Regulatory Information Report

RIRF24080

Fire resistance test for penetrations through the horizontal separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	27/08/2024
Test number:	RIRF24080

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Table of Contents

1.1 Document revision schedule

Revision #	Date	Description
1	27/08/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		27/08/2024
Authorised by:	Andrew Bain (Authorized signatory)		27/08/2024

ACCREDITED
IANZ
TESTING LABORATORY

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

2. Report Summary

Service penetrations were tested passing through a horizontal separating element consisting of 1 layer of 16mm FR Plasterboard on exposed side (ceiling) and 1 layer of 17mm structural plywood on the unexposed side (floor), fitted to a 190x45mm (nominal) timber frame. Glass wool insulation was inserted into the cavity for specimen 1.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	DN100 PVC Pipe	60NF	60NF	-/60/60
2	DN100 PVC Pipe	60NF	60NF	-/60/60
3	DN100 PVC Pipe	60NF	60NF	-/60/60
4	DN16 Pex Pipe	60NF	60NF	-/60/60
5	DN25 Pex Pipe	60NF	60NF	-/60/60
6	DN40 Pex Pipe	60NF	60NF	-/60/60
7	50mm Flexible Conduit (filled - 6 x TPS Cables)	60NF	60NF	-/60/60
8	50mm Flexible Conduit (empty)	60NF	60NF	-/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

Resistance to the incipient spread of fire (RISF) is excluded from the scope of the test

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. Pipes were capped from exposed side only.

Testing date:

08/08/2024

Installation completion date:

29/07/2024

Termination of The Test:

The test was discontinued at 60 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 PF24080. 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	190x45mm (nominal) timber frame with 1 layer of 16mm FR Plasterboard fitted to the exposed side of the frame (ceiling) and 1-layer 17mm structural plywood fitted to the unexposed side of the frame (floor).
	Dimensions	Width / Height (W/H): 1200mm × 1200mm

Materials		
1.2	Item / Product Name	Timber Framing
	Dimensions	Width / Thickness (W/T): 190mm × 45mm (nominal)
	Installation	Used to construct timber frame
1.5	Item / Product Name	FR Plasterboard
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Thickness (T): 16mm
	Installation	1 layer fitted to the exposed side of the timber framing (ceiling)
1.6	Item / Product Name	41mm Self Tapping Screw
	Dimensions	6g x 41mm
	Installation	Used to fix plasterboard and plywood to timber frame
1.7	Item / Product Name	Structural Plywood
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Thickness (T): 17mm
	Installation	1 layer fitted to the unexposed side of the timber framing (floor)

4.2 Specimens

Services		
2.1	Item / Product Name	DN100 PVC-U DWV PIPE
	Dimensions	Inner Diameter (ID): 103mm

		Outer Diameter (OD): 110mm
		Thickness (T): 3.5mm
2.2	Item / Product Name	DN16 PEX PIPE
	Dimensions	Inner Diameter (ID): 12mm
		Outer Diameter (OD): 17mm
		Thickness (T): 2.5mm
2.3	Item / Product Name	DN25 PEX PIPE
	Dimensions	Inner Diameter (ID): 19mm
		Outer Diameter (OD): 25mm
		Thickness (T): 3mm
2.4	Item / Product Name	DN40 PE-X Pipe
	Dimensions	Inner Diameter (ID): 28mm
		Outer Diameter (OD): 40mm
		Thickness (T): 6mm
2.5	Item / Product Name	PVC-U FLEXIBLE CONDUIT
	Dimensions	Inner Diameter (ID): 40mm
		Outer Diameter (OD): 50mm
		Thickness (T): 5mm
2.6	Item / Product Name	ELECTRICAL CABLE 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

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL
	Installation	Unexposed face – in annular gap to the depth of the lining (17mm)

