Regulatory Information Report

RIRF24097

Fire resistance test for penetrations through a vertical separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	28/10/2024
Test number:	PF24097

Passive Fire Inspection and Test Services Limited
1/113 Pavilion Drive, Mangere, Auckland 2022, New Zealand
www.firelab.co.nz
tests@firelab.co.nz

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1.1 Document revision schedule

Revision #	Date	Description
1	28/10/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		28/10/2024
Authorised by:	Andrew Bain (Authorized signatory)		28/10/2024

ACCREDITED
TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

2. Report Summary

Service penetration was tested passing through two layers of 13mm FR Plasterboard on each side of a 64mm (nominal) steel frame.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	**AGNI-Box – empty**	**124NF**	**124NF**	**-/120/120**
2	**AGNI-Box – filled**	**124NF**	**92**	**-/120/90**
2a	3 x Pair Coil with FR Insulation	124NF	92	-
2b	3 x 20mm Condensate Pipes	124NF	124NF	-
2c	25 x TPS Cables	124NF	124NF	-
3	**AGNI-Box – filled**	**124NF**	**73**	**-/120/60**
3a	50mm Steel Pipe	124NF	73	-
3b	25 x Alarm Cables	124NF	114	-
3c	25 x Data Cables	124NF	102	-
4	**AGNI-Box – filled**	**124NF**	**9**	**-/120/-**
4a	32mm PEX/AL/PEX Pipe	124NF	9	-
4b	16mm PEX/AL/PEX Pipe	124NF	11	-
4c	40mm PEX Pipe	124NF	12	-
4d	16mm PEX Pipe	124NF	12	-
5	**DN32 PVC-U Pipe**	**124NF**	**124NF**	**-/120/120**
6	**DN25 PEX Pipe**	**124NF**	**124NF**	**-/120/120**
7	**DN40 PEX Pipe**	**124NF**	**46**	**-/120/45**

NF – No failure during the test

3. General Information

3.1 Testing Scope

Applicable Standards:

AS 1530.4-2014 Section 10: Service penetrations and control joints

AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints

Departures from Testing Method:

No departures from the testing method

Test conditions:

Conditions complied with the Standard

3.2 Contact Details

Accredited Testing Laboratory

Fire TS Lab - Passive Fire Inspection and Test Services Ltd

Accreditation Number - 1335

1/113 Pavilion Drive, Mangere, Auckland, 2022

New Zealand

Contact e-mail: tests@firelab.co.nz

Client/Applicant:

Agnitek Pty Ltd

8 Clare St, Bayswater, VIC, 3153

Australia

Contact e-mail: info@agnitek.com.au

Manufacturer:

Same as Client/Applicant

3.3 Specimen Preparation, Conditioning and Timeline

Specimens conditioning and delivery to Laboratory:

Separating element was built by the Laboratory in line with Client instructions. Installation of fire stopping system was performed by the Laboratory in line with Client instructions. The Laboratory was not involved in sampling of the materials. The Laboratory checked materials during construction of the specimen. All services (except for empty AGNI-Boxes) we capped on the fire side only.

Testing date:

10/09/2024

Installation completion date:

05/09/2024

Termination of The Test:

The test was discontinued at 124 minutes.

3.4 Use of the Report

This report shall not be reproduced, except in full.

A regulatory information report was issued in addition to the full test report PF24097. This provides the minimum information required for regulatory compliance.

This report details the methods of construction, test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in AS 1530.4. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

The test results relate to the specimens of the product in the form in which they were tested. Differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

The specimens were supplied by the sponsor and the Laboratory was not involved in any of selection or sampling procedures.

The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions.

