Fire Testing Laboratory

Regulatory Information Report

PF24146

Fire resistance test for penetration through a vertical separating element

Client:	**Agnitek Pty Ltd**
Test method:	AS1530.4-2014
Report Date:	26/02/2025
Test number:	PF24146

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1.1 Document revision schedule

Revision #	Date	Description
1	26/02/2025	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		26/02/2025
Authorised by:	Andrew Bain (Authorized signatory)		26/02/2025

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 a 25mm thick vertical Shaftliner/16mm fire rated plasterboard separating element.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	AGNI-Box (empty)	67NF	67NF	-/60/60
2	32mm Copper Pipe	67NF	67NF	-/60/60
3	20mm Copper Cable	67NF	29	-/60/15
4	25mm Aluminium Cable	67NF	67NF	-/60/60
5	100mm Copper Pipe	67NF	61	-/60/60
6	50mm Steel Pipe	67NF	67NF	-/60/60
7	TPS Cables (bundle of 8)	67NF	63	-/60/60
8	100mm PVC Pipe	67NF	15	-/60/15
9	PE Pair Coil + TPS Cable + 20mm Condensate Pipe	67NF	67NF	-/60/60
10	FR Pair Coil + TPS Cable + 20mm Condensate Pipe	67NF	67NF	-/60/60
11	25mm PEX Pipe	67NF	67NF	-/60/60

NF – No Failure

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

FTSL - 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. Services were capped from fire side only.

Testing date:

11/02/2025

Installation completion date:

16/01/2025

Termination of The Test:

The test was discontinued at 67 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 PF24146. 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 recognised 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	Shaftliner / FR Plasterboard, Steel Framed Wall
	Dimensions	Width x Height: 1200mm x 1200mm Lining Thickness: 41mm
	Installation	2 steel frames created for each wall lining. Shaftliner was installed to the inside of the steel frame and installed into the refractory frame on the exposed face. 16mm fire rated plasterboard was installed to the inside of the steel frame and Shaftliner installed into the refractory frame from the unexposed face.

Materials		
1.2	Item	Concrete Pin Anchors
	Dimensions	6.5mm x 32mm
	Installation	Fixing top and bottom plates to refractory frame
1.3	Item	Steel Stud 0.50bmt
	Dimensions	Width x Height: 64mm x 1200mm
	Installation	Used to construct studs and nogs in steel frames
1.4	Item	Steel Track 0.50bmt
	Dimensions	Width x Height: 64mm x 1200mm
	Installation	Used to construct top and bottom plates
1.5	Item	Self-Tapping Screw
	Dimensions	10g x 16mm
	Installation	Used to construct steel stud frames
1.7	Item	FR Plasterboard
	Dimensions	Width x Height: 1200mm x 1200mm Thickness: 16mm
	Installation	1 layer installed to the interior of the steel studs on the unexposed side of the separating element

1.8	Item	Shaftliner Plasterboard
	Dimensions	Width x Height: 600mm x 1200mm Thickness: 25mm
	Installation	1 layer installed to the interior of the steel studs on the exposed side of the separating element
1.9	Item / Product Name	AGNI-Seal
	Installation	Used to between the wall linings and the refractory frame of the separating element

4.2 Specimens

Services		
2.1	Item	AGNI-Box
	Dimensions	Width x Height: 300mm x 151mm (OD)
	Construction	The AGNI-Box is constructed using 0.9bmt 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 material that are cut to size. The recessed space was fitted with 50mm thick foam to the both faces of the AGNI-Box.
2.2	Item	32x1.22 B 32mm Copper Pipe
	Dimensions	Diameter (OD): 34.2mm
		Diameter (ID): 31.1mm
		Wall Thickness: 1.65mm
2.3	Item	X-90 0.6/1 kV CU electrical cable
	Cable	Outer Diameter: 19.3mm
		Sheath Material: PVC
		Sheath Thickness: 1.98mm
	Core	Number of Cores: 3 (circular shaped)
		Outer Diameter: 6.64mm
		Conductor Diameter: 1.7mm
		Conductor Material: Copper
		Insulation Material: X-90 PVC
		Insulation Thickness: 1.04mm
	Earth	Outer Diameter: 4.57mm
		Conductor Diameter: 1.01mm
2.4	Item	Multicore Aluminium Flexible Rubber (Fixed Wiring) 4 Core + Earth Cable
	Cable	Outer Diameter: 30.5mm
		Sheath Material: E-Rubber S-20
		Sheath Thickness: 3.0mm

