

## Regulatory Information Report

**RIRF24086**

**Fire resistance test for penetrations through a  
vertical separating element (Cross Laminated  
Timber)**

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	03/09/2024
Test number:	RIRF24086




# Table of Contents

1.1	Document revision schedule .....	3
1.2	Signatories .....	3
2.	Report Summary.....	4
3.	General Information .....	5
3.1	Testing Scope .....	5
3.2	Contact Details.....	5
3.3	Specimen Preparation, Conditioning and Timeline .....	6
3.4	Use of the Report.....	6
4.	Specimen Description.....	7
4.1	Supporting Construction.....	7
4.2	Specimens .....	7
5.	Test Results.....	10
5.1	Specimen A.....	10
5.2	Specimen C.....	11
5.3	Specimen D.....	12
5.4	Specimen E.....	13
5.5	Specimen F .....	14
5.6	Specimen G .....	15
5.7	Specimen H.....	16
5.8	Specimen I .....	17
6.	Observations during the test.....	18
7.	Photos .....	19
7.1	Photos before the test .....	19

## 1.1 Document revision schedule

Revision #	Date	Description
1	03/09/2024	Issued to Client

## 1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		03/09/2024
Authorised by:	Andrew Bain (Authorized signatory)		03/09/2024



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



## 2. Report Summary

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Service penetrations were tested passing through a vertical separating element consisting of one 100mm thick cross laminated timber panel.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
A	Two 50mm AGNI-Board	72NF	72NF	-/60/60
C	50mm Steel Pipe	72NF	72NF	-/60/60
D	One cable bundle of eight TPS cables	72NF	64	-/60/60
E	80mm PVC-U Pipe	72NF	72NF	-/60/60
F	32mm PVC-U Pipe	72NF	72NF	-/60/60
G	25mm Flexi Conduit with 3 TPS cables inside	72NF	72NF	-/60/60
H	25mm Pex pipe	72NF	72NF	-/60/60
I	16mm Pex pipe	72NF	72NF	-/60/60

**NF – No failure during the test**

## 3. General Information

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### 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](mailto:tests@firelab.co.nz)

**Client/Applicant:**

Agnitek Pty Ltd

8 Clare St, Bayswater, VIC, 3153

Australia

Contact e-mail: [info@agnitek.com.au](mailto:info@agnitek.com.au)

**Manufacturer/supplier:**

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 in fire side only.

#### **Testing date:**

15/08/2024

#### **Installation completion date:**

07/08/2024

#### **Termination of The Test:**

The test was discontinued at 72 minutes.

### 3.4 Use of the Report

This report shall not be reproduced, except in full.

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	Cross Laminated Timber panel (CLT)
	Dimensions	Width / Height / Thickness (W/H/T): 1200mm x 1200mm x 100mm
	Installation	100mm thick CTL Panel was installed in refractory frame

### 4.2 Specimens

Services		
2.1	Item / Product Name	AGNI-Board
	Dimensions	Width / Length / Thickness (W/L/T): 350mm x 300mm x 50mm (Cut in the test)
2.2	Item / Product Name	AGNI-BOX 300 (25)
	Dimensions	Length / Width / Height (L/W/H): 300mm x 200mm x 200mm
2.3	Item / Product Name	50mm Steel Pipe
	Dimensions	Inner Diameter (ID): 41.74
		Outer Diameter (OD): 48.44mm
Thickness (T): 3.5mm		
2.4	Item / Product Name	Electric Cable 2.5mm <sup>2</sup> x 2C+ E TPS cable
	Dimensions	Width / Thickness (W/T): 12mm x 5mm
2.5	Item / Product Name	DN80 PVC-U DWV Pipe
	Dimensions	Inner Diameter (ID): 76mm
		Outer Diameter (OD): 82.5mm
Thickness (T): 3mm		
2.6	Item / Product Name	DN32 PVC-U DWV Pipe
	Dimensions	Inner Diameter (ID): 32mm
		Outer Diameter (OD): 36mm