		Exposed face – between separating element and AGNI-Sleeve

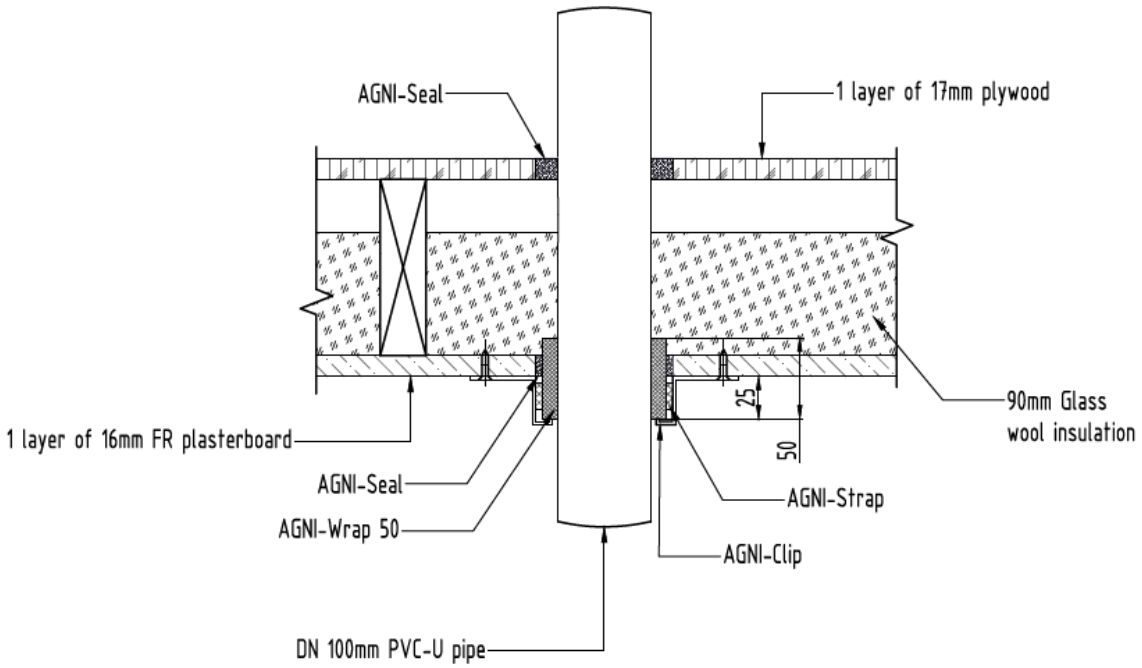
Fixings		
4.1	Item / Product Name	AGNI-Strap – Stainless Steel Tie
	Dimensions	Width / Length (W/L): 4.6mm × 200mm
	Installation	Used to fix AGNI-Wrap around pipe
4.2	Item / Product Name	AGNI-Clip
	Installation	Used to fix AGNI-Wrap to separating element
4.3	Item / Product Name	25mm GIB Grabber Self Tapping Screw
	Dimensions	6g x 25mm
	Installation	Used to fix AGNI-Clip to separating element

Intumescent		
5.1	Item / Product Name	AGNI-Wrap 50
	Dimensions	Width (W): 50mm
		Thickness (T): 3.5mm
	Installation	Installed around services, exposed side only
5.2	Item / Product Name	AGNI-Wrap 50
	Dimensions	Width (W): 50mm
		Thickness (T): 4.5mm
	Installation	Installed around service three, exposed side only
5.3	Item / Product Name	AGNI-Wrap 50
	Dimensions	Width (W): 50mm
		Thickness (T): 2.5mm
	Installation	Installed around service three, exposed side only

Insulation		
6.1	Item / Product Name	90mm glass wool insulation
	Rating	R2.2
	Installation	Installed into cavity for specimens one and nine