	Core	Number of Cores: 4 (circular shaped)
		Outer Diameter: 9.2mm
		Conductor Diameter: 0.53mm
		Conductor Material: Aluminium
		Insulation Material: LSFLEX R-70
		Insulation Thickness: 1.3mm
2.5	Item	100x1.63 B 100mm Copper Pipe
	Dimensions	Diameter (OD): 104.8mm
		Diameter (ID): 101.5mm
		Wall Thickness: 1.65mm
2.6	Item	50mm Steel Pipe
	Dimensions	Diameter (OD): 48.3mm
		Diameter (ID): 42.2mm
		Wall Thickness: 3.05mm
2.7	Item	Electrical Cable 450/750V 2C + E
	Cable	Width x Depth: 14mm x 6.5mm
		Sheath Material: 3V-90 PVC
		Sheath Thickness: 1.24mm
	Core	Number of Cores: 2 (circular shaped)
		Outer Diameter: 4mm
		Conductor Diameter: 0.85mm
		Conductor Material: Copper
		Insulation Material: V-90 PVC
		Insulation Thickness: 1.15mm
	Earth	Outer Diameter: 3.2mm
		Wire Diameter: 0.64mm
2.8	Item	DN100 PVC-U DWV Pipe
	Dimensions	Diameter (OD): 111.0mm
		Diameter (ID): 104.0mm
		Wall Thickness: 3.5mm

2.9	Item	Polyethylene Pair Coil Insulated Refrigeration Tube – Ardent Annealed Copper Tube
	Copper Tube 1	Diameter (OD): 19.05mm
		Diameter (ID): 16.77mm
		Wall Thickness: 1.14mm
	Copper Tube 2	Diameter (OD): 9.52mm
		Diameter (ID): 7.9mm
		Wall Thickness: 0.81mm
	Insulation	Thickness: 6.8mm
		Material: Polyethylene
2.10	Item	PVC-U 20mm Pipe
	Dimensions	Diameter (OD): 20.0mm
		Diameter (ID): 16.0mm
		Wall Thickness: 2.0mm
2.11	Item	Ardent Super Pair FR Rubber Insulated Fire Retardant Pair Coil
	Copper Tube 1	Diameter (OD): 15.88mm
		Diameter (ID): 13.84mm
		Wall Thickness: 1.02mm
	Copper Tube 2	Diameter (OD): 9.52mm
		Diameter (ID): 7.9mm
		Wall Thickness: 0.81mm
	Insulation	Thickness: 16mm
		Material: Fire rated closed cell rubber
2.12	Item	25mm PE-X Pipe
	Dimensions	Diameter (OD): 25.1mm
		Diameter (ID): 19.2mm
		Wall Thickness: 2.95mm

Sealants		
3.1	Item	AGNI-Seal
	Dimensions	600mL Sausage

3.2	Item	AGNI-Black
	Dimensions	310mL Cartridge

Intumescent		
4.1	Item	AGNI-Wrap 50
	Dimensions	Thickness: 3.5mm
4.2	Item	AGNI-Sleeve
	Dimensions	Width: 100mm Thickness: 3.5mm

Insulation		
5.1	Item	AGNI-Shield
	Dimensions	Width: 300mm - 450mm Thickness: 13mm