		Thickness (T): 2mm
2.7	Item / Product Name	25mm UPVC Flexible conduit
	Dimensions	Inner Diameter (ID): 19.5mm
		Outer Diameter (OD): 25mm
Thickness (T): 2.5mm		
2.8	Item / Product Name	25mm Pex Pipe
	Dimensions	Inner Diameter (ID): 20mm
		Outer Diameter (OD): 25mm
Thickness (T): 2.5mm		
2.9	Item / Product Name	16mm Pex Pipe
	Dimensions	Inner Diameter (ID): 12mm
		Outer Diameter (OD): 16mm
Thickness (T): 2mm		

### Sealants and coating

3.1	Item / Product Name	AGNI-Seal Fire rated Acrylic Sealant
	Dimensions	600ml
	Installation	Installed within the aperture, positioned between the penetrations and the separating element (Specimens C and D). Additionally, filled between the AGNI-Sleeve and the penetrations with a thickness of 5mm (Specimens E, F, G, H, and I). Applied on the surface of the separating element and around the services to protect the gap between the services and the separating element (Specimen A).
3.2	Item / Product Name	AGNI-Coat
	Dimensions	5 litres bucket
	Installation	Applied on the top of AGNI-Boards



**Fixing and wrap**

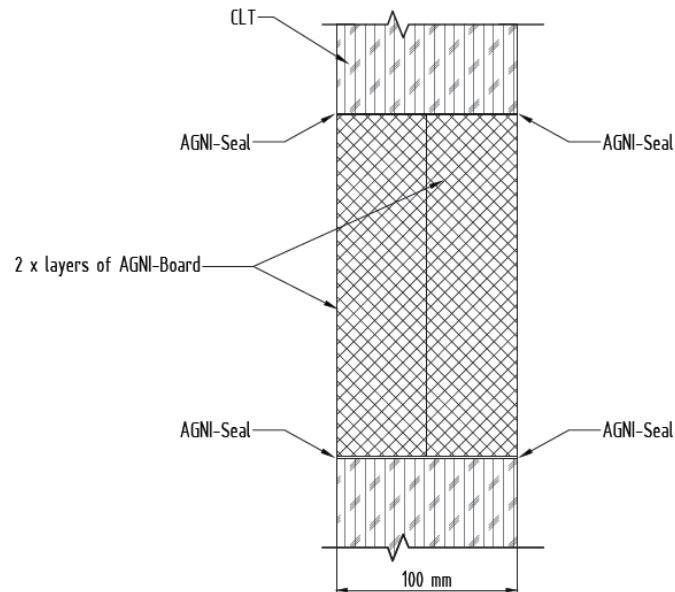
4.1	Item	AGNI-Shield
	Dimensions	Width (W): 100mm Thickness (T): 13mm (nominal) Density (D): 126.84kg/m <sup>3</sup>
	Installation	Wrap around the penetrations
4.2	Item	AGNI-Straps
	Dimensions	Width (W):4.6mm
	Installation	Tie the AGNI-Shield around penetration

**Intumescent**

5.1	Item	AGNI-Sleeve (fabric base removed)
	Dimensions	Width (W): 120mm
		Thickness (T): 3.5mm
Installation	Wrap around the penetrations	

## 5. Test Results

### 5.1 Specimen A



**Figure 4 – Specimen A**

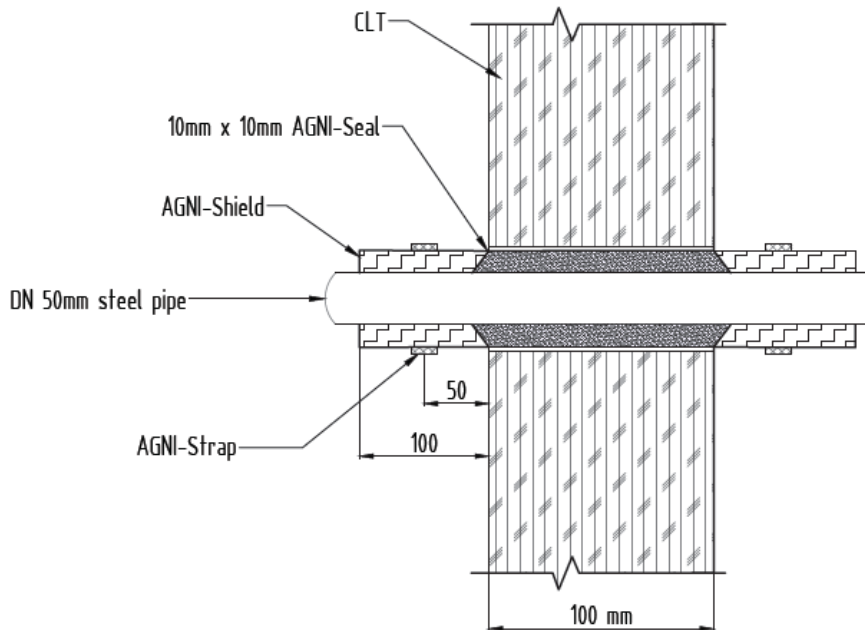
Service penetration details	
Service	Two 50 mm thick AGNI-Boards
Service Support	N/A
Aperture Diameter	350mm x 300mm
Annular Spacing	0mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	Two layers of AGNI-Boards were friction fitted in the aperture. All damages of the AGNI-Board coating were painted with AGNI-Coat. AGNI-Seal was used to seal the joints between the CLT and the boards, ensuring a smooth, flush finish.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 5.2 Specimen C