5. Test Results

5.1 Specimen 1



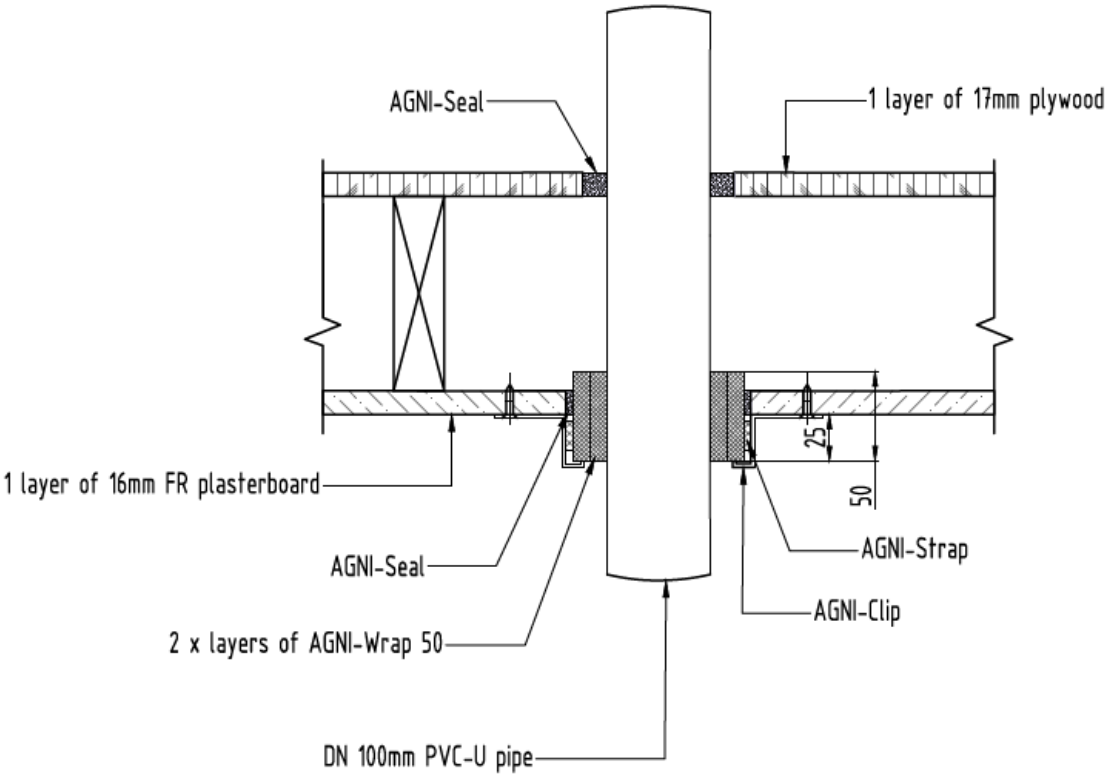
Service penetration details	
Service	DN100 PVC-U DWV Pipe
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	120mm
Annular Spacing	Min: 2.3mm Max: 7.6mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Cavity** – 90mm glass wool insulation was installed into cavity **Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed:

	1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element. 2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.2 Specimen 2



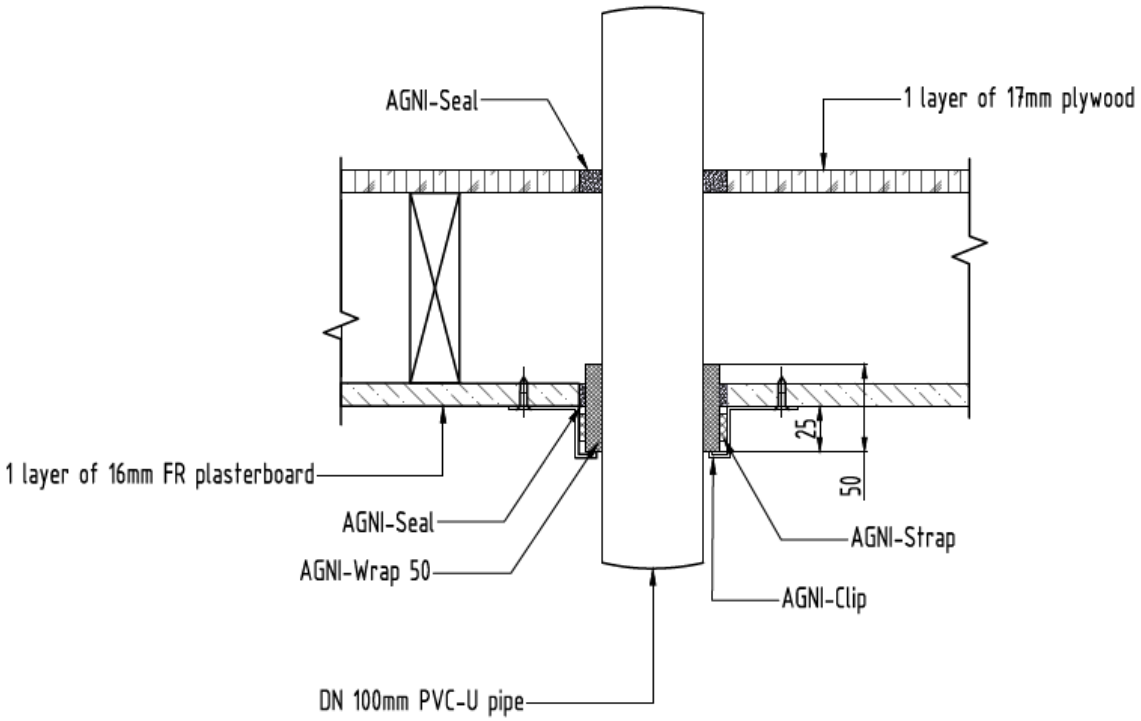
Service penetration details	
Service	DN100 PVC-U DWV Pipe
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	120mm
Annular Spacing	Min: 1.0mm Max: 9.0mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed:

