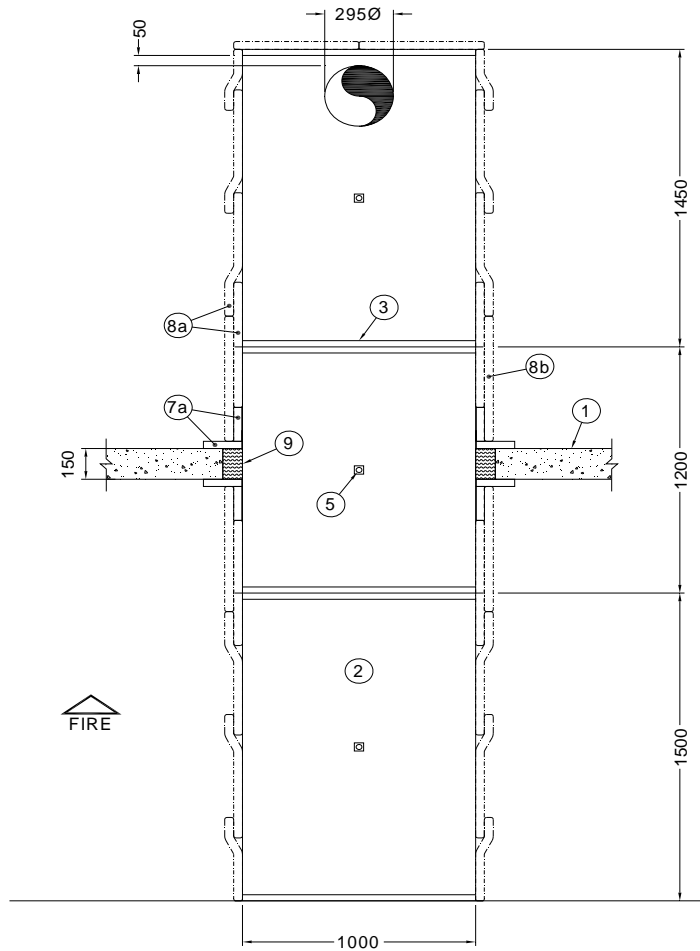
The element, '3M™ Fire Barrier Duct Wrap 615+' is fully described in the test reports provided in support of classification listed in Clause 3.1.

3. Test/extended application reports in support of classification

3.1 Summary of test/extended application reports

Name of Laboratory	Name of sponsor	Test report Nos.	Test method / extended application rules & date
Exova Warringtonfire - Notified Body No. 0833	3M Nederland B.V.	WF Test Report No. 319989	EN 1366-1: 1999 26 th July 2012
Exova Warringtonfire - Notified Body No. 0833	3M Nederland B.V.	WF Test Report No. 324343	EN 1366-1: 1999 13 th December 2012

