Regulatory Information Report

RIRF24078

Fire resistance test for penetrations through a vertical separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	14/08/2024
Test number:	PF24078

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	14/08/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		14/08/2024
Authorised by:	Andrew Bain (Authorized signatory)		14/08/2024

ACCREDITED
IANZ
TESTING LABORATORY

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

2. Report Summary

Service penetration was tested passing through 1 layer of 13mm FR Plasterboard on each side of a 92mm (nominal) steel frame.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
2	DN32 Copper Pipe	66 NF	66 NF	-/60/60
3	25mm Flexible Conduit (filled – 3 x TPS Cables)	66 NF	60	-/60/60
4	DN100 Copper Pipe	66 NF	39	-/60/30
5	60mm Steel Pipe	66 NF	66	-/60/60
7	DN150 Copper Pipe	66 NF	51	-/60/45
8	DN40 PE-Xa Pipe	66 NF	62	-/60/60

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 Client. 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:

23/07/2024

Installation completion date:

14/07/2024

Termination of The Test:

The test was discontinued at 66 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 PF24078. 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	92mm (nominal) steel stud frame with one layer of 13mm FR Plasterboard fitted to each side of the frame
	Dimensions	Width / Height (W/H): 1200mm × 1200mm

Materials		
1.2	Item / Product Name	Concrete Pin Anchors
	Dimensions	6.5mm x 32mm
	Installation	Used to fix top and bottom plates to refractory frame
1.3	Item / Product Name	Steel Stud
	Dimensions	Width / Height (W/H): 92mm x 1200mm
	Installation	Used to construct studs in steel frame
1.4	Item / Product Name	Steel Track
	Dimensions	Width / Height (W/H): 92mm x 1200mm
	Installation	Used to construct top and bottom plates in steel frame, also used for nogs
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	Applied to each face of the frame to create separating element
1.7	Item / Product Name	GIB Grabber Self Tapping Screw
	Dimensions	41mm
	Installation	Used to secure plasterboard to frame

4.2 Specimens

Services		
2.2	Item / Product Name	32DN Copper pipe
	Dimensions	Inner Diameter (ID): 32mm
		Outer Diameter (OD): 34mm
		Thickness (T): 1mm
2.3	Item / Product Name	Flexible Conduit (filled with 3 x TPS cables)
	Dimensions	Inner Diameter (ID): 19mm
		Outer Diameter (OD): 25mm
		Thickness (T): 3mm
2.4	Item / Product Name	100DN Copper pipe
	Dimensions	Inner Diameter (ID): 98.5mm
		Outer Diameter (OD): 104.5mm
		Thickness (T): 3mm
2.5	Item / Product Name	Steel Pipe
	Dimensions	Inner Diameter (ID): 53.5mm
		Outer Diameter (OD): 60.5mm
		Thickness (T): 3.5mm
2.6	Item / Product Name	DN40 PE-Xa Pipe
	Dimensions	Inner Diameter (ID): 28mm
		Outer Diameter (OD): 40mm
		Thickness (T): 6mm
2.7	Item / Product Name	150 DN Copper pipe
	Dimensions	Inner Diameter (ID): 148mm
		Outer Diameter (OD): 153mm
		Thickness (T): 2.5mm
2.8	Item / Product Name	$2.5mm^2$ × 2C+E Flat TPS Cable
	Dimensions	Width / Height (W/H): 12mm × 5.5mm