	1. Two revolutions of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element. 2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.3 Specimen 3



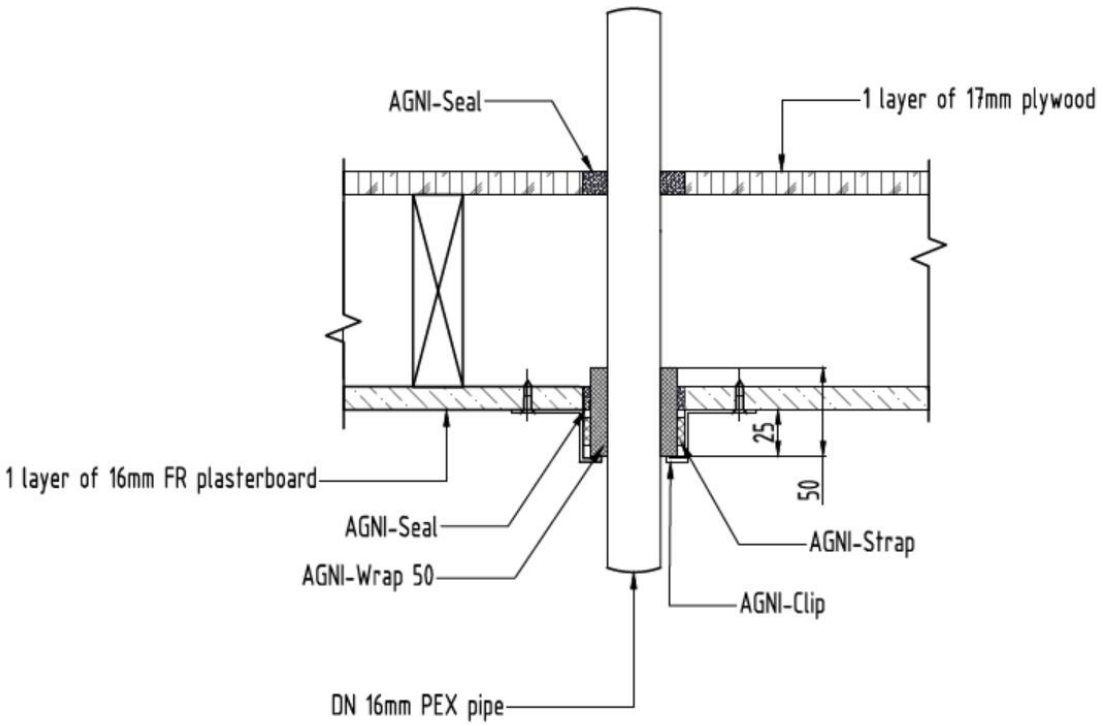
Service penetration details	
Service	DN100 PVC-U DWV Pipe
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	120mm
Annular Spacing	Min: 4.5mm Max: 5.4mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed: 1. One revolution of 4.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element.

