



Project number: 4788672825

3<sup>rd</sup> September 2020

**ASSESSMENT REPORT**

On Protecta FR IPT

**Title**

The Performance of Protecta FR IPT  
in Accordance with AS 4072.1: 2005 &  
AS 1530.4 2005/14

Polyseam Ltd  
15 St Andrews Road  
Huddersfield  
West Yorkshire  
HD1 6SB  
United Kingdom



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UL International (UK) Ltd.  
220, Cygnet Court, Centre Park, Warrington. WA1 1PP

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**TABLE OF CONTENTS**

<b>Section</b>	<b>Page</b>
1. Introduction	3
2. Assumptions	3
3. Assessment – AS 4072.1: 2005 & AS 1530.4 2005/14	3
4. Limits of Applicability	5
5. Conclusions	6
6. Validity	6
7. Declaration by POLYSEAM LTD	7
8. Signatories	8
Appendix 1: Summary of Primary Supporting Evidence	9
Appendix 2: Summary of Assessed Designs	12



## 1. Introduction

This report considers the expected fire resistance performance of Protecta FR IPT, as detailed in Certificate UL-EU-00910, ETA-18/0901 and ETA 18/0902, to be used as penetration seals around specific, single uninsulated metal pipes to form a penetration seal, or to be used as linear joint and gap seals to reinstate the fire resistance performance of wall and floor constructions.

For plastic pipes, AS1530.4: 2014 requires the external projection away from the furnace to be increased to a minimum of 2000 mm. Since all of the supporting test data used in support of Certificate UL-EU-00910-CPR was conducted upon specimens comprising services lengths of 500 mm long on each side of the supporting construction, this assessment does not allow for the use of plastic pipe services.

Installation into supporting constructions typical to the Australasian market is also considered, since the UL-EU certificate and associated European Technical Assessment are based upon installation into equivalent constructions.

The data which forms the basis of this assessment was obtained from tests in accordance with EN 1366-3: 2009 and EN 1366-4: 2006.

The penetration seals and the linear joint and gap seals discussed are required to provide up to 240 minutes integrity and insulation performance, depending on size and configuration, with respect to AS 4072.1: 2005 & AS 1530.4 2005/14.

## 2. Assumptions

It is assumed that the walls and floors into which the penetration seals are installed, or between which the joint and gap seals are installed have been proven via test to provide at least the same performance as that required of the seal.

It is assumed that the proposed penetration seals or linear joint and gap seals will be installed by competent installers and will be of the configurations described in Appendix 2.

## 3. Assessment – Performance to AS 4072.1: 2005 & AS 1530.4 2005/14

The proposed Protecta FR IPT is certificated by UL and is authorised to bear the UL-EU Mark. The basic requirements for this certification are as follows:

- Verification of the manufacture of test samples
- Testing in accordance with EN 1366-3
- Testing in accordance with EN 1366-4
- Evaluation against EAD 350454-00-1104, September 2017.
- Evaluation against EAD 350141-00-1106, September 2017.
- Continuous factory surveillance and verification
- Eligibility to bear the 'CE Mark' via compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions



for the marketing of construction products and repealing Council Directive 89/106/EEC - OJ L 88 of 4 April 2011 (The Construction Products Regulation)

The requirements for UL-EU Certification therefore go far beyond those of simple type testing, however since the products have been tested in accordance with EN 1366-3: 2009 or EN 1366-4: 2006, it is necessary to consider any significant differences between this standard and the required AS 4072.1: 2005 & AS 1530.4 2005/14.

It is noted that the requirements of the 2005 and 2014 versions of the AS 1530.4 standard are the same for the proposed applications and therefore this report is considered applicable to both versions.

