

# UL-EU CERTIFICATE

**Certificate No.** UL-EU-00919-CPR  
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**Date of Issue** 2015-10-16  
**Revised** 2018-03-14

**Certificate Holder** Polyseam AS  
Ravneveien 7  
Linnestad Næringsområde  
N-3174 Revetal, Norway  
<http://www.polyseam.com>

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

**Certified Product Type** Fire Stop – Coated board  
**Product Trade Name** Protecta FR Board  
**Trademark** N/A  
**Rating/Classification** See Appendix

**Harmonised Technical Specifications** ETAG 026-2/ETAG 026-3/EN 13501-2  
**Supporting Documentation** ETA 13/0673, ETA 16/0717, EC – CERTIFICATE OF CONFORMITY - 0843 – CPR – 0140 and Classification report No. 13CA21782 B Rev 3 / Classification report No. 47875760363 / Classification report No. 4787998082  
**Additional information** Additional test evidence is held on file  
**Expiry date** 2025-10-15



**Head of Notified Body**  
Chris Miles



This is to certify that representative samples of the Certified Product listed above have been investigated by Underwriters Laboratories to the Standard(s) indicated on this Certificate, in accordance with the UL Global Services Agreement and the UL-EU Mark Service Terms and Conditions ("Agreement"). The Certificate Holder is entitled to use the UL-EU Mark for the Certified Product listed on the certificate and manufactured at the production site(s) listed, in accordance with the terms of the Agreement. Only those products bearing the UL-EU Mark for Europe should be considered as being covered by UL's UL-EU Mark Service. This Certificate shall remain valid through the Expiration date, unless a Standard identified on this Certificate is amended or withdrawn prior to that date or there is a non-compliance with the Agreement.



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This certificate relates to the use of Protecta FR Board for fire stopping where there are service penetrations through floors and walls and for joints and gaps in and between walls and floors. The detailed scope is given in pages 3 to 28 of this Certificate. This shows the thickness and acceptable dimensions, substrates and orientations required to provide fire resistance periods of up to 240 minutes for differing services and wall/floor constructions.

The product is certificated on the basis of:

- ii) ETA 13/0673
- iii) ETA 16/0717
- iv) EC – CERTIFICATE OF CONFORMITY - 0843 – CPR – 0140
- v) Inspection and surveillance of factory production control by UL
- vi) Fire resistance test data in accordance with EN 1366-3: 2009
- vii) Classification in accordance with EN 13501-2
- viii) Durability and Servicability as defined in ETAG 026-2, Clause 2.4.12

Protecta FR Board has been tested in accordance with the requirements of ETAG 026-2, Clause 2.4.12 to demonstrate its suitability for use at temperatures below 0°C, with exposure to UV but no exposure to rain. These conditions are designated Y<sub>1</sub>, including lower classes Y<sub>2</sub>, Z<sub>1</sub>, Z<sub>2</sub> in ETAG 026-2.



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Product-type: Protecta FR Board		Intended use: Penetration Seal
Basic requirement for construction work	Basic Requirement	Performance
<b>BWR 1 Mechanical resistance and stability</b>		
-	None	Not relevant
<b>BWR 2 Safety in case of fire</b>		
EN 13501-1	Reaction to fire	Class F (Untested)
EN 13501-2	Resistance to fire	See pages 4 - 28
<b>BWR 3 Hygiene, health and environment</b>		
EN 1026:2000	Air permeability (material property)	No performance determined
ETAG 026-2, Annex C	Water permeability (material property)	No performance determined
Declaration of manufacturer	Release of dangerous substances	Declaration of manufacturer
<b>BWR 4 Safety in use</b>		
EOTA TR 001:2003	Mechanical resistance and stability	No performance determined
EOTA TR 001:2003	Resistance to impact/movement	No performance determined
EOTA TR 001:2003	Adhesion	No performance determined
<b>BWR 5 Protection against noise</b>		
EN 10140-2/ EN ISO 717-1	Airborne sound insulation	No performance determined
<b>BWR 6 Energy economy and heat retention</b>		
EN 12664, EN 12667 or EN 12939	Thermal properties	No performance determined
EN ISO 12572 EN 12086	Water vapour permeability	No performance determined
<b>General aspects relating to fitness for use</b>		
EN 13162 or EN 14303, EN ISO 1519	Durability and serviceability	Y <sub>1</sub>
<b>BWR 7 Sustainable use of natural resources</b>		
-	-	No performance determined