4. Specimen Description

4.1 Supporting Construction

Separating element		
1.1	Item	64mm (nominal) steel stud frame with two layers of 13mm FR Plasterboard fitted to each side of the frame
	Dimensions	Width / Height (W/H): 1200mm × 1200mm

Materials		
1.3	Item / Product Name	Steel Stud
	Dimensions	Width / Height (W/H): 64mm x 1200mm
	Installation	Used to construct studs in steel frame and nogs
1.4	Item / Product Name	Steel Track
	Dimensions	Width / Height (W/H): 64mm x 1200mm
	Installation	Used to construct top and bottom plates in steel frame
1.5	Item / Product Name	Self-Tapping Screw
	Dimensions	10g x 16mm
	Installation	Used to construct steel stud frame – secure studs, tracks and nogs together
1.6	Item / Product Name	FR plasterboard
	Dimensions	Width / Height (W/H): 1200mm x 1200mm
		Thickness (T): 13mm
	Installation	Two layers applied to each face of the frame to create separating element
1.7	Item / Product Name	Self Tapping Screw
	Dimensions	41mm
	Installation	Used to secure GIB Fyreline to frame

4.2 Specimens

Services		
2.1	Item / Product Name	AGNI-Box
	Dimensions	Width / Height (W/H): 300mm x 151mm
	Construction	The AGNI-Box is constructed using 1.0 BMT steel measuring 300mm (width) x 151mm (height) x 200mm (depth). A 50mm recessed steel lip surrounds all four side of both faces of the AGNI-Box and holds two layers of 3.5mm intumescent. The recessed space on both faces of the AGNI-Box was fitted with 50mm thick foam, friction fit into the frame.
2.2	Item / Product Name	FR RUBBER INSULATED PAIR COIL
	Copper Pipe 1	Diameter (OD): 9.52mm
		Diameter (ID): 7.9mm
		Thickness (T): 0.81mm
	Copper Pipe 2	Diameter (OD): 15.88mm
		Diameter (ID): 13.84mm
		Thickness (T): 1.02mm
	Insulation	Wall Thickness (T): 19mm
		Material: Nitrile Butadiene Rubber
	Location	3 included in specimen 2
2.3	Item / Product Name	uPVC ELECTRICAL CONDUIT 25mm
	Dimensions	Diameter (OD): 25mm
		Diameter (ID): 21mm
		Thickness (T): 2mm
	Location	3 included in specimen 2
2.4	Item / Product Name	ELECTRICAL CABLE 450/750V 2C + E
	Cable Dimensions	Width x Depth (W/D): 14mm x 6.5mm
	Core Dimensions	Overall Diameter (OD): 4mm
		Wire Diameter: 0.85mm
	Earth Dimensions	Overall Diameter (OD): 3.2mm
		Wire Diameter: 0.64mm

	Location	25 included in specimen 2
2.5	Item / Product Name	50mm STEEL PIPE
	Dimensions	Diameter (OD): 48.5mm
		Diameter (ID): 40.5mm
		Thickness (T): 4mm
	Location	1 included in specimen 3
2.6	Item / Product Name	2 C 0.75mm² RED FIRE ALARM CABLE TCW
	Dimensions	Overall Diameter (OD): 6.5mm
	Location	25 included in specimen 3 – AGNI-Box
2.7	Item / Product Name	CAT6 CABLE
	Dimensions	Overall Diameter (OD): 7.5mm
	Location	25 included in specimen 3
2.8	Item / Product Name	DN16 SDR9 PEX PIPE
	Dimensions	Diameter (OD): 16mm
		Diameter (ID): 11mm
		Thickness (T): 2.5mm
	Location	1 included in specimen 4
2.9	Item / Product Name	DN40 SDR11 PE-X PIPE
	Dimensions	Diameter (OD): 40mm
		Diameter (ID): 28mm
		Thickness (T): 6mm
	Location	1 included in specimen 4, specimen 7
2.10	Item / Product Name	DN20 PE-X/AL/PE-X PIPE
	Dimensions	Diameter (OD): 20mm
		Diameter (ID): 16mm
		Thickness (T): 2mm
	Location	1 included in specimen 4
2.11	Item / Product Name	DN32 PE-X/AL/PE-X PIPE
	Dimensions	Diameter (OD): 32mm
		Diameter (ID): 26mm
		Thickness (T): 3mm

	Location	1 included in specimen 4
2.12	Item / Product Name	DN32 PVC-U DWV PIPE
	Dimensions	Diameter (OD): 36mm
		Diameter (ID): 32mm
		Thickness (T): 2mm
	Location	1 included in specimen 5
2.13	Item / Product Name	DN25 SDR9 PEX PIPE
	Dimensions	Diameter (OD): 25.5mm
		Diameter (ID): 18.5mm
		Thickness (T): 3.5mm
	Location	1 included in specimen 6