Fixings		
6.1	Item	AGNI-Strap
	Dimensions	Width x Height: 4.6mm x 450mm
	Installation	Used to secure AGNI-Shield to services
6.2	Item	90° Angle 1.83bmt
	Dimensions	Size: 30mm x 30mm Length: 200mm
	Installation	Used to secure AGNI-Box to Shaftliner / plasterboard wall
6.3	Item	Hex Head Screw
	Dimensions	12g x 40mm (to separating elelemnt)
	Installation	Used to secure 90° angle to AGNI-Box and Hebel wall

5. Test Results

5.1 Observations during the test

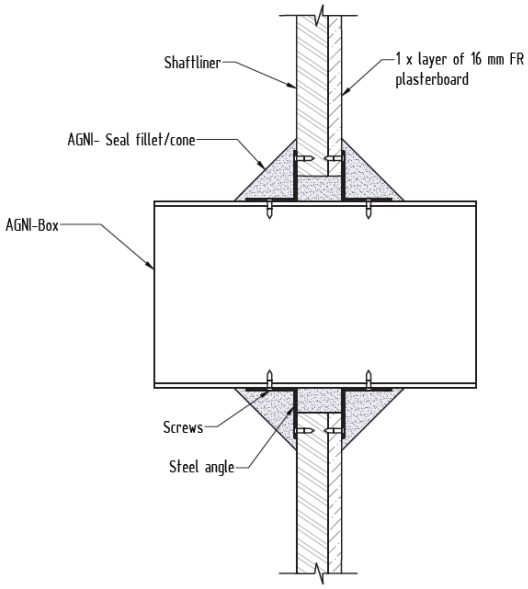
Time min	Test face	SP#	OBSERVATIONS/REMARKS
2	U	7	Smoke coming through from between the cables
41	U	1	Foam face beginning to expand
46	U	1	Smoke coming through from behind the foam face
67			**TEST DISCONTINUED**

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element

5.2 Specimen 1

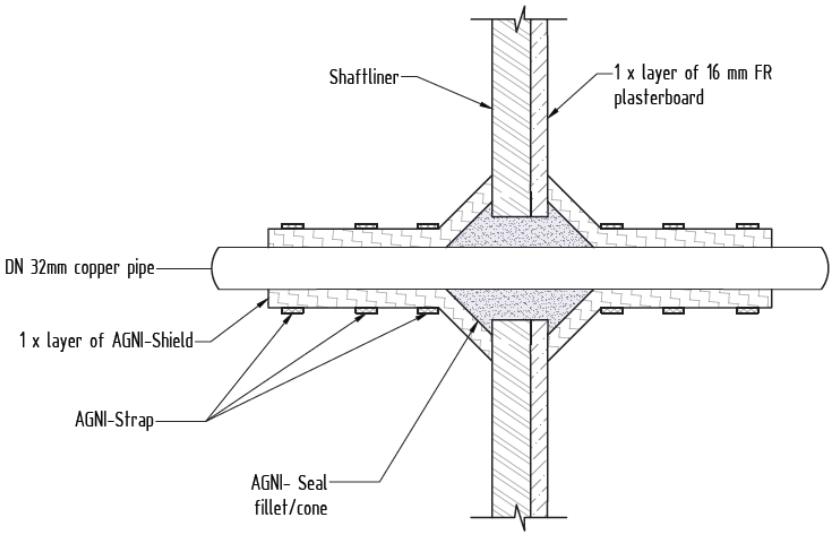


Service penetration details	
Service	AGNI-Box (empty)
Aperture Size	305mm x 162mm
Annular Spacing	Min: 3.2mm, Max: 6.8mm