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PROTECTA FR Board/Coating: Linear Gaps Between Concrete Floor Slabs or Between Floor Slab and Rigid Wall								
Substrate	Minimum Substrate Thickness (mm)	Maximum Gap Size (mm)	Seal Position	Minimum Seal Depth (mm)	Backing and sides coated	Coating thickness (mm)	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	120	Either face or any position between	60	Protecta FR Board 2S / Both sides	1	240	120
			Min. 50 mm above soffit	100	Stone wool, mineral fibre min. 33 kg/m <sup>3</sup> / Top face		240	180

PROTECTA FR Board/Coating: Linear Gaps Between Head of Wall and Soffit of Concrete Floor Slabs								
Substrate	Minimum Substrate Thickness (mm)	Maximum Gap Size (mm)	Seal Position	Minimum Seal Depth (mm)	Backing and sides coated	Coating thickness (mm)	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	120	Either face or any position between	100	Stone wool, mineral fibre min. 33 kg/m <sup>3</sup> / Top face	1.2	240	180



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PROTECTA FR BOARD 2S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Masonry/ Concrete	150	1200 x 1200	None (blank)	To both faces of wall	60 (x2)	None	240	240	
		Unlimited width x 1200 high	None (blank)				240	180	
			Electrical cables up to 21 mm Ø				180	60	
			Electrical cables up to 80 mm Ø				180	120	
			Telecom cables up to 21 mm Ø				180	60	
			Steel cable trays & ladders				180	180	
			PVC conduit up to 16 mm Ø				Min. 1000 mm of 30 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	240	90
			Steel pipe 40 mm diameter/1.5-14.2 mm wall*						
			Steel pipe 50 mm diameter/1.7-14.2 mm wall*						
			Steel pipe 60 mm diameter/1.9-14.2 mm wall*						
			Steel pipe 75 mm diameter/2.2-14.2 mm wall*						
		Steel pipe 90 mm diameter/2.5-14.2 mm wall*							
		Steel pipe 100 mm diameter/2.7-14.2 mm wall*							
		Steel pipe 115 mm diameter/3-14.2 mm wall*							
		Steel pipe 140 mm diameter/3.5-14.2 mm wall*							
		Steel pipe 165 mm diameter/ 3.9-14.2 mm wall*							
		Steel pipe 180 mm diameter/ 4.2-14.2 mm wall*							
		Steel pipe 200 mm diameter/ 4.6-14.2 mm wall*							
		Steel pipe 219 mm diameter/ 5.0-14.2 mm wall*							
		40 mm diameter/1.5-14.2 mm wall	Min. 1000 mm of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI			240	180		
		1200 x 1200						40 mm diameter/1.5-14.2 mm wall	240
		Unlimited width x 1200 high	Alupex composite pipe 16 mm diameter/2.25 mm wall			240***	240		
			None			240***	180		
								Single electrical cables up to 21 mm Ø	
								Any position within wall	60
		70 x 70	Single A1 cable						
		Single A2 cable							
		Single A3 cable							

\* Typical pipe diameters shown, intermediate sizes are possible  
 \*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise  
 \*\*\* Uncapped/Capped (U/C)

A1 cable = 5 x 1.5 mm<sup>2</sup> core HD603.3 electrical cable with PVC insulation, PVC sheath and 14 mm diameter  
 A2 cable = 5 x 1.5 mm<sup>2</sup> core HD22.4 electrical cable with EPR insulation, PO sheath and 11.2-14.4 mm diameter  
 A3 cable = 5 x 1.5 mm<sup>2</sup> core HD604.5 electrical cable with XLPE insulation, EVA sheath and 13 mm diameter