**Figure 9 – Specimen C**

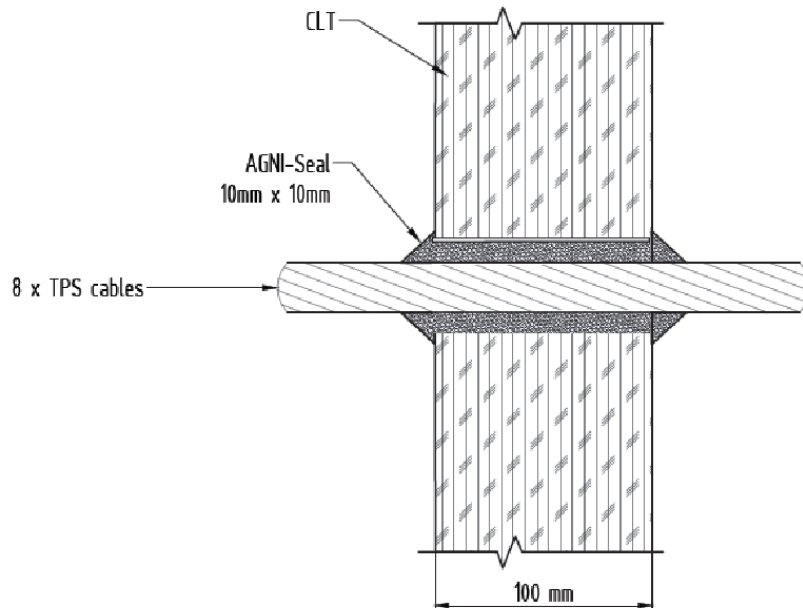
Service penetration details	
Service	50mm Steel Pipe
Service Support	Unistrut structure at 250mm from exposed face and 560mm from unexposed face
Aperture Diameter	68mm
Annular Spacing	Min: 7.5mm, Max: 12.06mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Seal was used to fill the annular gap between the CLT and the pipe to the full depth of CLT with 10x10mm cone on both faces. AGNI-Straps were used to secure the AGNI-Shield on both sides of the wall at 50mm from the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 5.3 Specimen D