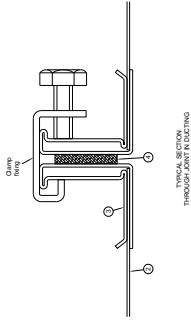
Summary of WF Test Report No. 319989

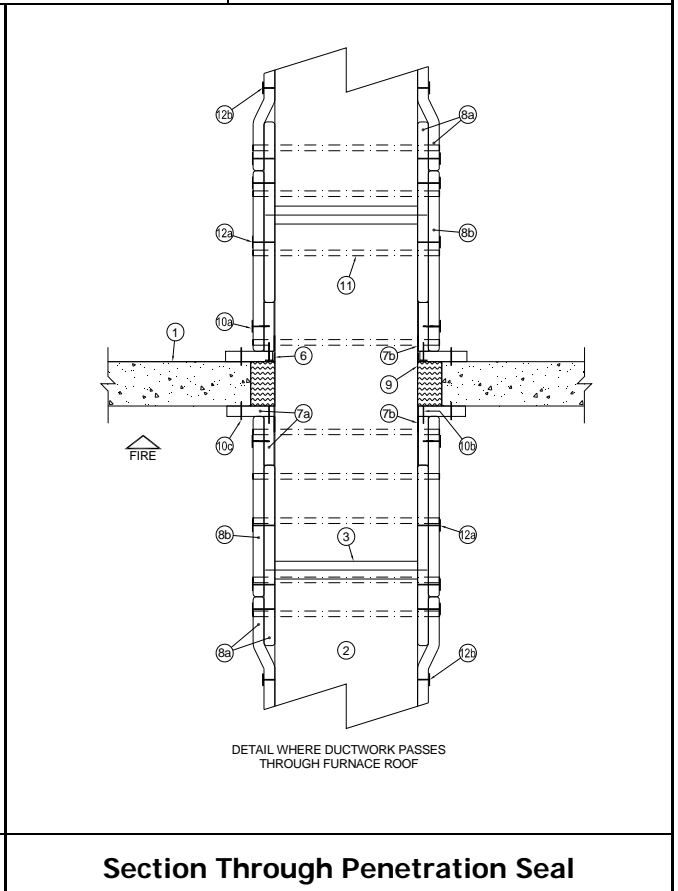
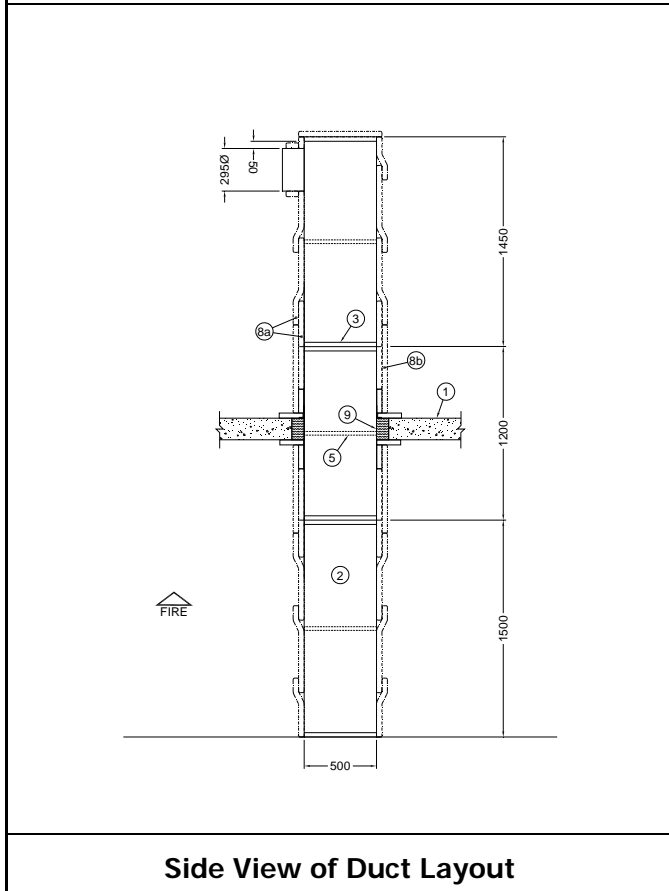