LS = Local Sustained  
 CS = Continuous Sustained  
 LI = Local Interrupted  
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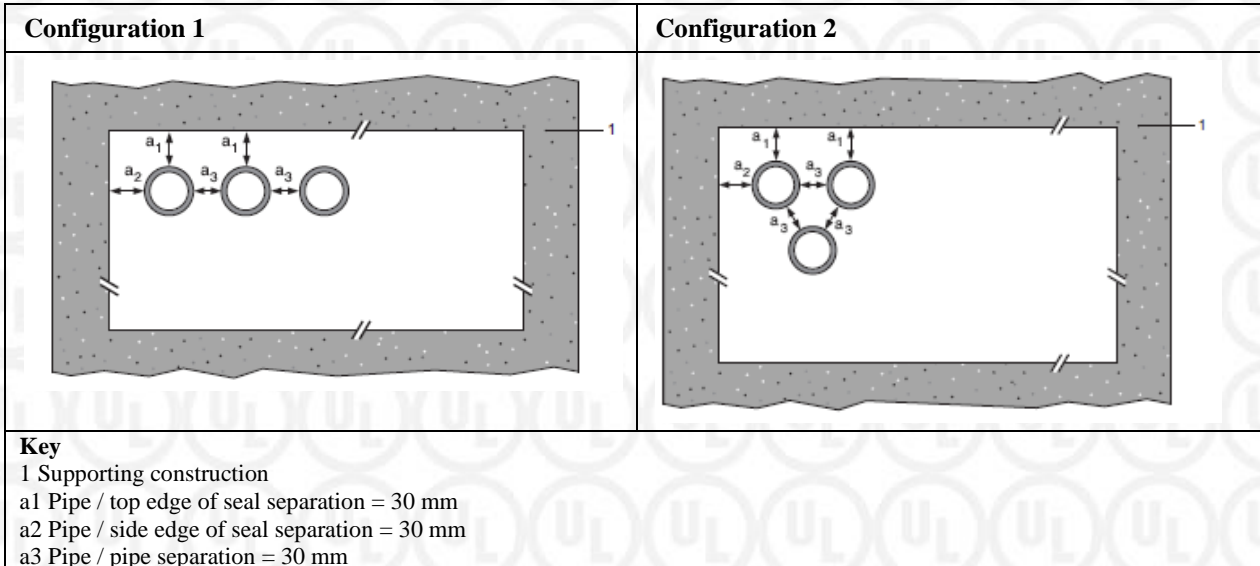
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PROTECTA FR BOARD 2S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	Unlimited width x 1200 high	40 mm diameter/1-14.2 mm wall	To both faces of wall	150 mm (2x60mm board + 30mm gap)	20 mm thick stone, mineral wool 80 kg/m <sup>3</sup>	240	180
			40 mm diameter/1-14.2 mm wall*			30-80 mm thick stone, mineral wool min. 80 kg/m <sup>3</sup>		
			50 mm diameter/1.2-14.2 mm wall*					
			60 mm diameter/1.4-14.2 mm wall*					
			75 mm diameter/1.6-14.2 mm wall*					
			90 mm diameter/1.9-14.2 mm wall*					
			100 mm diameter/2.1-14.2 mm wall*					
			115 mm diameter/2.4-14.2 mm wall*					
			140 mm diameter/2.9-14.2 mm wall*					
			165 mm diameter/ 3.4-14.2 mm wall*					
			180 mm diameter/ 3.6-14.2 mm wall*					
			200 mm diameter/ 4.0-14.2 mm wall*					
			219 mm diameter/ 4.3-14.2 mm wall*					
			250 mm diameter/ 5.0-14.2 mm wall*					
			300 mm diameter/ 5.9-14.2 mm wall*					
324 mm diameter/ 6.35-14.2 mm wall*								

\* Typical pipe diameters shown, intermediate sizes are possible

\*\* All pipe classifications are Capped/Uncapped (C/U)