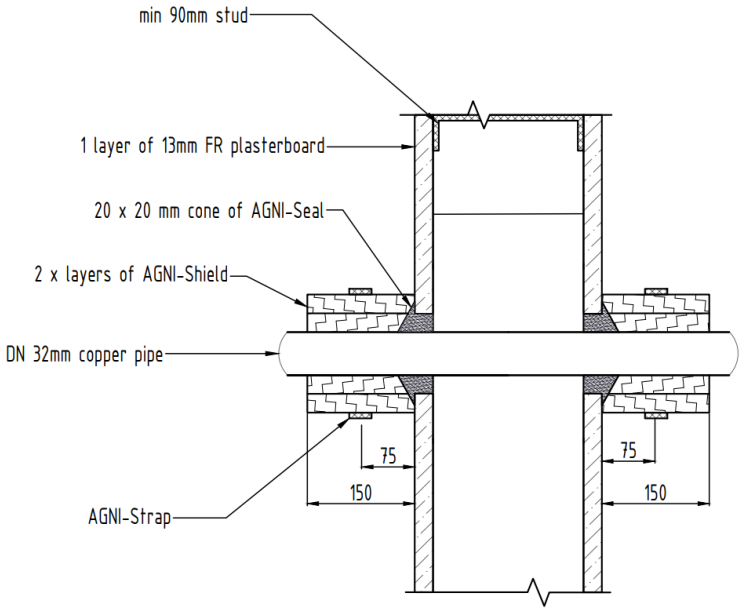
Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	600mL Sausage
	Installation	Seal separating element and sleeve/wrap, AGNI-Box and pipes

Fixings		
4.1	Item / Product Name	Stainless Steel Cable Tie
	Dimensions	Width / Length (W/L): 4.6mm × 200mm
	Installation	Used to fix AGNI-Sleeve, AGNI-Shield and AGNI-Wrap around pipe

Intumescent materials		
9.1	Item	AGNI-Sleeve
	Dimensions	Width (W): 125mm
		Thickness (T): 3.5mm
	Installation	Installed around some services, passed through separating element for specimen 8
9.2	Item	AGNI-Shield – foil faced ceramic wool blanket
	Dimensions	Width (W): 150mm, 300mm & 450mm
		Thickness (T): 3.5mm
	Installation	Installed around some services, finished flush with separating element
9.3	Item	AGNI-Wrap 50
	Dimensions	Width (W): 50mm
		Thickness (T): 3.5mm
	Installation	Installed around some services, passed through separating element for specimen 8

5. Test Results

5.1 Specimen 2

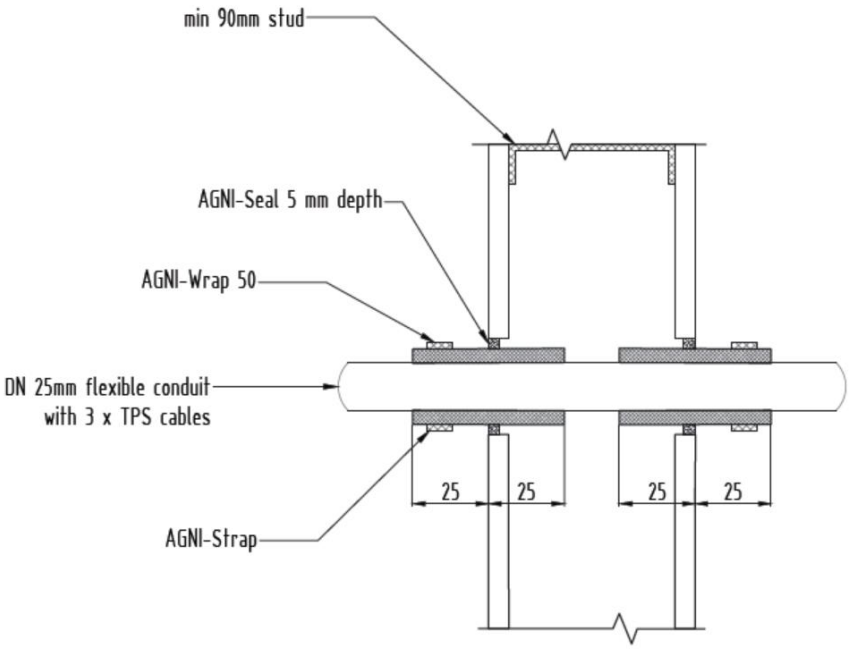


Service penetration details	
Service	DN32 Copper Pipe
Service Support	Exposed Face at 300mm Unexposed Face - Unistrut structure at 385mm
Aperture Diameter	44mm
Annular Spacing	2-10mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	20mm x 20mm AGNI-Seal cone around pipe, 2 revolutions of 150mm AGNI-Shield around pipe, one AGNI-Strap used to secure AGNI-Shield at 75mm from the wall.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	No failure at 66 minutes