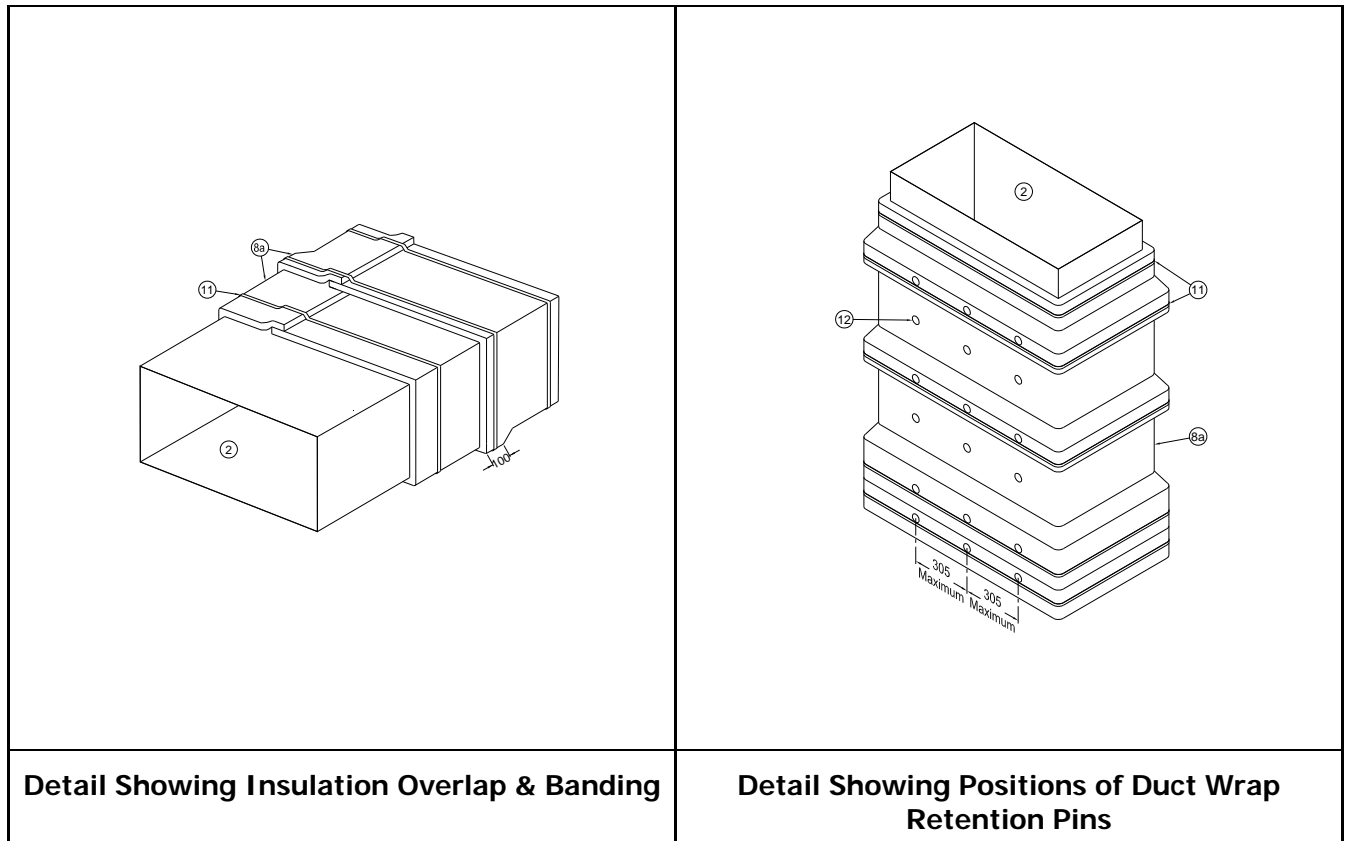
Key to drawings:

1. Separating element – 150 mm thick AAC concrete
2. Ducting – Galvanised mild steel 0.8 mm thick. Constructed to EN 1507 and DW 144 requirements.
3. End flanges – Galvanised mild steel 30 mm x 1 mm
4. Joint tape – Unifrax Corporation Insulfrax[®] felt tape 20 mm x 3 mm
5. Internal tie rods – Galvanised mild steel M12 threaded rod within a steel tube
6. Support angles – Mild steel angle 30 mm by 30 mm by 3 mm
7. (a) Penetration seal collar – Promatect L 500 board 35 mm thick.
7. (b) 3M[™] Fire Barrier Moldable Putty+ Pad – 2.7 mm x 50 mm
8. (a) Duct wrap insulation - 3M[™] Fire Barrier Duct Wrap 615+ Nominally 610 mm wide x 38 mm thick
8. (b) Duct wrap collar – 3M[™] Fire Barrier Duct Wrap 615+ Nominally 610 mm wide x 38 mm thick
9. Penetration seal infill - 3M[™] Fire Barrier Duct Wrap 615+ core material (without outer jacket)
10. (a) Fixing screws – mild steel drywall screws 45 mm x 3.9 mm diameter

Front View of Duct Layout

 <p>TYPICAL SECTION THROUGH JOINT IN DUCTING</p>	<ol style="list-style-type: none"> 10. (b) Fixing screws – mild steel drywall screws 55 mm x 3.9 mm diameter 10. (c) Fixing screws – mild steel drywall screws 100 mm x 5 mm diameter 11. Retention banding – carbon steel 12.7 mm x 0.5 mm 12. (a) Duct wrap retention pins – mild steel CD weld fixed cup pins, 64 mm long x 2.7 mm diameter 12. (b) Duct wrap retention pins – mild steel CD weld fixed cup pins, 28 mm long x 2.7 mm diameter
<p>Details of Ducting Assembly</p>	