The following aspects of the test are considered relevant to the performance of the seals:

- Mounting and installation – Both AS1530.4: 2014 and EN 1366-3: 2009 require that service penetrations and control joints are installed and tested in a manner representative of the intended application.
- Heating conditions – Both standards use the same specified heating conditions ( $T = 345 \log_{10} (8t + 1) + 20$ ) and instrumentation (Plate Thermometer required by EN 1366-3: 2009 and EN 1366-4: 2006 is an option in AS1530.4: 2014)
- Dimensions – Both AS1530.4: 2014 and EN 1366-3 requires a minimum service length of 500 mm on each side of the supporting construction, of which at least 200 mm shall extend beyond the extremities of the penetration sealing system however, for plastic pipes, AS1530.4: 2014 requires the external projection away from the furnace to be increased to a minimum of 2000 mm. Since all of the supporting test data used in support of Certificate UL-EU-00910-CPR was conducted upon specimens comprising services lengths of 500 mm long on each side of the supporting construction, this assessment does not allow for the use of plastic pipe services.
- Dimensions – AS1530.4: 2014 requires a minimum specimen length of 1000 mm and EN 1366-4: 2006 requires a minimum specimen length of 900 mm, however the supporting test data used in support of Certificate UL-EU-00910 was conducted upon specimens from 900mm to 3000mm long, thus significantly longer seals have been tested as well as seals that are marginally shorter.
- Pressure conditions – AS1530.4: 2014, EN 1366-3: 2009 and EN 1366-4: 2006 require that the test specimens be subjected to identical pressure conditions
- Instrumentation of specimens – The instrumentation of the specimens is of the same type and is applied at similar positions however, AS 1530.4: 2014 requires instrumentation to be applied in at least two positions 25 mm from the interface of the separating element and the main penetration seal. Since EN 1366-3: 2009 specifies instrumentation to be applied to the top edge of the penetration seal and the penetration service, it would be reasonable to consider that instrumentation is applied to a worst case position and as such, is expected to result in the same performance.
- Failure criteria – The failure criteria of both tests for Integrity and Insulation are identical, with the exception of the omission of gap gauges from the AS1530.4 standard. Although integrity performance for gap gauges is used for penetration seals under the EN 1366-3: 2009



standard, the formation of gaps was not observed in any of the supporting tests, for the performance periods given.

- Failure criteria – The failure criteria of both tests for Integrity and Insulation are identical, with the exception of the omission of gap gauges from the EN 1366-4 standard. Gap gauges however are not used for smaller control joints under the AS1530.4 standard either and in any case the formation of gaps was not observed in any of the supporting tests, for the performance periods given.

The parameters discussed above indicate that the EN 1366-3: 2009 and EN 1366-4: 2006 tests are equivalent to, and of equal severity to a AS1530.4: 2014 test, and therefore based upon the above, it is considered that Protecta FR IPT as detailed in Appendix 2, would provide up to 240 minutes (depending upon specification) FRL performance, if subjected to a test in accordance with AS1530.4: 2014 and AS 4072.1: 2005.

It is also noted that wall and floor constructions in the proposed market are of slightly different specifications to those currently certificated and tested in Europe, due to local requirements. The aspects that are considered critical to the performance of the seal are as follows:

- The depth of the seal is not reduced
- The wall or floor has proven fire resistance performance equal to or greater than that required
- In the case of plasterboard walls, single layer systems are acceptable provided the overall thickness of the board layer or layers is at least as great as the sealant depth (to allow for adhesion)
- Additionally, in the case where the overall construction thickness is reduced, but for a lesser performance requirement, then provided the components of the seal are not reduced, the overall seal depth may be reduced (by reducing the air cavity)

Subject to the above being satisfied, there is adequate confidence in the performance of the control joints and the specifications given in Appendix 2 reflect this.

It is our opinion that horizontal joints at the head and base of plasterboard walls will provide the same level of performance as vertical joints, either with backing as tested, or alternatively with the more robust option of backing of stud/channel. The tested wall joints were predominantly vertical, but the control joint that was tested horizontally in a wall performed at least as well as the vertical joints and the proposed horizontal configurations would be expected to perform similarly.