**Figure 11 – Specimen D**

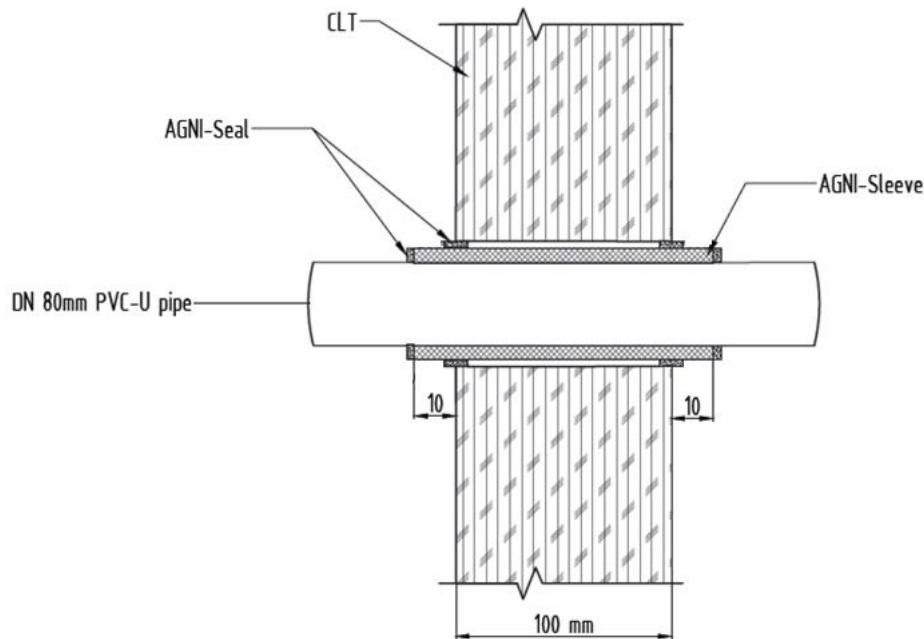
Service penetration details	
Service	Bundle of eight 2.5mm <sup>2</sup> x 2C+ E TPS cables
Service Support	Unistrut structure at 250mm from exposed face and 560mm from unexposed face
Aperture Diameter	55mm
Annular Spacing	Min: 10.34mm, Max: 12.73 mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Seal was used to fill the aperture between the CLT and the service to the full depth of CLT having 10x10mm cone on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 64 minutes

## 5.4 Specimen E



**Figure 13 – Specimen E**

Service penetration details	
Service	DN80 PVC-U DWV Pipe
Service Support	Unistrut structure at 250mm from exposed face; 560mm and 1350mm from unexposed face
Aperture Diameter	102mm
Annular Spacing	Min: 9 mm, Max: 10.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	A 120mm wide AGNI-Sleeve was wrapped around the service, extending 10mm beyond the CLT on both sides. The base fabric was removed prior to installation. All joints were sealed with nominal 5mm bead of AGNI-Seal on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 5.5 Specimen F