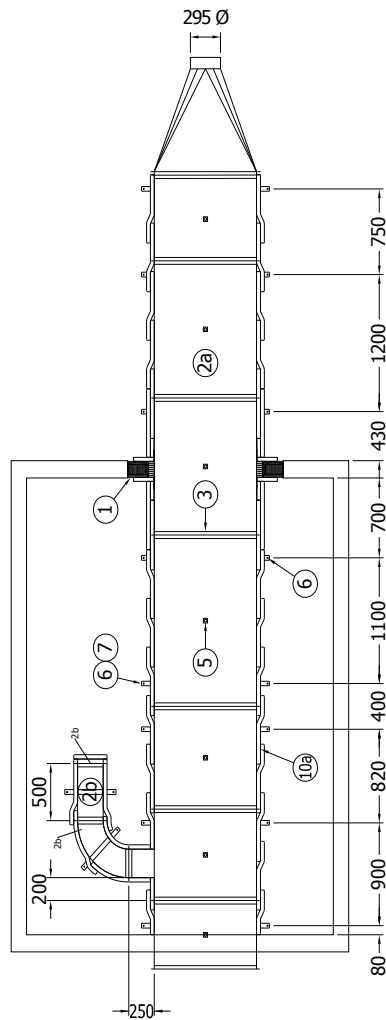




Summary of WF Test Report No. 319989

Test results:		
Integrity	Sustained flaming	245 minutes
	Gap gauge	245 minutes
	Cotton pad	245 minutes
	Volume flow rate	245 minutes
	Smoke Leakage	245 minutes
Insulation	245 minutes	

Summary of WF Test Report No. 324343

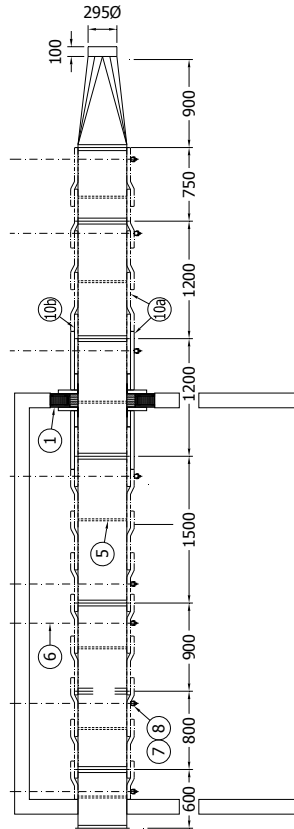


Key to drawings:

1. Separating element – 100 mm thick Gypsum plasterboard drywall assembly
2. (a) Main duct – Galvanised mild steel 0.6 mm thick. Constructed to class A requirements of EN 1507 and class A requirements of DW 144
2. (b) Branch duct – Galvanised mild steel 30 mm x 1 mm
3. End flanges – Galvanized mild steel 30 mm x 1 mm
4. Joint tape – Unifrax Corporation Insulfrax® felt tape 20 mm x 3 mm
5. Internal tie rods – Galvanised mild steel M12 threaded rod within a steel tube
6. Hanger rod – M10 mild steel threaded rod, nuts and washers
7. Support channel – Galvanised mild steel U profile 41 mm x 41 mm x 2.5 mm
8. Support channel saddle – Galvanised mild steel angled plate 48 mm x 30 mm x 80 mm x 80 mm wide x 5.2 mm thick
9. (a) Penetration seal collar – Promatect L 500 board, 35 mm thick
9. (b) Penetration seal protection - 3M™ Fire Barrier Moldable Putty+ Pad, 2.7 mm thick x 100 mm wide
10. (a) Duct wrap insulation - 3M™ Fire Barrier Duct Wrap 615+ Nominally 610 mm wide x 38 mm thick

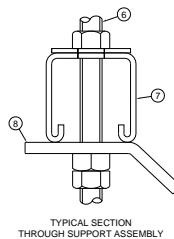
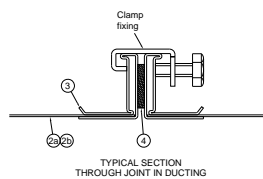
General Plan View of Duct Layout