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL Sausage

Fixings		
4.1	Item / Product Name	Self-Tapping Screw
	Dimensions	41mm
	Installation	Used to secure AGNI-Box to steel frame
4.2	Item / Product Name	Self-Tapping Screw
	Dimensions	10g x 16mm
	Installation	Used to construct AGNI-Box steel frame

Intumescent		
5.1	Item	AGNI-Wrap 50
	Dimensions	Width (W): 50mm
		Thickness (T): 3.5mm
	Installation	Installed around services in specimen 5, 6 and 7

Other		
6.1	Item / Product Name	Steel Stud 64mm 0.55bmt
	Dimensions	Width / Height (W/H): 300mm x 151mm
	Installation	Used to frame AGNI-Box

5. Test Results

5.1 Observations during the test

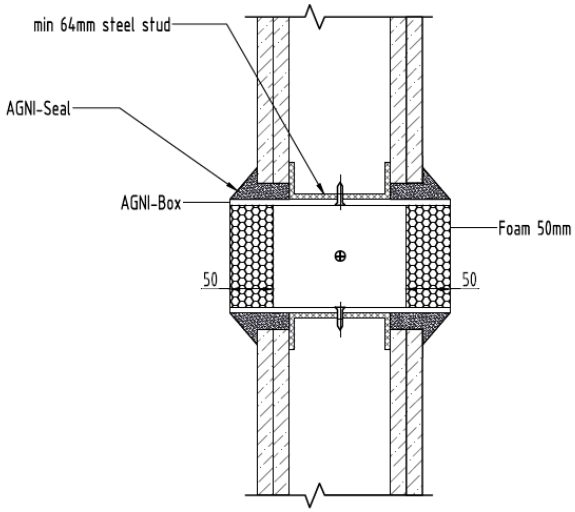
Time min	Test face	SP#	OBSERVATIONS/REMARKS
1	U	2, 3, 4	Smoke coming out from around services
4	U	1	Smoke coming out from the specimen
7	U	4	Foam pushing out from face of AGNI-Box
9	U	1	Foam fallen out of AGNI-Box. Cotton pad test – PASS
37	U	5, 6	Smoke coming out from between pipe and SE
40	U	1, 2, 3, 4	Sealant cone beginning to bubble and expand
46	U	7	Sealant expanding, pipe beginning to distort
60	U/E	All	No major observations
124			**TEST DISCONTINUED**