Local Fire-stopping system	
Application	Symmetrical
Products	90° angle, AGNI-Seal
Procedure	1. 200mm long 30mm x 30mm 90° angle used at the top and the bottom of the AGNI-Box, secured to Hebel wall and the AGNI-Box using hex head screws at 50mm from each end. 2. 20mm (nominal) deep AGNI-Seal applied into annular gap around AGNI-Box (no sealant behind the angles). 3. Nominal 50mm x 50mm AGNI-Seal sealant cone applied around the AGNI-Box.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.3 Specimen 2

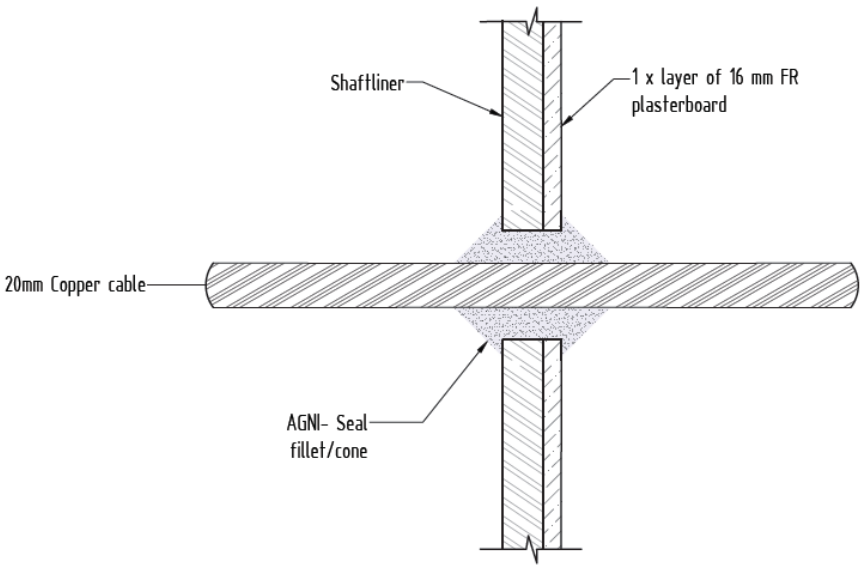


Service penetration details	
Service	Kembla NZS3501 2 32x1.22 B 32mm Copper Pipe
Aperture Size	53.1mm
Annular Spacing	Min: 7.3mm, Max: 11.6mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal, AGNI-Shield, AGNI-Strap
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service. 3. One layer of 300mm wide AGNI-Shield wrapped around service with 50mm overlap. 4. AGNI-Straps secure the AGNI-Shield to the pipe, positioned 50mm from each end and 150mm maximum spacing between each strap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.4 Specimen 3