Summary of WF Test Report No. 324343



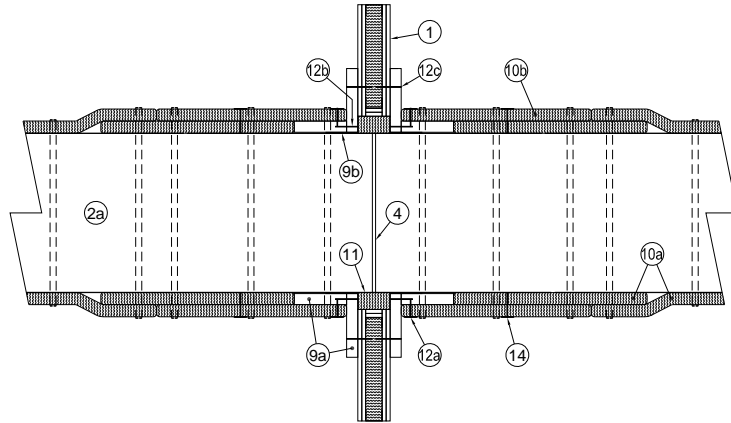
10. (b) Duct wrap collar - 3M™ Fire Barrier Duct Wrap 615+ Nominally 610 mm wide x 38 mm thick
11. Penetration seal infill - 3M™ Fire Barrier Duct Wrap 615+ core material (without outer jacket)
12. (a) Fixing screws – mild steel drywall screws 55 mm x 3.9 mm diameter
12. (b) Fixing screws – mild steel drywall screws 70 mm x 4.5 mm diameter
12. (c) Fixing screws – mild steel drywall screws 100 mm x 5 mm diameter
13. Retention banding – Stainless steel 12.7 mm x 0.4 mm
14. Duct wrap retention pins - mild steel CD weld fixed cup pins, 64 mm long x 2.7 mm diameter for fixing at twin layer collar and 28 mm long x 2.7 mm diameter for fixing at single layer thickness.

Side View of Ducting Assembly

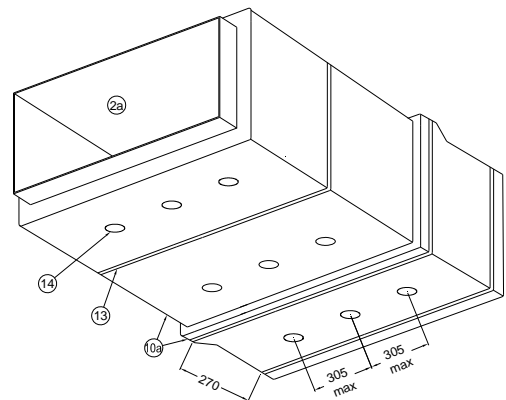
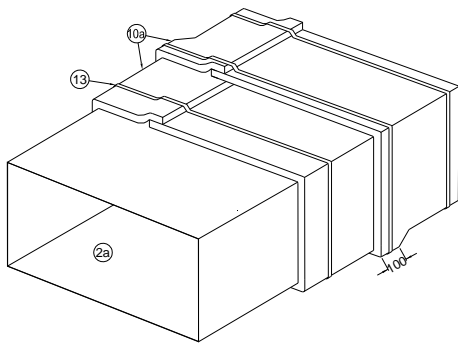


Details of Ducting Assembly

Summary of WF Test Report No. 324343



Details of Ducting Assembly



Detail Showing Insulation Overlap & Banding

Detail Showing Positions of Duct Wrap Retention Pins

Summary of WF Test Report No. 324343

Test results:		
Integrity	Sustained flaming	187 minutes
	Gap gauge	187 minutes
	Cotton pad	187 minutes
	Volume flow rate	185 minutes
	Smoke Leakage	168 minutes
Insulation		185 minutes

4. Field of Direct Application

The results of this fire tests are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with that appropriate design code for its stiffness and stability. Other changes are not permitted.

4.1 Vertical and horizontal ducts

- A test result obtained for horizontal ducts A and B is applicable to horizontal ducts only.
- A test result obtained from vertical ducts A and B is applicable to vertical ducts without a branch.
- A test on horizontal duct A which includes a branch duct also covers the use of branches on previously tested vertical ducts.