#### **4. Limits of Applicability**

The conclusions of this report only apply to Protecta FR IPT penetration seals and control joints as described in Appendix 2 of this report.



## 5. Conclusions

It can be concluded that Protecta FR IPT, installed as penetration seals or control joints, as described in Appendix 2 of this report, would provide the performances given in Appendix 2 of this report, if subjected to a test in accordance with AS 4072.1: 2005 & AS 1530.4 2005/14.

However, for plastic pipes, AS1530.4: 2014 requires the external projection away from the furnace to be increased to a minimum of 2000 mm. Since all of the supporting test data used in support of Certificate UL-EU-00910-CPR was conducted upon specimens comprising services lengths of 500 mm long on each side of the supporting construction, this assessment does not allow for the use of plastic pipe services.

## 6. Validity

This assessment is issued on the basis of test data and information available at the time of issue.

If contradictory evidence becomes available to UL International (UK) Ltd the assessment will be unconditionally withdrawn and POLYSEAM LTD will be notified in writing. Similarly, the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion.

The assessment is valid initially for a period of five years i.e. until 1<sup>st</sup> August 2024, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.



### **7. Declaration by POLYSEAM LTD**

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information, we agree to cease using the assessment and ask UL International (UK) Ltd to withdraw the assessment.

Signed:

Kew Beestal

For and on behalf of:

Polyseam Ltd



## 8. Signatories

Report by:

A handwritten signature in blue ink that appears to read "DAVID YATES".

David Yates\*

Senior Project Engineer

Building and Life Safety Technologies

Reviewed by:

A handwritten signature in blue ink that appears to read "CHRIS JOHNSON".

Chris Johnson\*

Staff Engineer

Building and Life Safety Technologies

\*For and on behalf of Underwriters Laboratories International (UK) Ltd

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant. This is included in Section 7 to this report.

REPORT ISSUED: 3<sup>rd</sup> September 2020



### Appendix 1: Summary of Primary Supporting Evidence

#### **WF No. 398928**

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 100 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimens to provide up to 127 minutes integrity and insulation performance.

#### **WF No. 395179**

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 100 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimens to provide up to 132 minutes integrity and insulation performance.

#### **WF No. 372808**

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick rigid floor supporting construction.

The test demonstrated the ability of the specimens to provide up to 133 minutes integrity and insulation performance.

#### **WF No. 382336**

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick rigid floor supporting construction.

The test demonstrated the ability of the specimens to provide up to 133 minutes integrity and insulation performance.

#### **WF No. 392115**

A fire resistance test in accordance with BS EN 1366-3: 2009, on penetration seals installed in a 150 mm thick rigid floor supporting construction.

The test demonstrated the ability of the specimens to provide up to 241 minutes integrity and 146 minutes insulation performance.

#### **Chilt/IF13065**

A fire resistance test in accordance with BS EN 1366-4: 2006, on two specimens of Protecta FR IPT joint seal, mounted within a 150 mm thick rigid floor supporting construction.

The test demonstrated the ability of the specimens to provide up to 264 minutes integrity and insulation performance.

**Chilt/IF13160**

A fire resistance test in accordance with BS EN 1366-4: 2006, on three specimens of Protecta FR IPT joint seal, mounted within a 100 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimens to provide up to 132 minutes integrity and insulation performance.

**WF No. 375339**

A fire resistance test in accordance with BS EN 1366-4: 2006, on a specimen of Protecta FR IPT joint seal, mounted within a 75 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimen to provide up to 61 minutes integrity and 55 minutes insulation performance.

**BMT/FEP/F16151**

A fire resistance test in accordance with BS EN 1366-4: 2006, on a specimen of Protecta FR IPT joint seal, mounted within a 100 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimen to provide up to 107 minutes integrity and 72 minutes insulation performance.