CS = Continuous Sustained



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PROTECTA FR BOARD 2S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Masonry/ Concrete	150	70 x 70	Up to 12 mm diameter Copper pipe 0.9-14.2 mm wall	Any position within wall	60	Min. 1000 mm of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	240	240	
		115 x 115	Up to 54 mm diameter Copper pipe 0.9-14.2 mm wall				240	120	
			Up to 54 mm diameter Copper pipe 0.9-14.2 mm wall				240	90	
			Unlimited width x 1200 high			Steel pipe 325 mm diameter/ 6.35-14.2 mm wall	Min. 1000 mm of 30 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	120	90
						Up to 75 mm diameter Alupex composite pipe 7.5 mm diameter		120***	90
		200 x 200	75 mm diameter Alupex composite pipe 7.5 mm wall			Min. 600 mm of 30 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI		120***	120

\*600 mm long insulation required for Alupex pipes

\*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise

\*\*\* Capped/Capped (C/C)

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PROTECTA FR BOARD 2S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	280 x 280	Steel pipe 40 mm diameter/1.5-14.2 mm wall*	Any position within wall	60	Min. 1000 mm of 30 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	240	240
			Steel pipe 50 mm diameter/1.7-14.2 mm wall*					
			Steel pipe 60 mm diameter/1.9-14.2 mm wall*					
			Steel pipe 75 mm diameter/2.2-14.2 mm wall*					
			Steel pipe 90 mm diameter/2.5-14.2 mm wall*					
			Steel pipe 100 mm diameter/2.7-14.2 mm wall*					
			Steel pipe 115 mm diameter/3-14.2 mm wall*					
			Steel pipe 140 mm diameter/3.5-14.2 mm wall*					
			Steel pipe 165 mm diameter/ 3.9-14.2 mm wall*					
			Steel pipe 180 mm diameter/ 4.2-14.2 mm wall*					
			Steel pipe 200 mm diameter/ 4.6-14.2 mm wall*					
			Steel pipe 219 mm diameter/ 5.0-14.2 mm wall*					
		Unlimited width x 1200 high	Steel pipe 40 mm diameter/1.5-14.2 mm wall*			Min. 1000 mm of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	240	90
			Steel pipe 50 mm diameter/1.7-14.2 mm wall*					
			Steel pipe 60 mm diameter/1.9-14.2 mm wall*					
			Steel pipe 75 mm diameter/2.2-14.2 mm wall*					
			Steel pipe 90 mm diameter/2.5-14.2 mm wall*					
			Steel pipe 100 mm diameter/2.7-14.2 mm wall*					
			Steel pipe 115 mm diameter/3-14.2 mm wall*					
			Steel pipe 140 mm diameter/3.5-14.2 mm wall*					
			Steel pipe 165 mm diameter/ 3.9-14.2 mm wall*					
			Steel pipe 180 mm diameter/ 4.2-14.2 mm wall*					
			Steel pipe 200 mm diameter/ 4.6-14.2 mm wall*					
			Steel pipe 219 mm diameter/ 5.0-14.2 mm wall*					

\* Typical pipe diameters shown, intermediate sizes are possible  
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PROTECTA FR BOARD 2S: Service Penetration Seals comprising 1x 60 mm Protecta FR Board 2-S seals, fitted at any position within rigid walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services - Mild or stainless steel pipe	Protecta FR Wrap	Wrap Position	Insulation CS	Fire Resistance (mins.)	
							E	EI
Masonry/Concrete	150	Unlimited width x 1200 high	165 mm diameter/ 4.5-14.2 mm wall	1 off 50 x 1.8 mm	Central	9-25 mm Kaiflex ST/KK insulation	120	45
			219 mm diameter/ 5-14.2 mm wall	Not required	Not required	30 mm Stone wool insulation 80 kg/m <sup>3</sup> CS	240	60

CS = Continuous Sustained

All pipe classifications are pipe end configurations U/C, C/U and C/C (U=Uncapped, C=Capped).