	2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.4 Specimen 4



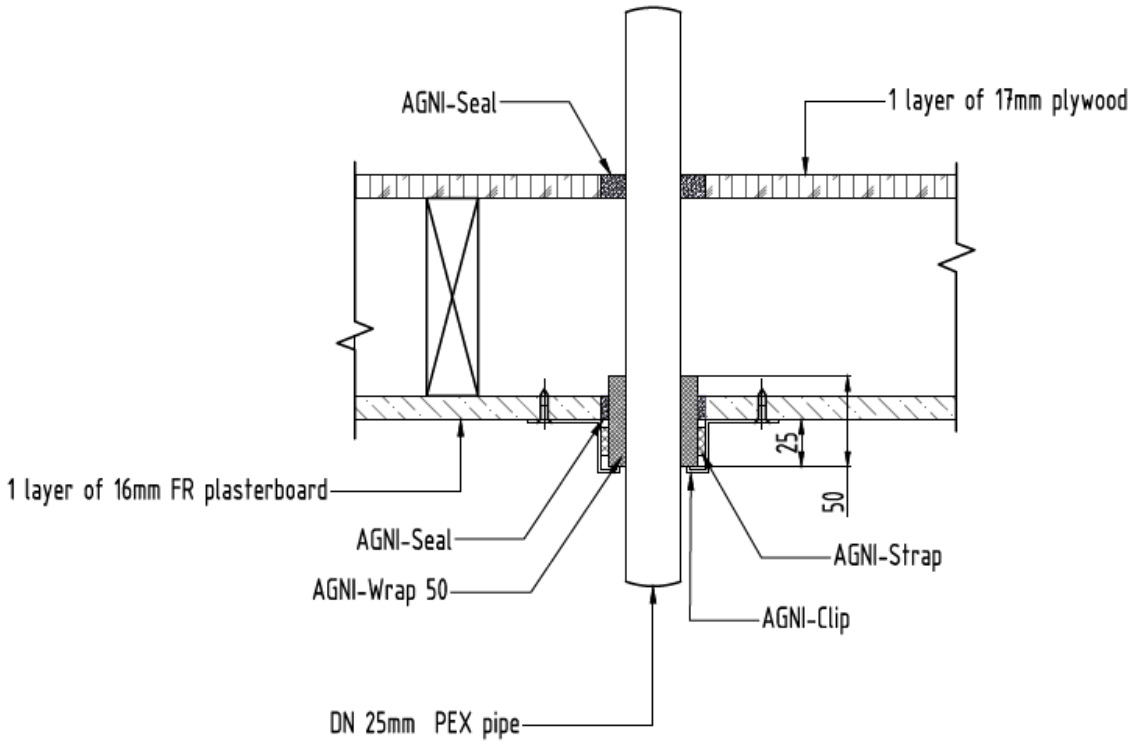
Service penetration details	
Service	DN16 PEX PIPE
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	25mm
Annular Spacing	Min: 2.5mm Max: 5.6mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element.