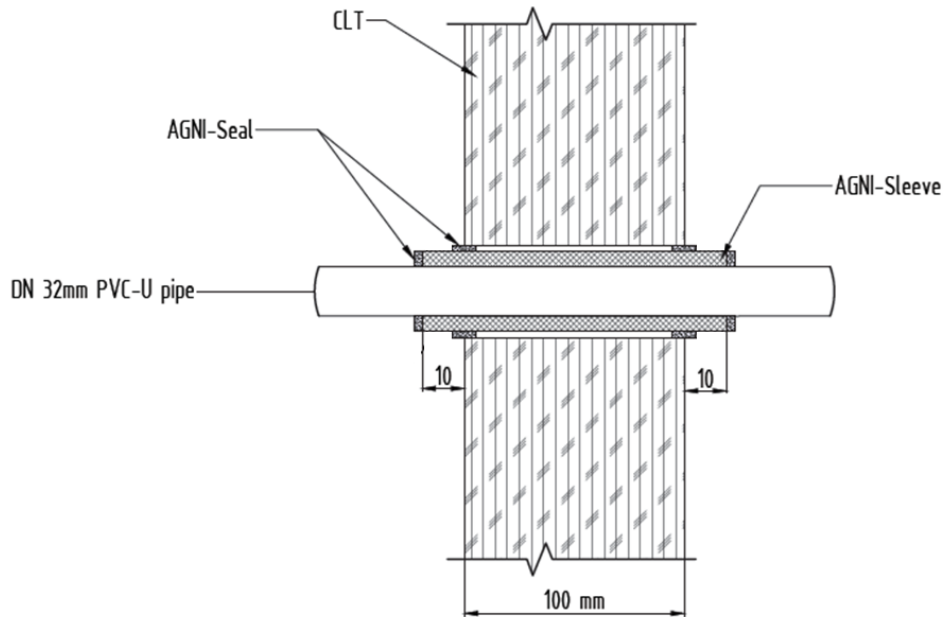


Figure 15 – Specimen F

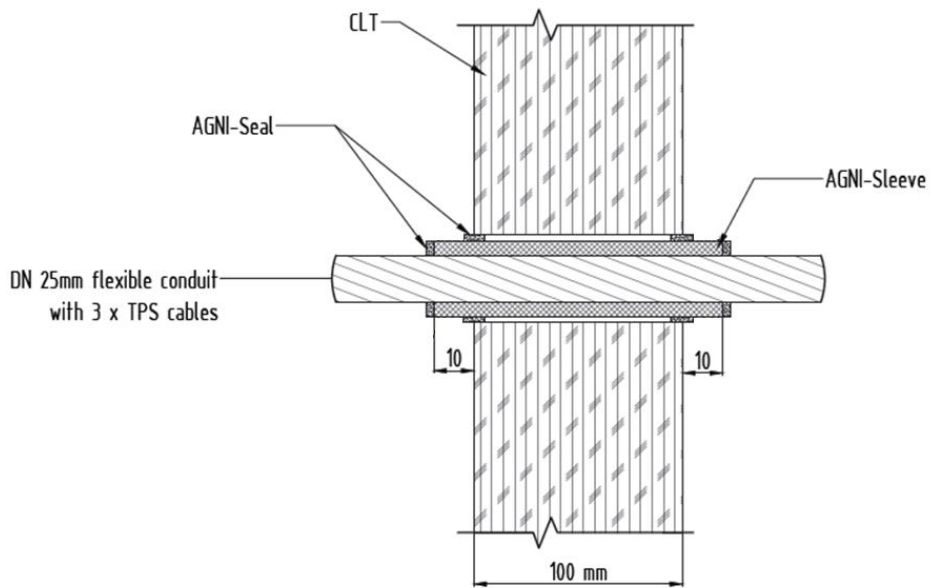
Service penetration details	
Service	MARLEY OPTIM DN32 PVC-U DWV Pipe
Service Support	Unistrut structure at 250mm from exposed face; 560mm and 1350mm from unexposed face
Aperture Diameter	55mm
Annular Spacing	Min: 7.5, Max: 11.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	A 120mm wide AGNI-Sleeve was wrapped around the service, extending 10mm beyond the CLT on both sides. The base fabric was removed prior to installation. All joints were sealed with nominal 5mm bead of AGNI-Seal on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 5.6 Specimen G



**Figure 17 – Specimen G**

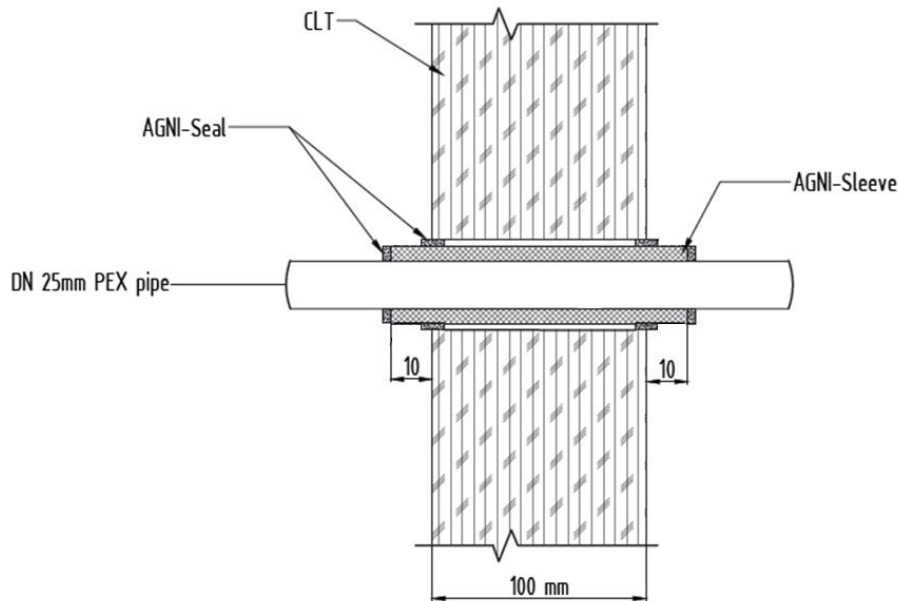
Service penetration details	
Service	25mm UPVC Flexible Conduit with three 2.5mm <sup>2</sup> x 2C+ E TPS cables in the conduit
Service Support	Unistrut structure at 250mm from exposed face; 560mm and 1350mm from unexposed face
Aperture Diameter	36mm
Annular Spacing	Min: 3.74mm, Max: 7.26mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	A 120mm wide AGNI-Sleeve was wrapped around the service, extending 10mm beyond the CLT on both sides. The base fabric was removed prior to installation. All joints were sealed with nominal 5mm bead of AGNI-Seal on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 5.7 Specimen H