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element

5.2 Specimen 1

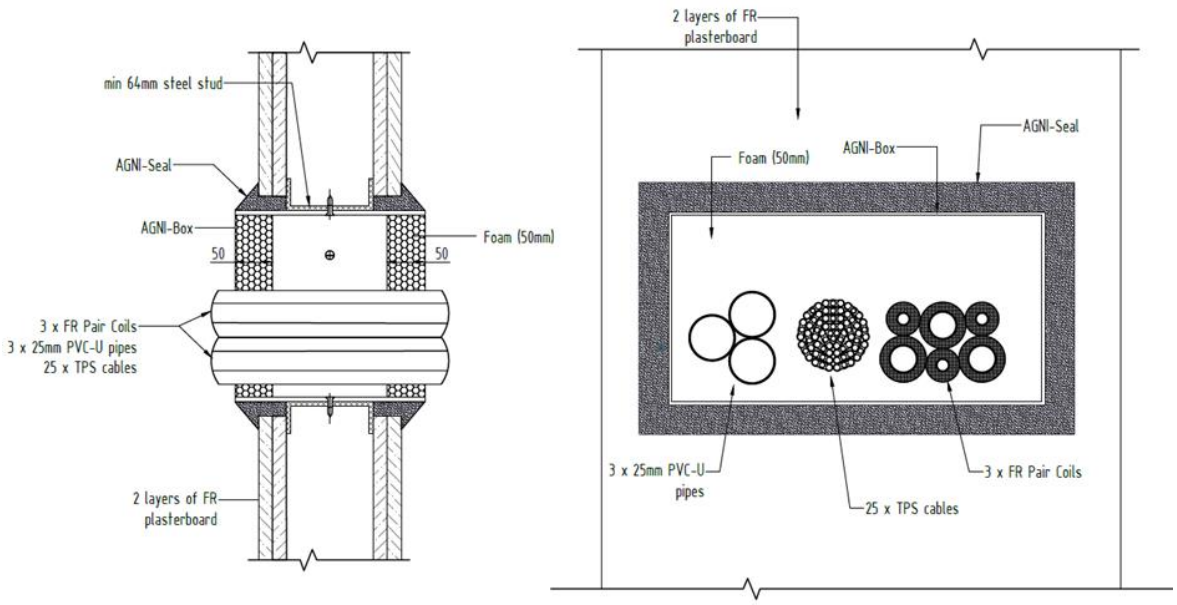


Service penetration details	
Service	AGNI-Box
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	The following procedure was followed: 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. AGNI-Box was secured to the steel stud frame using 41mm screws on all four sides of the AGNI-Box. A 40mm x 40mm AGNI-Seal cone was applied between the AGNI-Box and the separating element. The AGNI-Seal cone surrounded all four edges of the AGNI-Box.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

5.3 Specimen 2



Service penetration details	
Service	AGNI-Box – filled (3 x FR Pair Coil, 25 x TPS Cables and 3 x uPVC Electrical Conduit Pipes)
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

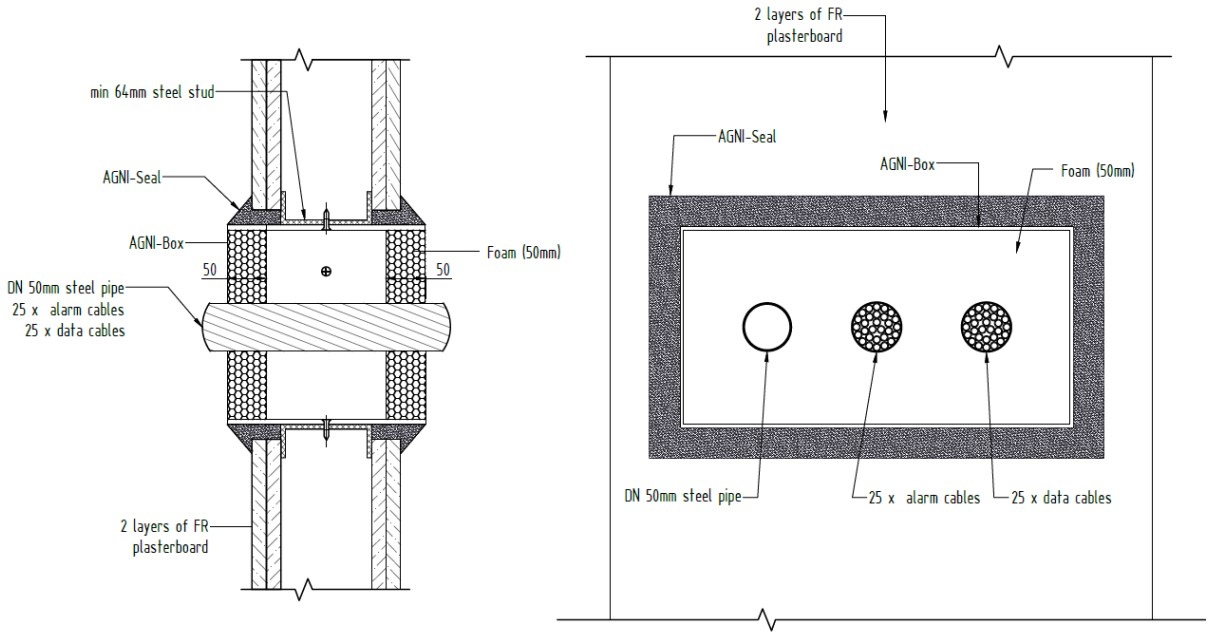
Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	The following procedure was followed: 1. 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. 2. AGNI-Box was secured to the steel stud frame using two 41mm screws on all four sides of the AGNI-Box. 3. A 40mm x 40mm AGNI-Seal cone was applied between the AGNI-Box and the separating element. The AGNI-Seal cone surrounded all four edges of the AGNI-Box. 4. The services were inserted into the AGNI-Box – 3 x pair coils grouped together in the left position, 25 cables bundled together in the centre position and 3 pipes

	grouped together in the right position. These services were lightly touching each other to fit in the AGNI-Box. 5. The foam was cut in half horizontally and then was cut to friction fit around the services. 6. The foam was then inserted into the face of the AGNI-Box.