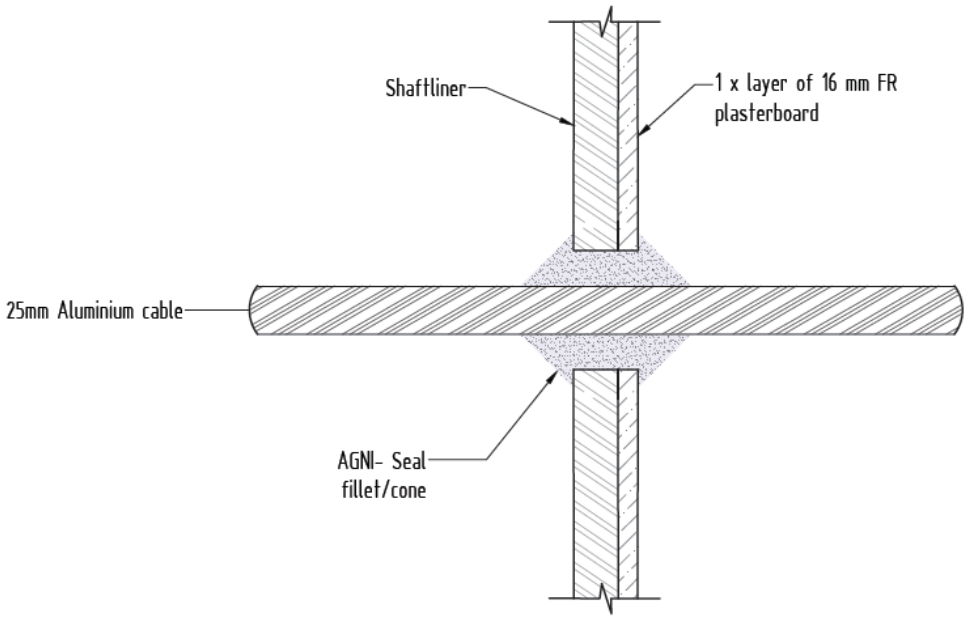


Service penetration details	
Service	X-90 0.6/1 kV CU electrical cable
Aperture Size	39.9mm
Annular Spacing	Min: 8.7mm, Max: 11.9mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	29 minutes

5.5 Specimen 4

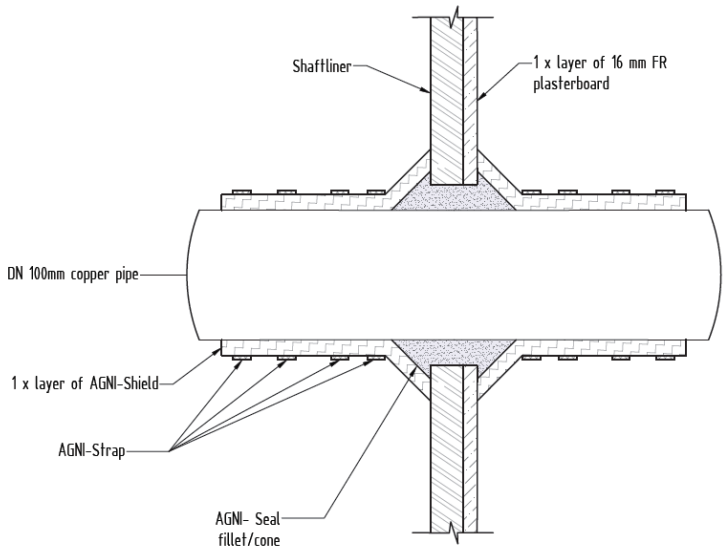


Service penetration details	
Service	25mm aluminium cable
Aperture Size	41.4mm
Annular Spacing	Min: 3.7mm, Max: 7.2mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.6 Specimen 5

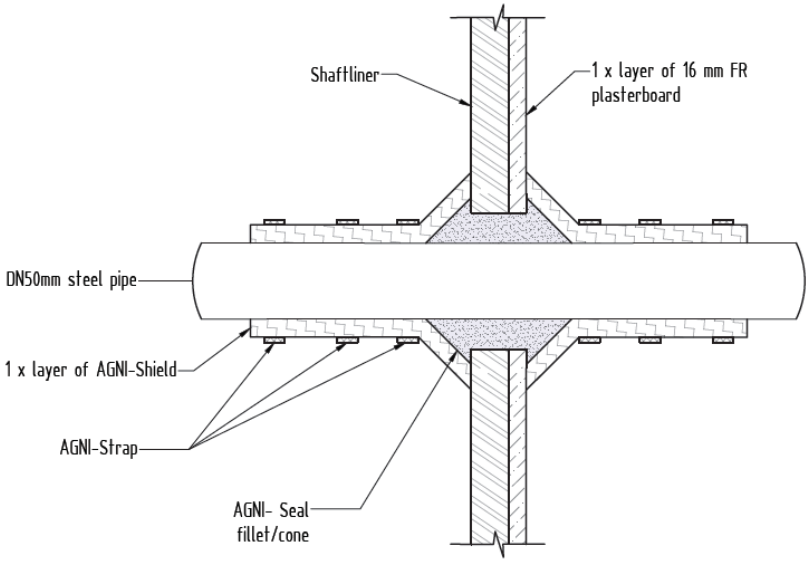


Service penetration details	
Service	Kembla NZS3501 2 100x1.63 B 100mm Copper Pipe
Aperture Size	122.1mm
Annular Spacing	Min: 5.0mm, Max: 6.1mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal, AGNI-Shield, AGNI-Strap
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service. 3. One layer of 450mm wide AGNI-Shield wrapped around service with 50mm overlap. 4. AGNI-Straps secure the AGNI-Shield to the pipe, positioned 50mm from each end and 150mm maximum spacing between each strap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	61 minutes