5.2 Specimen 3

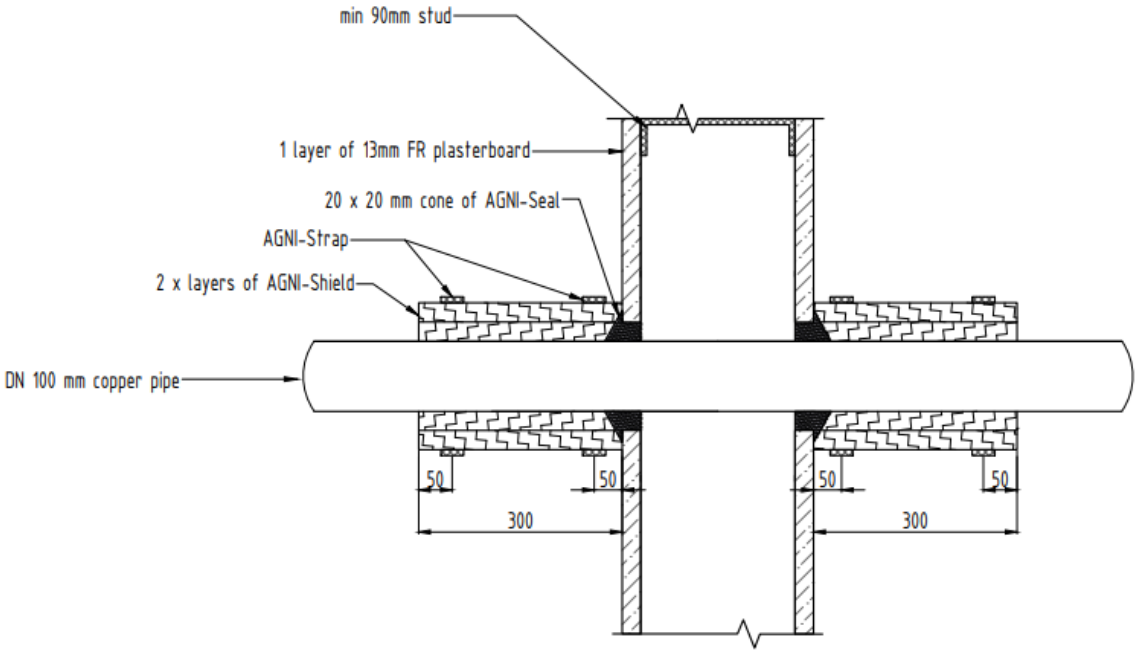


Service penetration details	
Service	25mm Flexible Conduit filled with 3 TPS cables
Service Support	Exposed Face – Unistrut structure at 220mm Unexposed Face - Unistrut structure at 540mm
Aperture Diameter	35mm
Annular Spacing	3-7mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Wrap 50 inserted 25mm into aperture with 25mm past the separating element, AGNI-Strap used to secure AGNI-Wrap, bead of AGNI-Seal (5mm) used to seal between separating element and the AGNI-Wrap.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	60 minutes