**WF No. 380112**

A fire resistance test in accordance with BS EN 1366-4: 2006, on a specimen of Protecta FR IPT joint seal, mounted within a 100 mm thick flexible wall supporting construction.

The test demonstrated the ability of the specimen to provide up to 132 minutes integrity and insulation performance.

**BMT/FEP/F16150**

A fire resistance test in accordance with BS EN 1366-4: 2006, on two specimens of Protecta FR IPT joint seal, mounted within a 150 mm thick rigid wall supporting construction.

The test demonstrated the ability of the specimen to provide up to 241 minutes integrity and insulation performance.

**UL 4788672825**

A classification in accordance with EN 13501-2: 2007+A1: 2009, based upon the reports detailed above.

**13CA40986**

A classification in accordance with EN 13501-2: 2007+A1: 2009, based upon the reports detailed above.

**UL 4788672830**

A classification in accordance with EN 13501-2: 2007+A1: 2009, based upon the reports detailed above.



**ETA 18/0901**

A European Technical Assessment of Protecta FR IPT in accordance with EAD 350454-00-1104, September 2017.

**ETA 18/0902**

A European Technical Assessment of Protecta FR IPT in accordance with EAD 350141-00-1106, September 2017.

**UL-EU-00910-CPR**

A UL certificate which relates to the use of Protecta FR IPT for fire stopping where there are joints in or between walls and floors or service penetrations through floors and walls.

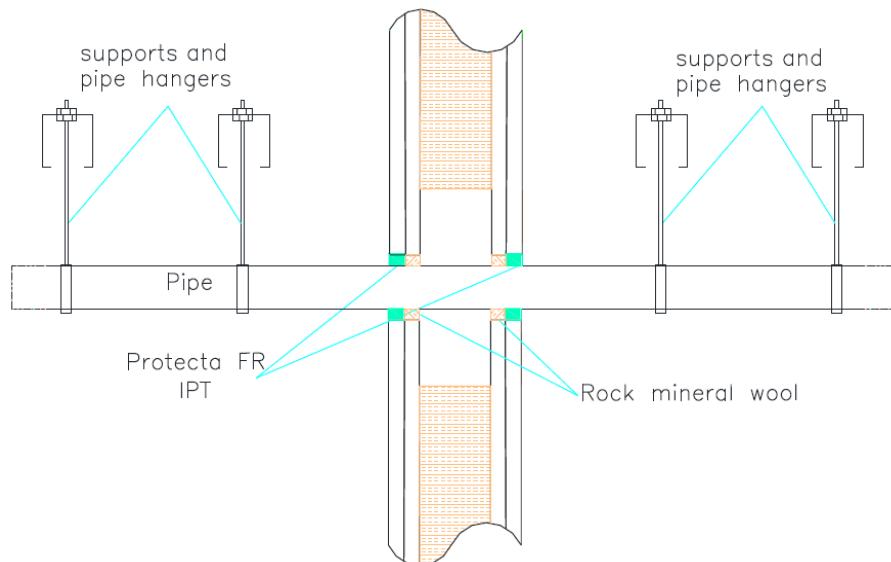
### Appendix 2: Summary of Assessed Scope

#### Flexible and rigid wall constructions with wall thickness of minimum 100 mm

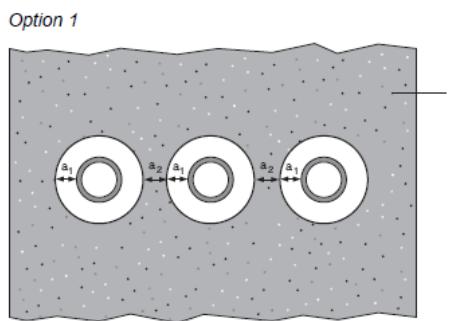
##### Double side penetration seal with metallic (and composite) pipes