5.7 Specimen 6

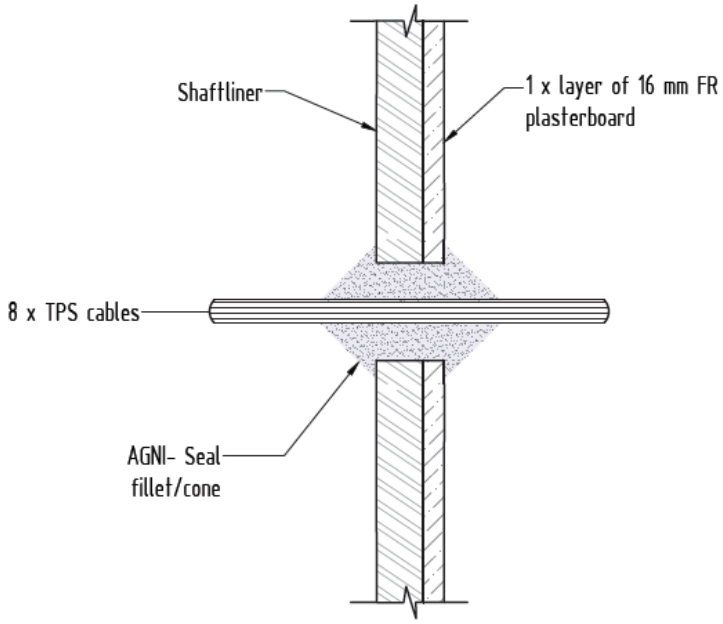


Service penetration details	
Service	50mm Steel Pipe
Aperture Size	68.2mm
Annular Spacing	Min: 8.1mm, Max: 11.8mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal, AGNI-Shield, AGNI-Strap
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service. 3. One layer of 300mm wide AGNI-Shield wrapped around service with 50mm overlap. 4. AGNI-Straps secure the AGNI-Shield to the pipe, positioned 50mm from each end and 150mm maximum spacing between each strap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.8 Specimen 7

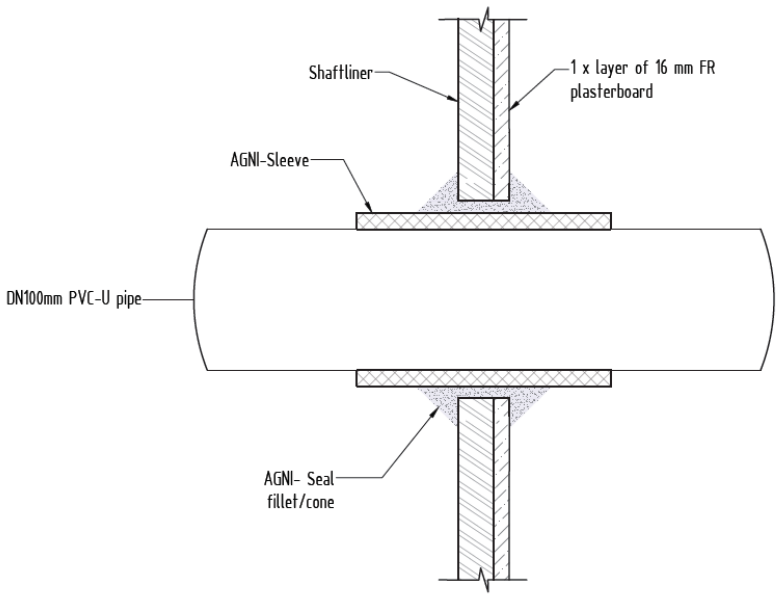


Service penetration details	
Service	Electrical Cable 450/750V 2C + E (bundle of 8)
Aperture Size	54.1mm
Annular Spacing	Min: 6.8mm, Max: 10.5mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Seal
Procedure	1. AGNI-Seal applied into annular gap around service full depth of the wall. 2. 30mm x 30mm AGNI-Seal sealant cone applied around the service.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	63 minutes