4.2 Sizes of ducts

Test results obtained for the standard sizes of duct A and duct B are applicable to all dimensions up to the size tested, together with the increases given in the table below:

	Rectangular width - mm	Rectangular height - mm
Duct A	+ 250	+ 500
Duct B	+ 250	+ 750

4.3 Pressure difference

A test result obtained for the standard underpressure of 300 Pa in duct A is applicable to an underpressure and an overpressure up to the same value providing that the integrity criteria during the duct B test was satisfied.

4.4 Height of vertical ducts – ducts supported at each storey

The test results are applicable to any number of storeys provided:

- i) the distance between supporting constructions does not exceed 5 m
- ii) limitations on buckling are satisfied

4.5 Limitations on buckling

In order to prevent damage to the fire protection of material from buckling of vertical ducts, the test results are only applicable to situations where the ratio between the length of duct exposed in the compartment to the smallest lateral dimension across the outside face of the duct does not exceed 8:1, unless additional supports are provided.

In cases where additional supports are provided, the ratio of the distance between the additional supports, or the distance between supports and the supporting construction to the smallest lateral dimension across the outside face of the duct shall not exceed 8:1.

4.6 Suspension devices for horizontal ducts

As the test configuration does not allow for assessment of the loadbearing capacity, the suspension devices shall be made of steel and be sized such that the calculated stresses do not exceed the values given below:

Type of load	Maximum stresses (N/mm ²)	
	t ≤ 60 min	60 min < t ≤ 120 min
Tensile stress in all vertically orientated components	9	6
Shearing stress in screws of property class 4.6 according to EN 20898-1	15	10

The elongation in mm of the suspension devices of the test ducts can be calculated on the basis of temperature increases and stress levels. For unprotected steel suspension devices, the temperature used shall be the maximum furnace temperature. For protected steel suspension devices, the maximum recorded suspension device temperature shall be used. The value calculated represents the elongation limit for suspension devices with a greater length than in the test.

The largest distance between suspension devices used in the tested constructions cannot be exceeded.

If suspension devices have been used at all joints within the furnace, then suspension devices shall be located at all joints in practice.

In cases where the lateral dimension between the outer vertical surface of the duct and the centreline of the suspension device is less than 50 mm, the test results shall apply up to 50 mm. If it is tested at greater than 50 mm then it is valid at up to the distance tested.

The horizontal loadbearing component of the suspension device system shall be sized so that the bending stress does not exceed that applied to the equivalent member in the test.

4.7 Supporting construction

A test result obtained for a fire resisting duct passing through a standard supporting construction is applicable to a supporting construction with a fire resistance equal to or greater than that of the standard supporting construction used for the test (thicker, denser, more layers of board as appropriate).

4.8 Steel ducts

The test results shall apply to those ducts having lower leakage values provided that the steel duct tested represents the highest leakage value (class A, prEN1507).

Test results on a steel duct that has been stiffened shall only apply to ducts that are also stiffened in a similar manner.

The applicability of results to ducts of lower leakage values only applies when the lower leakage rate is not achieved by means of a combustible seal.

5. Classification and field of application

5.1 Reference of classification

This classification has been carried out in accordance with clause 7.2.2.4 of EN 13501-3:2005+ A1: 2009.

5.2 Classification

The product, '3M™ Fire Barrier Duct Wrap 615+', may be classified according to the following combinations of performance parameters and classes as appropriate.

E	I		t	t		(i	↔	o)		S
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Considering the tests submitted for classification, '3M™ Fire Barrier Duct Wrap 615+' provides the following classification:

Fire resistance classification: EI 120 (v_e h_o o →i) S

Fire resistance classification: EI 180 (v_e o →i) S

Fire resistance classification: EI 180 (v_e h_o o →i)

Fire resistance classification: EI 240 (v_e o →i) S

6. Limitations

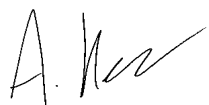
This classification document does not represent type approval or certification of the product.

SIGNED



D Forshaw
Principal Certification Engineer

APPROVED



A Kearns
Technical Manager

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