**Penetration Seal:** Pipe (single) fitted at any position within the aperture, with 12.5 mm deep Protecta FR IPT Sealant to both sides of the wall, backed with 12.5 mm deep stone wool insulation minimum 33kg/m<sup>3</sup>. Minimum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

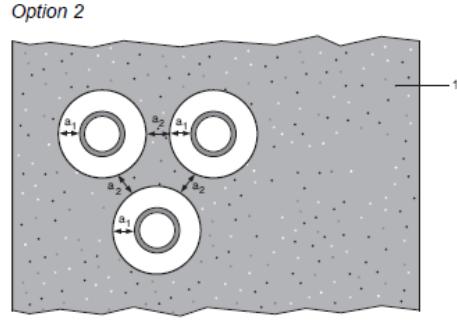
Construction details:



**Configuration 1**



**Configuration 2**



**Key**

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation



Substrate	Min. Wall thickness (mm)	Opening Size (mm)	Penetrating Services	Seal Depth (mm)	Backing	FRL
Drywall/ Masonry/ concrete	100	Maximum annular ring width 30 mm	Alupex composite pipe 16-20 mm diameter/ 2.0 mm wall	12.5	Stone wool 12.5 mm deep min. 33 kg/m <sup>3</sup>	-/120/120
			Steel pipe 4-22 mm diameter/ 1.0-11.0 mm wall#			-/120/120
			Copper or steel pipe 6-12 mm diameter/ 0.8-6.0 mm wall			-/120/60

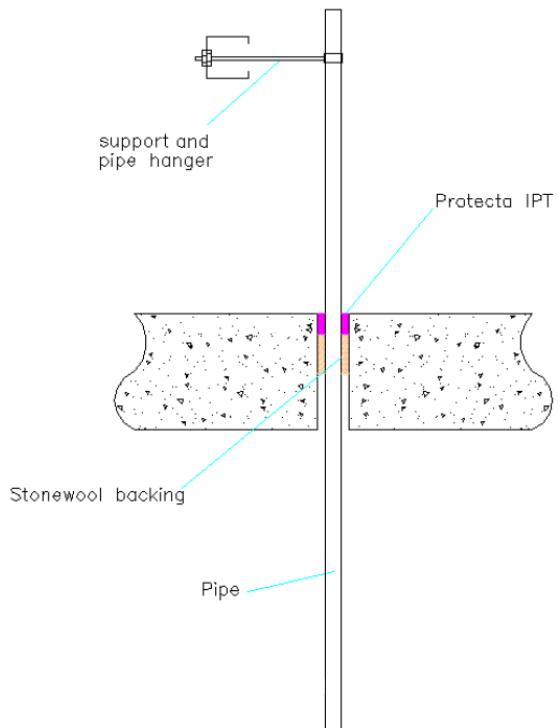
All pipe classifications are pipe end configurations C/C, with the exception of those marked '#' which are C/U, U/C and C/C (U=Uncapped, C=Capped).

## Rigid floor constructions with floor thickness of minimum 150 mm

### Single side penetration seal with pipes

**Penetration Seal:** Pipes fitted at any position within the aperture, with Protecta FR IPT to the top face of the floor, backed with 48 mm stone wool minimum 35kg/m<sup>3</sup>. Minimum annular space 10 mm (A1) and minimum separation between penetration seals 30 mm (A2).

Construction details:



Configuration 1	Configuration 2
<p>Option 1</p>	<p>Option 2</p>

**Key**

- 1 Supporting construction
- a1 Pipe / top edge of seal separation
- a2 Pipe / side edge of seal separation
- a3 Pipe / pipe separation



Substrate	Min. Wall thickness (mm)	Opening Size (mm)	Penetrating Services	Seal Depth (mm)	Seal Position	Backing	FRL
concrete	150	Maximum annular ring width 30 mm	Steel pipe 4-16 mm diameter/ 1.0-8.0 mm wall#	25	Top side of floor	Stone wool 48 mm deep min. 35 kg/m <sup>3</sup>	-/120/120
			Copper or steel pipe up to 10 mm diameter/ 0.7-5.0 mm wall				-/120/120
			Copper or steel pipe 11-15 mm diameter/ 0.7 - 7.5 mm wall				-/120/45
			Alupex composite pipe 16-20 mm diameter/ 2.0 mm wall				-/120/120