5.3 Specimen 4

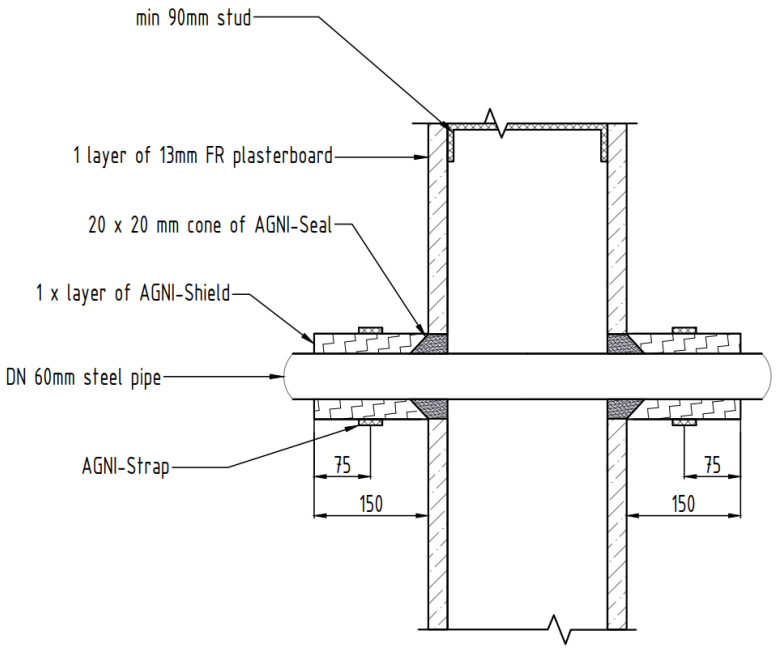


Service penetration details	
Service	DN100 Copper Pipe
Service Support	Exposed Face – Unistrut structure at 220mm Unexposed Face - Unistrut structure at 540mm
Aperture Diameter	115mm
Annular Spacing	2-10mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	20mm x 20mm AGNI-Seal cone around pipe, 2 revolutions of 300mm AGNI-Shield around pipe, AGNI-Strap used to secure AGNI-Shield, placed 50mm from each end of the AGNI-Shield.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	39 minutes