5.9 Specimen 8

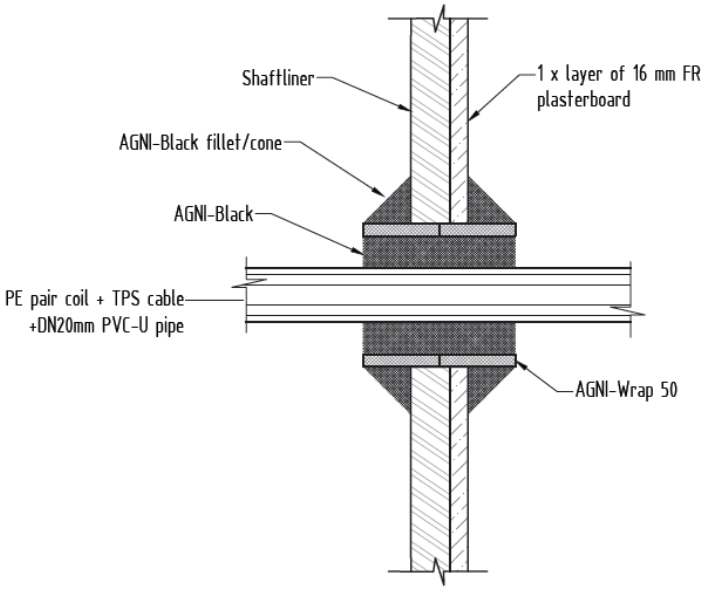


Service penetration details	
Service	DN100 PVC-U DWV Pipe
Aperture Size	127.8mm
Annular Spacing	Min: 5.9mm, Max: 10.9mm

Local Fire-stopping system	
Application	Asymmetrical
Products	AGNI-Sleeve, AGNI-Seal
Procedure	1. One revolution of 100mm wide AGNI-Sleeve wrapped around service and pushed through the aperture, finishing 30mm past each side of the lining. 2. 10mm (nominal deep) AGNI-Seal applied between AGNI-Sleeve and service, finishing flush with the top of the AGNI-Sleeve. 3. 30mm x 30mm AGNI-Seal sealant cone applied around AGNI-Sleeve.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	15 minutes