Test results - specimen	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	92 minutes

2a	3 x Pair Coil with FR Insulation	124NF	92
2b	3 x 20mm Condensate Pipes	124NF	124NF
2c	25 x TPS Cables	124NF	124NF

5.4 Specimen 3



Service penetration details	
Service	AGNI-Box – filled (50mm Steel Pipe, 25 x Alarm Cables, 25 x Data Cables)
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

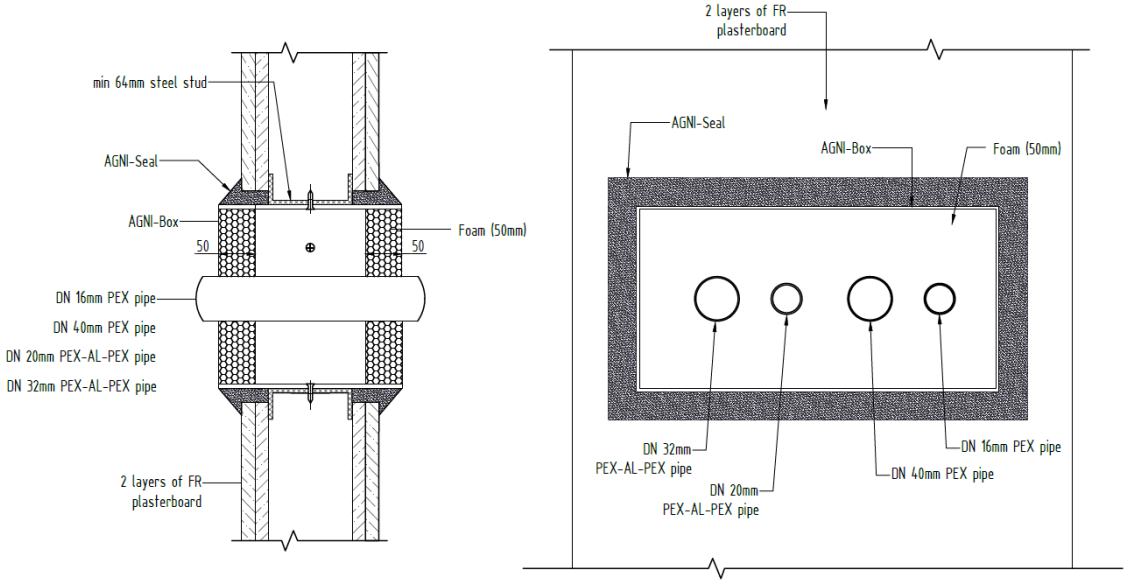
Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	The following procedure was followed: 1. 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. 2. AGNI-Box was secured to the steel stud frame using two 41mm screws on all four sides of the AGNI-Box. 3. A 40mm x 40mm AGNI-Seal cone was applied between the AGNI-Box and the separating element. The AGNI-Seal cone surrounded all four edges of the AGNI-Box. 4. The services were inserted into the AGNI-Box – steel pipe in the left position, 25 alarm cables bundled together in the centre position and 25 data cables bundled together in the right position. These services

	were spaced 30mm (nominal) apart from each other in the AGNI-Box. 5. The foam was cut in half horizontally and then was cut to friction fit around the services. 6. The foam was then inserted into the face of the AGNI-Box.