**Figure 19 – Specimen H**

<b>Service penetration details</b>	
Service	25mm Pex Pipe
Service Support	Unistrut structure at 250mm from exposed face; 560mm and 1350mm from unexposed face
Aperture Diameter	36mm
Annular Spacing	Min: 4.35mm, Max: 6.65mm

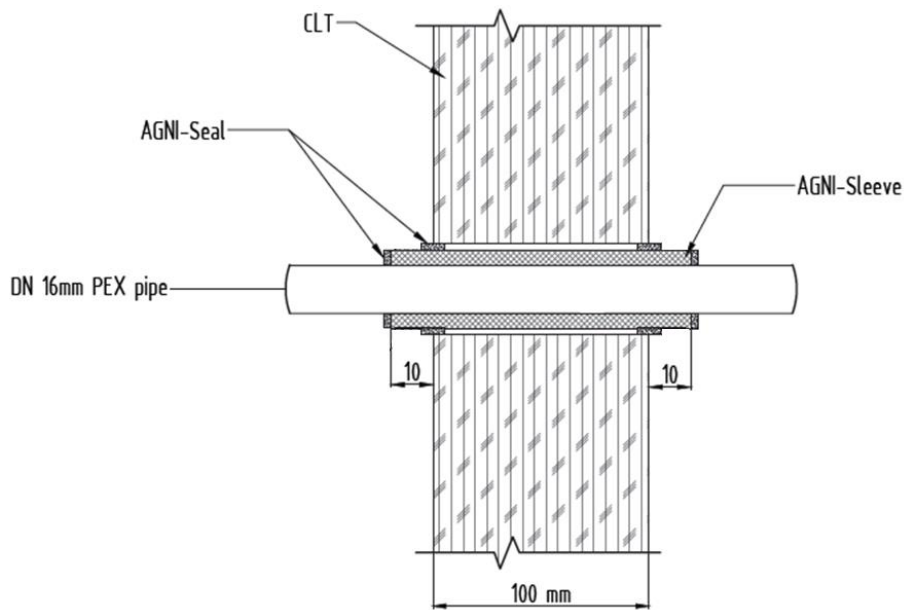
<b>Local Fire-stopping system</b>	
Application	Symmetrical – installed on both faces of separating element
System description	A 120mm wide AGNI-Sleeve was wrapped around the service, extending 10mm beyond the CLT on both sides. The base fabric was removed prior to installation. All joints were sealed with nominal 5mm bead of AGNI-Seal on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes



## 5.8 Specimen I



**Figure 21 – Specimen I**

Service penetration details	
Service	16mm Pex Pipe
Service Support	Unistrut structure at 250mm from exposed face; 560mm and 1350mm from unexposed face
Aperture Diameter	27mm
Annular Spacing	Min: 3.77mm, Max: 7.23mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	A 120mm wide AGNI-Sleeve was wrapped around the service, extending 10mm beyond the CLT on both sides. The base fabric was removed prior to installation. All joints were sealed with nominal 5mm bead of AGNI-Seal on both sides of the wall.

### Test results

Structural adequacy	Not applicable
Integrity	No failure at 72 minutes
Insulation	No failure at 72 minutes

## 6. Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
5	U	D, H	Smoke generated from the interaction between the service and the sealant.
8	U	E	The service deflected and melted, creating a gap between the service and the sleeve, which is emitting smoke.
10	U	F	Smoke came from two small holes in the sealant between the service and the sleeve.
12	U	F	The size of two small holes developed.
40	U	D	The TPS cables adjacent to the sealant expanded.
45	U	H	The AGNI-Sleeve expanded slightly.
56	U	C	The sealant in the aperture expanded, protruding between the wrap and the separating element.
<b>69</b>	<b>U</b>	<b>SE</b>	<b>The separating element, about 100 mm up and to the left of service E, cracked and showed a visible glow. The cotton pad test failed.</b>
72			Test discontinued.

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

## 7. Photos

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### 7.1 Photos before the test



**Figure 23 – Exposed face prior to test commencement**