	2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.5 Specimen 5



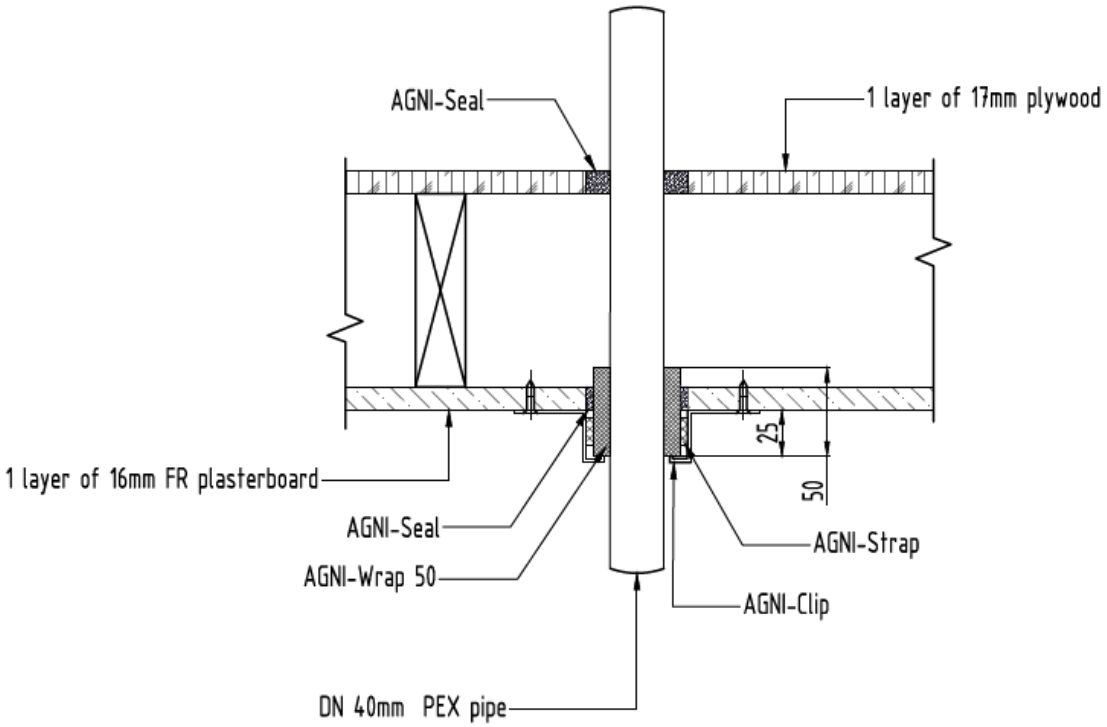
Service penetration details	
Service	DN25 PEX PIPE
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	36mm
Annular Spacing	Min: 4.0mm Max: 7.0mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element.

	2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.6 Specimen 6



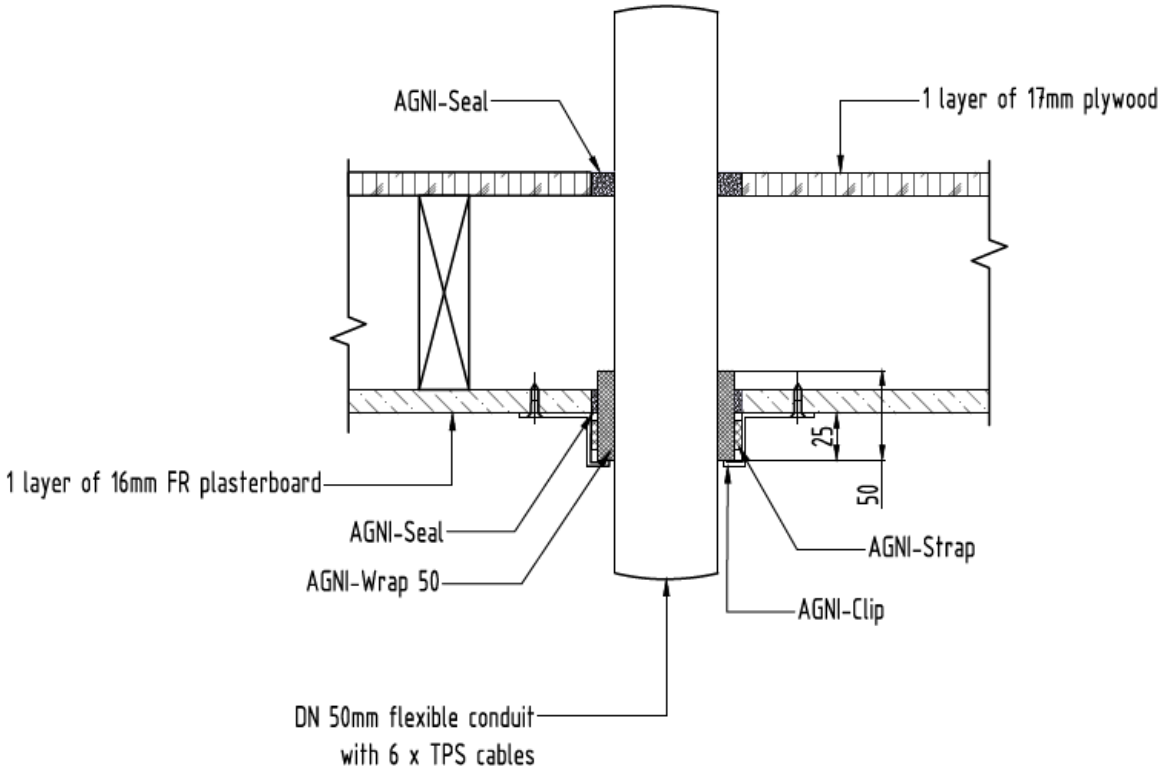
Service penetration details	
Service	DN40 PE-X PIPE
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	54mm
Annular Spacing	Min: 5.0mm Max: 7.8mm