Test results - specimen	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	73 minutes

3a	50mm Steel Pipe	124NF	73
3b	25 x Alarm Cables	124NF	114
3c	25 x Data Cables	124NF	102

5.5 Specimen 4



Service penetration details	
Service	AGNI-Box – filled (16mm PEX Pipe, 40mm PEX Pipe, 20mm PE-X/AL/PE-X Pipe, 32mm PE-X/AL/PE-X Pipe)
Aperture Size	300mm x 151mm
Annular Spacing	Min: 0mm, Max: 5mm

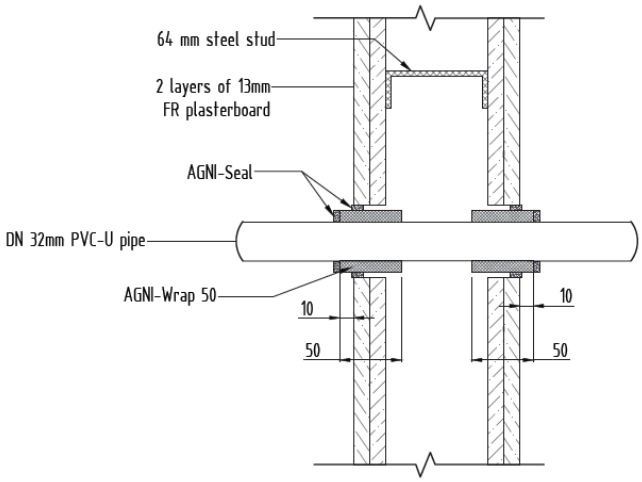
Local Fire-stopping system	
Application	Symmetrical – applied to both faces of separating element
System description	The following procedure was followed: 1. 64mm steel stud frame was constructed (300mm wide x 151mm height) in the centre of the cavity for a tight fit of the AGNI-Box. 2. AGNI-Box was secured to the steel stud frame using two 41mm screws on all four sides of the AGNI-Box. 3. A 40mm x 40mm AGNI-Seal cone was applied between the AGNI-Box and the separating element. The AGNI-Seal cone surrounded all four edges of the AGNI-Box. 4. The services were inserted into the AGNI-Box – 32mm PEX/AL/PEX pipe in the left position, 16mm PEX/AL/PEX pipe in the centre-left position, 40mm PEX pipe in the centre-right pipe and 16mm PEX pipe in the right position. These services were spaced 20mm – 40mm (nominal) apart from each other in the AGNI-Box.

	5. The foam was cut in half horizontally and then was cut to friction fit around the services. 6. The foam was then inserted into the face of the AGNI-Box.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	9 minutes

4a	32mm PEX/AL/PEX Pipe	124NF	9
4b	16mm PEX/AL/PEX Pipe	124NF	11
4c	40mm PEX Pipe	124NF	12
4d	16mm PEX Pipe	124NF	12

5.6 Specimen 5

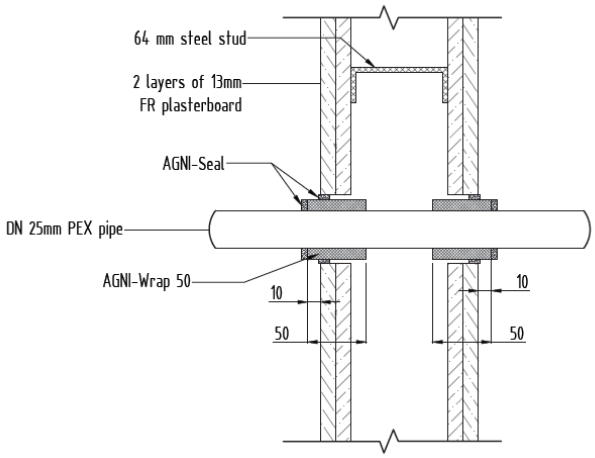


Service penetration details	
Service	DN32 PVC-U Pipe
Aperture Diameter	46mm
Annular Spacing	Min: 4mm, Max: 6mm

Local Fire-stopping system	
Application	Symmetrical – applied to both face of the separating element
System description	The following procedure was followed: 1. 50mm thick AGNI-Wrap was cut to fit one revolution of the circumference of the aperture. 2. The AGNI-Wrap was inserted into the aperture, finishing 10mm past the separating element. 3. 5mm (nominal) bead of AGNI-Seal was used applied between the AGNI-Wrap and the separating element. 4. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal 10mm (nominal) deep.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