PROTECTA FR BOARD 2S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Masonry/Concrete	150	600 x 600	None	To both faces of wall, protruding by 50 mm	60 (x2)	None	240	180
			Electrical cables up to 21 mm Ø				240	120
			Electrical cables up to 80 mm Ø				240	60
			Telecom cables up to 21 mm Ø				240	240
			Steel cable trays & ladders				240	180
			Non-Sheathed wires up to 17 mm Ø				240	180
			Non-Sheathed wires up to 24 mm Ø	240			90	
			None	To both faces of wall, pattress fixed with 50 mm overlap*			240	180
			Electrical cables up to 50 mm Ø				240	90
			Electrical cables up to 80 mm Ø				240	60
			Telecom cables up to 21 mm Ø				240	240
			Steel cable trays & ladders				240	180
			Non-Sheathed wires up to 24 mm Ø				240	120

\* Fixed with 100 mm steel screws and penny washers at 350 mm centres



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PROTECTA FR BOARD 2S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services - PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1	Seal Position	Minimum Seal Depth (mm)	Protecta FR Wrap (mm)	Wrap Position	Fire Resistance (mins.)	
								E	EI
Masonry/ Concrete	150	Unlimited width x 1200 high	Up to 40 mm diameter / 1.9-3.0 mm wall	To both faces of wall	60 (x2)	50 x 1.8	Central to each FR Board	240	240
			Up to 110 mm diameter / 2.7-6.6 mm wall			50 x 3.6			
			Up to 125 mm diameter / 4.7-7.4 mm wall			50 x 7.2			
			Up to 160 mm diameter / 4.0-9.5 mm wall			50 x 10.8			

PROTECTA FR BOARD 2S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services - PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1	Seal Position	Minimum Seal Depth (mm)	Protecta FR Wrap (mm)	Wrap Position	Fire Resistance (mins.)	
								E	EI
Masonry/ Concrete	150	Unlimited width x 1200 high	Up to 40 mm diameter / 2.4-4.6 mm wall	To both faces of wall	60 (x2)	50 x 1.8	Central to each FR Board	240	240
			Up to 110 mm diameter / 3.4-10.0 mm wall			50 x 3.6			
			Up to 125 mm diameter / 3.9-7.4 mm wall			50 x 7.2			
			Up to 160 mm diameter / 4.9-9.5 mm wall			50 x 10.8			

PROTECTA FR BOARD 2S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	PP pipe according to EN 1451-1	Seal Position	Minimum Seal Depth (mm)	Protecta FR Wrap (mm)	Wrap Position	Fire Resistance (mins.)	
								E	EI
Masonry/ Concrete	150	Unlimited width x 1200 high	Up to 40 mm diameter / 1.8-5.5 mm wall	To both faces of wall	60 (x2)	50 x 1.8	Central to each FR Board	240**	240
			Up to 110 mm diameter / 2.7-10.0 mm wall			50 x 3.6			
			Up to 125 mm diameter / 3.1-11.4 mm wall			50 x 7.2			
			Up to 160 mm diameter / 4.9-14.6 mm wall			50 x 10.8			

\*All pipe classifications are pipe end configurations U/C (U=Uncapped, C=Capped) except those marked \*\* which are C/C