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element.

	2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.7 Specimen 7



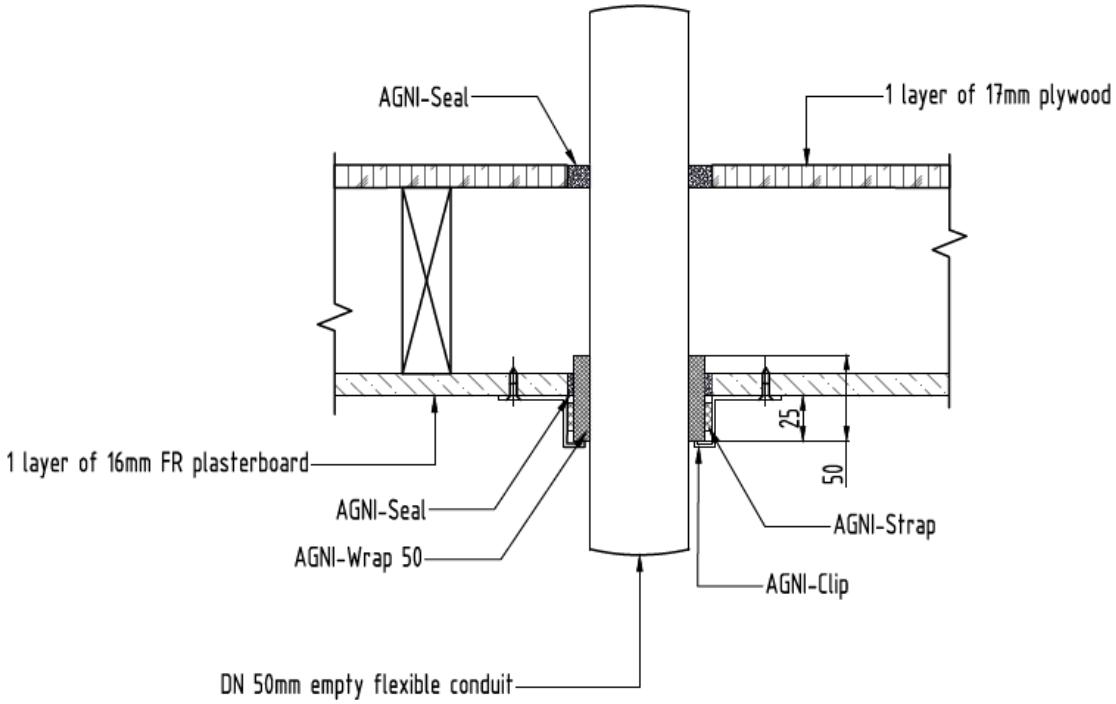
Service penetration details	
Service	50mm FLEXIBLE CONDUIT – filled with 6 x TPS cables
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	60mm
Annular Spacing	Min: 3.4mm Max: 7.1

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed:

	1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element. 2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

5.8 Specimen 8



Service penetration details	
Service	50mm FLEXIBLE CONDUIT – empty
Service Support	Unistrut structure at 480mm and 1480mm
Aperture Diameter	60mm
Annular Spacing	Min: 4.6mm Max: 6.1

Local Fire-stopping system	
Application	Asymmetrical
System description	**Unexposed face** – The following procedure was followed: 1. AGNI-Seal was applied into the annular space to depth of the lining (17mm nominal), it finished flush with face of the separating element. **Exposed face** – The following procedure was followed: 1. One revolution of 3.5mm thick AGNI-Wrap was inserted 25mm into aperture leaving 25mm past the separating element.