5.7 Specimen 6

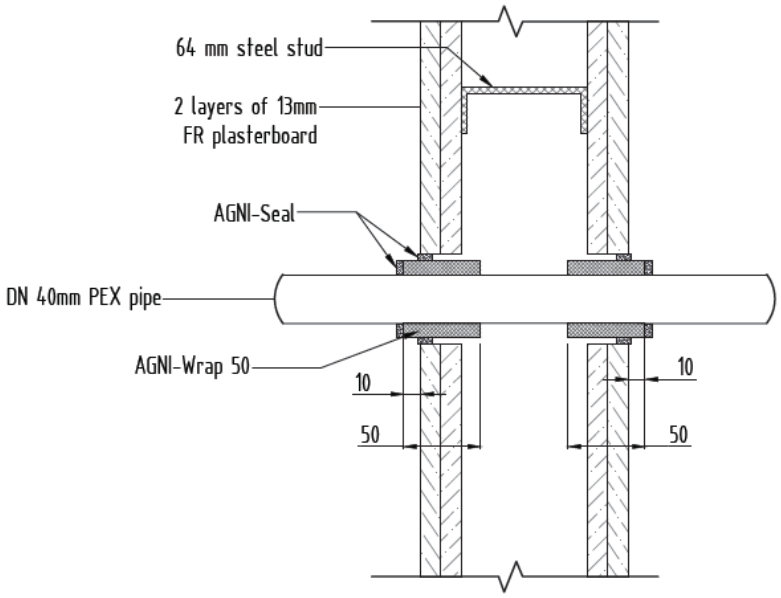


Service penetration details	
Service	DN25 SDR9 PEX PIPE
Aperture Diameter	36mm
Annular Spacing	Min: 4mm, Max: 6.5mm

Local Fire-stopping system	
Application	Symmetrical – applied to both face of the separating element
System description	The following procedure was followed: 1. 50mm thick AGNI-Wrap was cut to fit one revolution of the circumference of the aperture. 2. The AGNI-Wrap was inserted into the aperture, finishing 10mm past the separating element. 3. 5mm (nominal) bead of AGNI-Seal was used applied between the AGNI-Wrap and the separating element. 4. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal 10mm (nominal) deep.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	No failure at 124 minutes

6.8 Specimen 7



Service penetration details	
Service	DN40 SDR11 PEX PIPE
Aperture Diameter	50mm
Annular Spacing	Min: 4.5mm, Max: 5.5mm

Local Fire-stopping system	
Application	Symmetrical – applied to both face of the separating element
System description	The following procedure was followed: 1. 50mm thick AGNI-Wrap was cut to fit one revolution of the circumference of the aperture. 2. The AGNI-Wrap was inserted into the aperture, finishing 10mm past the separating element. 3. 5mm (nominal) bead of AGNI-Seal was used applied between the AGNI-Wrap and the separating element. 4. The gap between the AGNI-Wrap and the pipe was filled with AGNI-Seal 10mm (nominal) deep.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 124 minutes
Insulation	46 minutes