5.10 Specimen 9

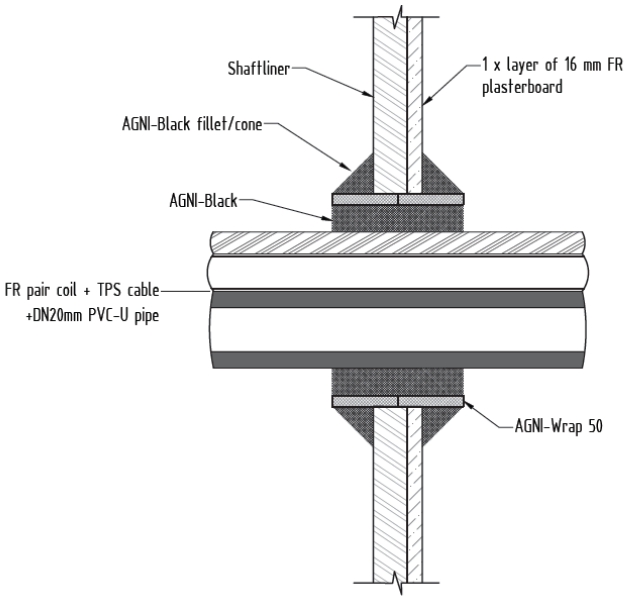


Service penetration details	
Service	Polyethylene Pair Coil Insulated Refrigeration Tube **+** Electrical Cable 450/750V 2C + E **+** 20mm PVC Pipe
Aperture Size	90.9mm
Annular Spacing	Min: 8.2mm, Max: 27.3mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Wrap 50, AGNI-Black
Procedure	1. One revolution of AGNI-Wrap 50 inserted 20mm deep into the annular gap against the separating element. 2. AGNI-Black applied between AGNI-Wrap 50 and service, finishing flush with the top of the AGNI-Wrap 50. 3. 30mm x 30mm AGNI-Black sealant cone around the AGNI-Wrap 50.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.11 Specimen 10

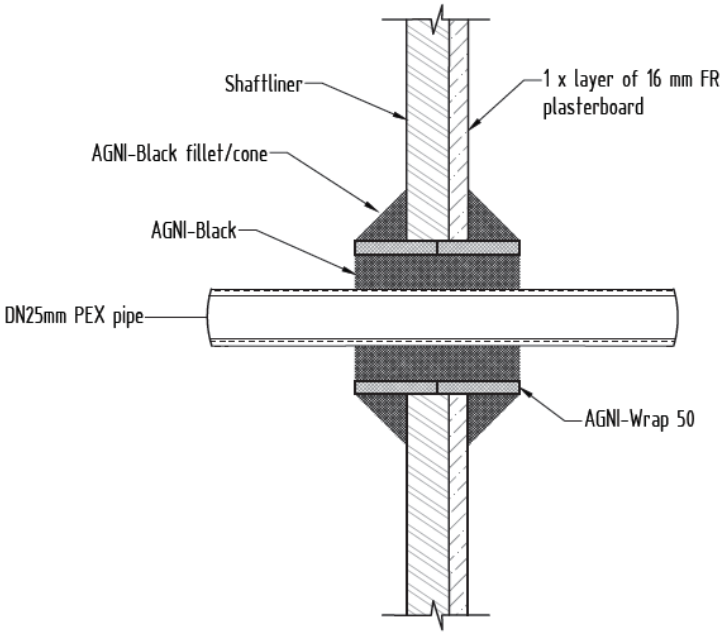


Service penetration details	
Service	Ardent Super Pair FR Rubber Insulated Fire Retardant Pair Coil **+** Electrical Cable 450/750V 2C + E **+** 20mm OVC-U Pipe
Aperture Size	128.2mm
Annular Spacing	Min: 8.3mm, Max: 37.5mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Wrap 50, AGNI-Black
Procedure	1. One revolution of AGNI-Wrap 50 inserted 20mm deep into the annular gap against the separating element. 2. AGNI-Black applied between AGNI-Wrap 50 and service, finishing flush with the top of the AGNI-Wrap 50. 3. 30mm x 30mm AGNI-Black sealant cone around the AGNI-Wrap 50.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

5.12 Specimen 11



Service penetration details	
Service	DN25 PE-X Pipe
Aperture Size	56.1mm
Annular Spacing	Min: 12.3mm, Max: 18.7mm

Local Fire-stopping system	
Application	Symmetrical
Products	AGNI-Wrap 50, AGNI-Black
Procedure	1. One revolution of AGNI-Wrap 50 inserted 20mm deep into the annular gap against the separating element. 2. AGNI-Black applied between AGNI-Wrap 50 and service, finishing flush with the top of the AGNI-Wrap 50. 3. 30mm x 30mm AGNI-Black sealant cone around the AGNI-Wrap 50.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 67 minutes
Insulation	No failure at 67 minutes

6. Photos

6.1 Photos before the test

Figure 1 - Unexposed face prior to test commencement

Figure 2 - Exposed face prior to test commencement