	2. The AGNI-Wrap was then secured with AGNI-Strap at the centre of the AGNI-Wrap. 3. Two AGNI-Clips were used to secure AGNI-Wrap to the separating element. 4. A bead of AGNI-Seal (5mm) was applied between the separating element and AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 60 minutes
Insulation	No failure at 60 minutes

6. Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
1	U	7	Smoke escaping from sealant around pipe
4	U	1	Pipe collapsing onto SE
4	U	3	Pipe dropping into aperture
7	U	5	Pipe dropping into aperture
9	U	6	Pipe dropping into aperture
9	U	3	Sealant expanding
14	U	6	Smoke escaping from sealant around pipe
15	E	ALL	Service detached from SE, intumescent expanded
17	U	1	Smoke from pipe, discolouration of SE
17	U	3	Smoke from crack in sealant
32	U	3	Sealant discolouring
32	U	2	Smoke escaping from crack in sealant around pipe
36	U	5	Smoke escaping from sealant around pipe
47	U	6	Sealant expanding
54	U	3	Pipe collapsing onto SE
60			**TEST DISCONTINUED**

NOTE: **E - Exposed Face (inside furnace)**
U - Unexposed Face (outside furnace)
SE - Separating element

7. Photos

7.1 Photos before the test

Figure 1 – Exposed face prior to test commencement

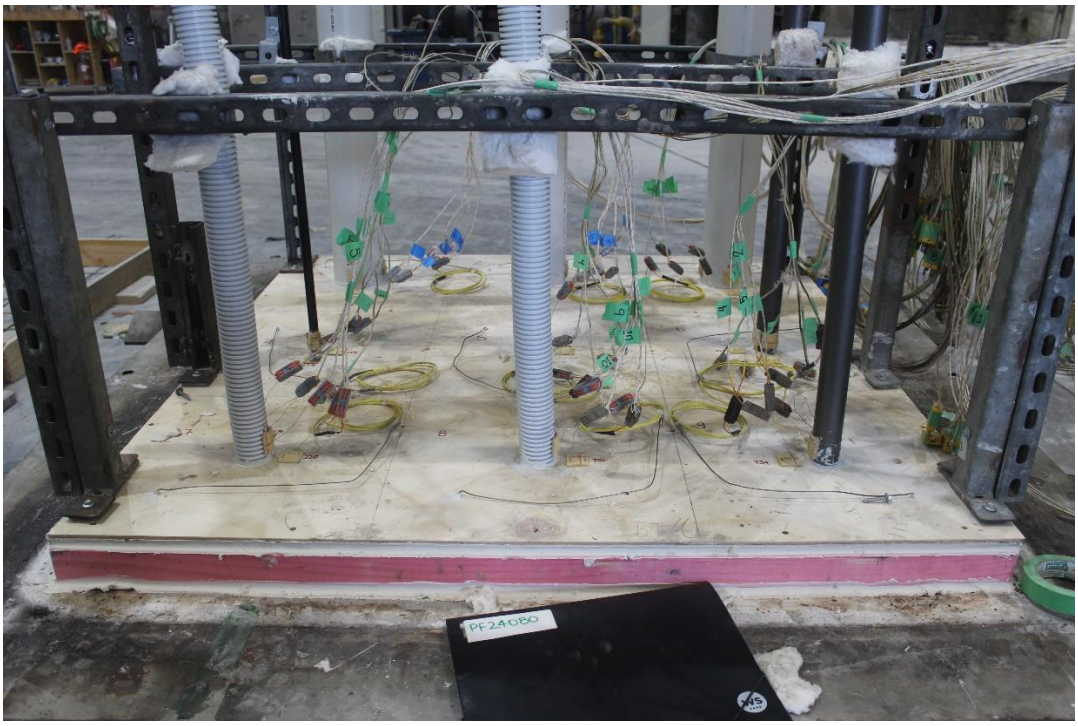


Figure 2 – Unexposed face prior to test commencement