6. Photos

6.1 Photos before the test

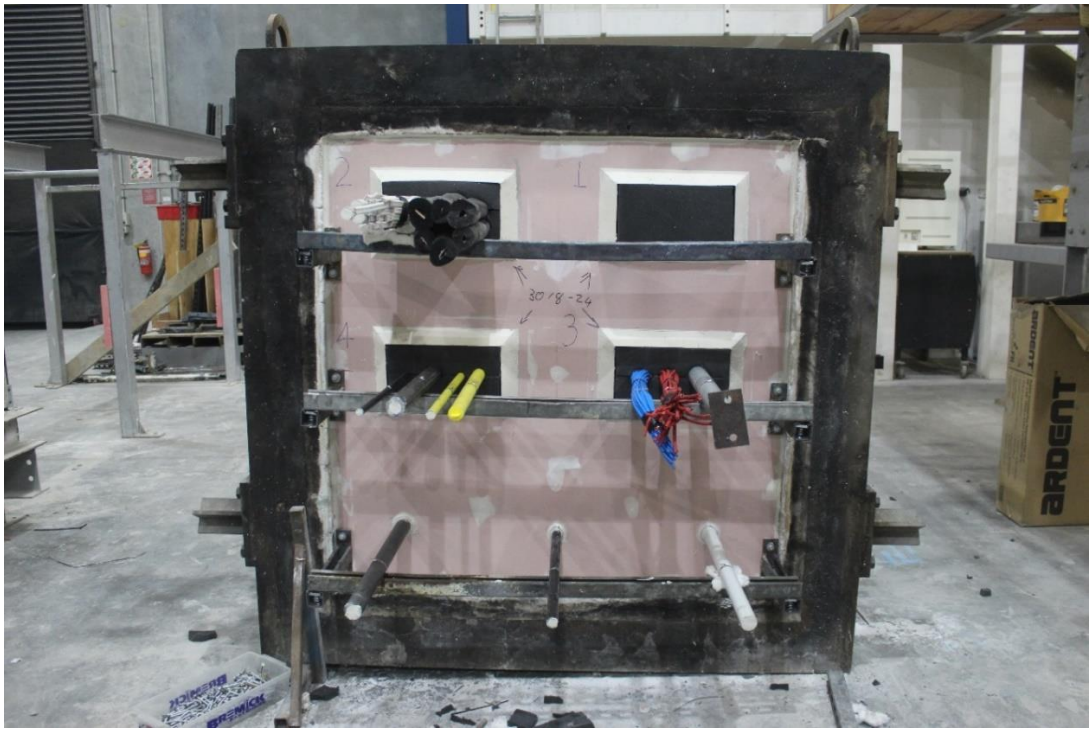


Figure 1 – Exposed face prior to test commencement

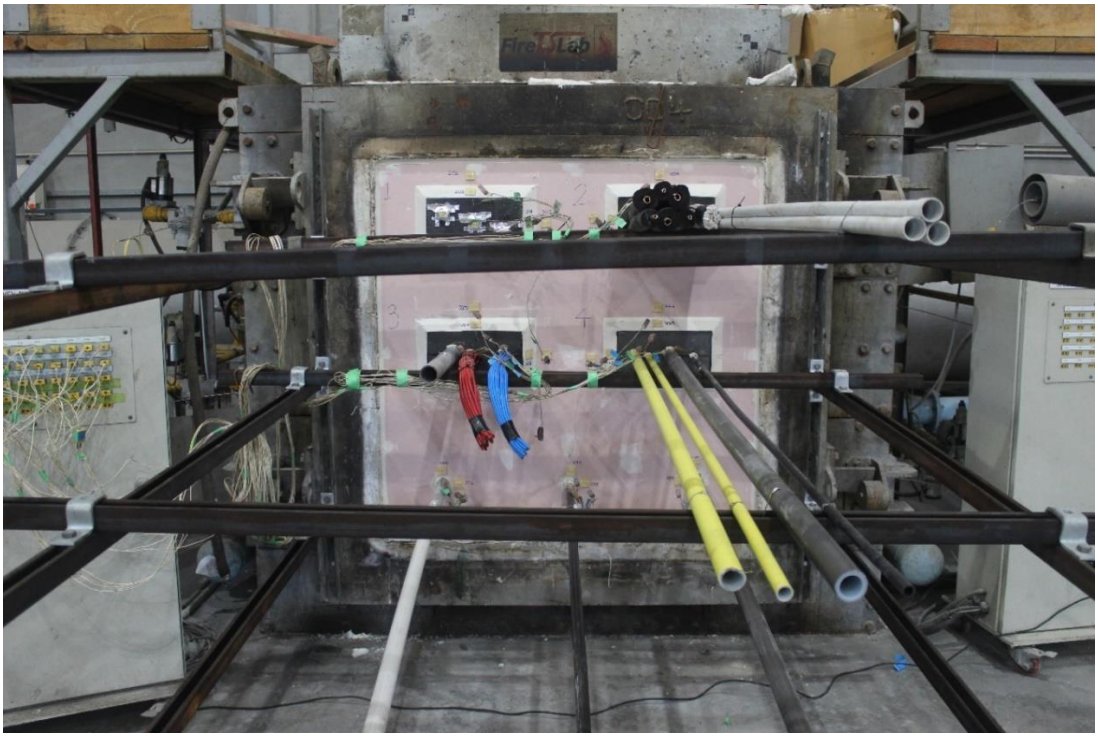


Figure 2 – Unexposed face prior to test commencement