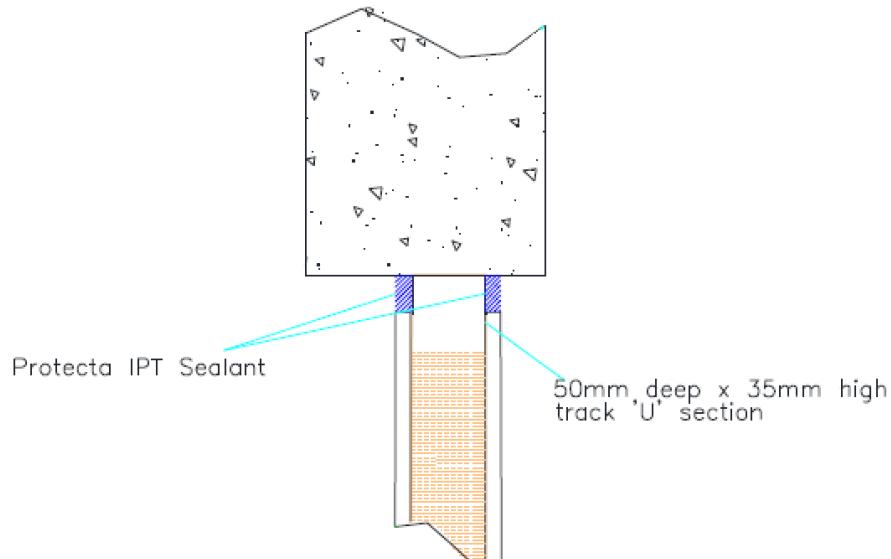
All pipe classifications are pipe end configurations C/C, with the exception of those marked '#' which are C/U, U/C and C/C (U=Uncapped, C=Capped).

### Flexible or rigid wall constructions

**Control Joints, for horizontal gaps at the head of plasterboard walls or in rigid walls and deflection head of plasterboard wall and soffit of concrete floor**

**Joint Seal:** Protecta FR IPT to both sides of the wall, joint widths up to 25 mm

Construction details:



Substrate	Min. Wall thickness (mm)	Sealant depth* minimum	Backing material	Maximum Joint Width (mm)	FRL
wall/ floor	75	12.5 mm	Minimum 50 mm steel partition head track /stud	25	-/60/45

\* Plasterboard walls may be single layer or double layer provided the facing (overall board) thickness is at least equal to the sealant depth.

### Flexible or rigid wall constructions

**Control Joints, for horizontal or vertical gaps at the head or between the side of plasterboard walls or in rigid walls and deflection head of plasterboard wall and soffit of concrete floor**

<b>Joint Seal:</b> Protecta FR IPT to both sides of the wall, joint widths up to 30 mm	
Construction details:	
	<p>Protecta IPT Sealant 25mm wide x 12.5mm deep 35mm deep track 'U' section</p> <p>Protecta IPT Sealant 15mm wide x 12.5mm deep 50mm deep 'C' stud section</p>

Substrate	Min. Wall thickness (mm)	Sealant depth* minimum	Backing material	Maximum Joint Width (mm)	FRL
Wall/Floor	100	12.5 mm	12.5 mm deep stone wool 35 kg/m <sup>3</sup> plus partition head/base track	30	-/120/120
			Minimum 50 mm steel partition head track /stud	25	-/90/60
				15	-/120/120

\* Plasterboard walls may be single layer or double layer provided the facing (overall board) thickness is at least equal to the sealant depth.