5.4 Specimen 5

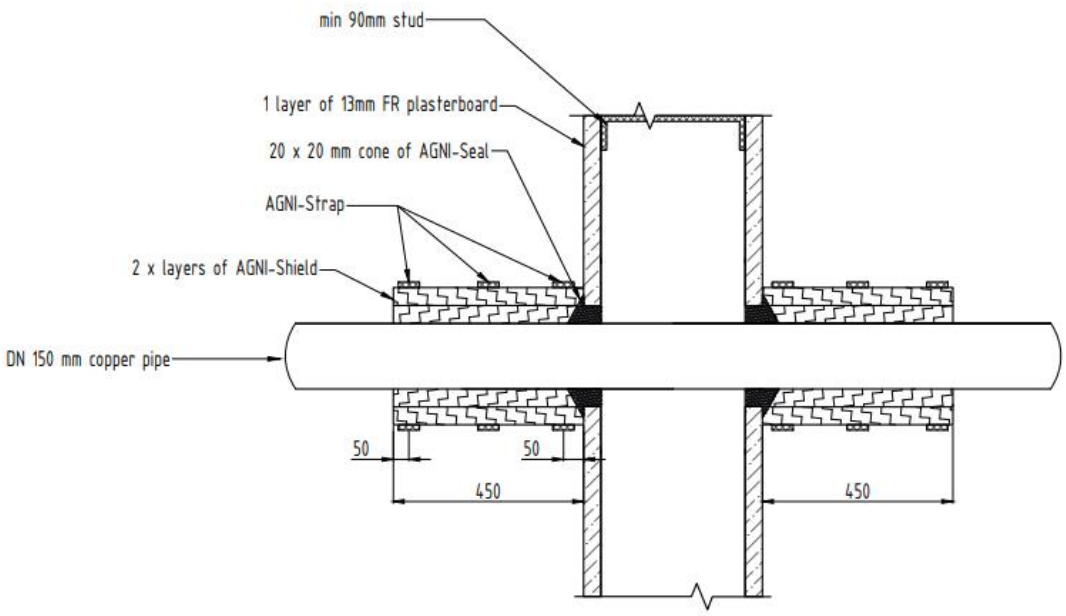


Service penetration details	
Service	60mm Steel Pipe
Service Support	Exposed Face – Unistrut structure at 220mm Unexposed Face - Unistrut structure at 540mm
Aperture Diameter	70mm
Annular Spacing	2-8mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	20mm x 20mm AGNI-Seal cone around pipe, 2 revolutions of 150mm AGNI-Shield around pipe, AGNI-Strap used to secure AGNI-Shield, placed at the centre of the AGNI-Shield.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	66 minutes

5.5 Specimen 7

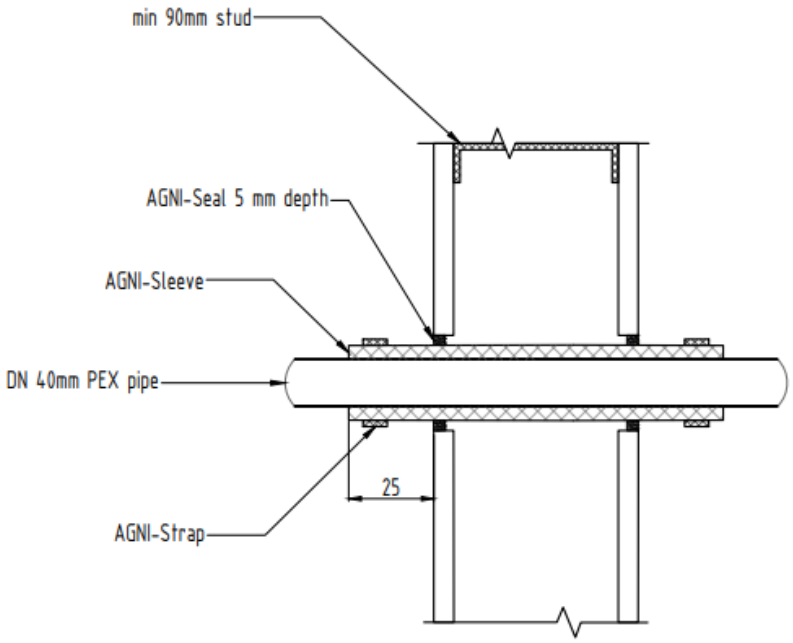


Service penetration details	
Service	DN150 Copper Pipe
Service Support	Exposed Face –at 230mm Unexposed Face – Unistrut at 535mm and 1520mm
Aperture Diameter	160mm
Annular Spacing	3.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	20mm x 20mm AGNI-Seal cone around pipe, 2 revolutions of 450mm AGNI-Shield around pipe, AGNI-Strap used to secure AGNI-Shield, placed 50mm from each end of the wrap and additional strap installed mid length of the AGNI-Shield.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	51 minutes

5.6 Specimen 8



Service penetration details	
Service	DN40 PEX Pipe
Service Support	Exposed Face – at 230mm Unexposed Face – Unistrut at 535mm and 1520mm
Aperture Diameter	54mm
Annular Spacing	2-8mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Sleeve inserted through separating element 25mm past the separating element on each side, AGNI-Strap used to secure AGNI-Sleeve on both side, bead of AGNI-Seal (5mm) applied between separating element and sleeve.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 66 minutes
Insulation	62 minutes

6. Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
21	U	6	Pipe deflected downward approximately 300mm from SE
24	U	3	Pipe discoloured from sleeve to TC22 and TC23
31	U	6	AGNI-Wrap expanded
38	U	8	Pipe bowing at about 400mm from SE
59	U	4, 7	SE around aperture discoloured. Sealant expanded between SE and wrap at right hand side of specimen
64	U	6	Pipe broke and detached from SE
65	U	2, 5	Sealant between SE and wrap expanded
66			Test discontinued

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element