## Flexible or rigid wall constructions

### Control Joints, for gaps in plasterboard or concrete/masonry walls

Joint Seal: Protecta FR IPT to both sides of the wall, joint widths up to 30 mm	
<p>Construction details:</p>	

Substrate	Min. Floor thickness (mm)	Sealant depth minimum	Backing material	Maximum Joint Width (mm)	FRL
Wall/Floor	100	12.5 mm	12.5 mm Stone wool minimum 35 kg/m³	30	-/120/120

Gap may be vertical or horizontal orientated.  
Gaps in flexible partition constructions shall be additionally constructed such that a 50 mm partition stud or channel lines each side of the gap positioned with the section's web towards the gap.

\* Plasterboard walls may be single layer or double layer provided the facing (overall board) thickness is at least equal to the sealant depth.

## Rigid wall constructions

### Control Joints, between the head of rigid walls and soffit of concrete floor slab or between rigid walls

<b>Joint Seal:</b> Protecta FR IPT to both sides of the wall, joint widths up to 30 mm	
<p>Construction details:</p> <p>30</p> <p>Protecta IPT Sealant 15mm deep</p> <p>Rock mineral fibre 45 deep</p> <p>Fire side</p>	<p>Protecta IPT Sealant 15mm deep</p> <p>Rock mineral fibre 45 deep</p> <p>Fire side</p> <p>30</p>

Substrate	Min. Floor thickness (mm)	Sealant depth minimum	Backing material	Maximum Joint Width (mm)	FRL
Concrete/ Masonry	150	15 mm (one side)	45 mm stone wool minimum 33 kg/m <sup>3</sup>	30	-/240/60
		15 mm (both sides)			-/240/240

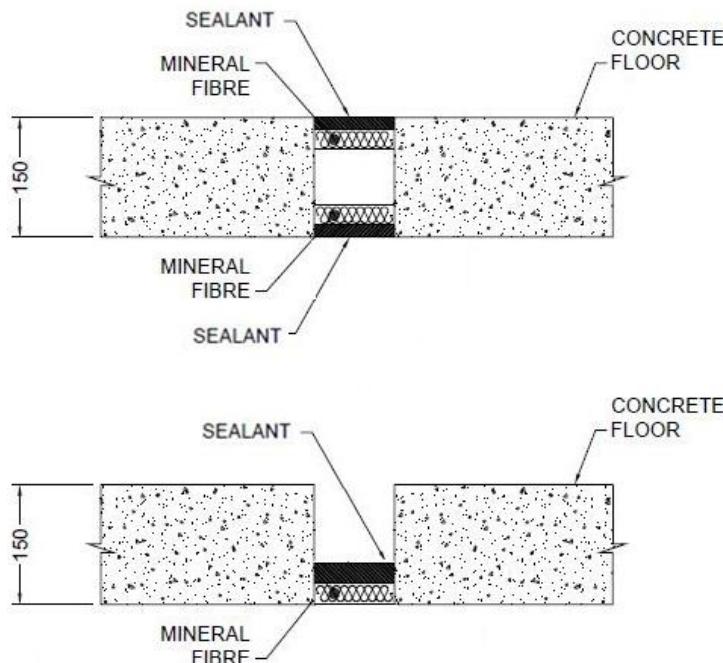
Soffit mounted seals shall be arranged such that the sealant is on the upper surface of the backing material.

## Rigid floor constructions

### Control joint, between floor slabs or between floor slab and concrete wall

**Joint Seal:** Protecta FR IPT to one or both sides of the floor, joint widths up to 30 mm

Construction details:



Substrate	Min. Floor thickness (mm)	Sealant depth minimum	Backing material	Maximum Joint Width (mm)	FRL
Concrete	150	15 min. to both faces	20 mm stonewool minimum 33 kg/m <sup>3</sup>	30	-/240/240
		25min. above backer*	48 mm Protecta Mineral Fibre BIO 128 kg/m <sup>3</sup>		-/240/180

\* At any height within the floor