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PROTECTA FR BOARD 2S: Service Penetration Seals in floors								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	1200 x 600	None (blank)	Flush to both faces of floor	60 (x2)	None	180	180
		2400 x 1200	None (blank)				180	120
			Electrical cables up to 21 mm Ø				120	120
			Electrical cables up to 80 mm Ø				120	60
			Telecom cables up to 21 mm Ø				120	120
			Steel cable trays & ladders				120	60
			Non-Sheathed wires up to 24 mm Ø				180	45
		PVC conduit up to 16 mm Ø	120				90	
		1200 x 600	None (blank)				240	120
		2400 x 1200	None (blank)				120	90
			Single electrical cables up to 21 mm Ø				120	30
			Electrical cables up to 21 mm Ø				90	45
			Electrical cables up to 80 mm Ø				90	30
			Telecom cables up to 21 mm Ø				45	45
			Steel cable trays & ladders	45	45			
			Non-Sheathed wires up to 17 mm Ø	45	30			
			Non-Sheathed wires up to 24 mm Ø	45	20			
			PVC conduit up to 16 mm Ø	45	45			
			Steel or copper conduit up to 16 mm Ø	45	15			
		600 mm x 1200 mm	Single electrical cables up to 21 mm Ø	240	30			
		1200 x 600	40 mm diameter/1.5-14.2 mm wall*	180	180			
		280 x 280	40 mm diameter/1.5-14.2 mm wall*	240	240			
		2400 x 1200	40 mm diameter/1.5-14.2 mm wall*	180	120			
			40 mm diameter/1.5-14.2 mm wall*	180	60			
			40 mm diameter/1.5-14.2 mm wall*					
			50 mm diameter/1.7-14.2 mm wall*					
			60 mm diameter/1.8-14.2 mm wall*					
			75 mm diameter/2.1-14.2 mm wall*					
			90 mm diameter/2.3-14.2 mm wall*					
			100 mm diameter/2.5-14.2 mm wall*					
115 mm diameter/2.8-14.2 mm wall*								
140 mm diameter/3.2-14.2 mm wall*								
165 mm diameter/ 3.6-14.2 mm wall*								
180 mm diameter/ 3.9-14.2 mm wall*								
200 mm diameter/ 4.2-14.2 mm wall*								
219 mm diameter/ 4.5-14.2 mm wall*								

All conduit and pipe classifications are pipe end configurations C/U (U=Uncapped, C=Capped)

\* Typical pipe diameters shown, intermediate sizes are possible

- LS = Local Sustained
- CS = Continuous Sustained
- LI = Local Interrupted
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PROTECTA FR BOARD 2S: Service Penetration Seals in floors								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	2400 x 1200	40 mm diameter/1.5-14.2 mm wall*	Any position within floor	60	1000 mm min. of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> CI or LI	120	60
			40 mm diameter/1.5-14.2 mm wall*					
			50 mm diameter/1.7-14.2 mm wall*					
			60 mm diameter/1.8-14.2 mm wall*					
			75 mm diameter/2.1-14.2 mm wall*					
			90 mm diameter/2.3-14.2 mm wall*					
			100 mm diameter/2.5-14.2 mm wall*					
			115 mm diameter/2.8-14.2 mm wall*					
			140 mm diameter/3.2-14.2 mm wall*					
			165 mm diameter/ 3.6-14.2 mm wall*					
			180 mm diameter/ 3.9-14.2 mm wall*					
		200 mm diameter/ 4.2-14.2 mm wall*						
		219 mm diameter/ 4.5-14.2 mm wall*						
		600 x 1200	40 mm diameter/1.5-14.2 mm wall*			1000 mm min. of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> CI or LI	240	60
			40 mm diameter/1.5-14.2 mm wall*					
			50 mm diameter/1.7-14.2 mm wall*					
			60 mm diameter/1.8-14.2 mm wall*					
			75 mm diameter/2.1-14.2 mm wall*					
	90 mm diameter/2.3-14.2 mm wall*							
	100 mm diameter/2.5-14.2 mm wall*							
	115 mm diameter/2.8-14.2 mm wall*							
	140 mm diameter/3.2-14.2 mm wall*							
	165 mm diameter/ 3.6-14.2 mm wall*							
	180 mm diameter/ 3.9-14.2 mm wall*							
	200 mm diameter/ 4.2-14.2 mm wall*							
	219 mm diameter/ 4.5-14.2 mm wall*							
	1200 x 600	Up to 12 mm diameter Copper pipe 0.9-14.2 mm wall	1000 mm min. of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> CI or LI			240	45	
		Up to 54 mm diameter Copper pipe 0.9-14.2 mm wall						
		114 mm diameter mild or stainless steel pipe 11-14.2 mm wall						
	2400 x 1200	600 x 1200	None			120**	20	
								240**

All conduit and pipe classifications are pipe end configurations C/U (U=Uncapped, C=Capped) except those marked \*\* which are C/C

\* Typical pipe diameters shown, intermediate sizes are possible

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PROTECTA FR BOARD 2S: Service Penetration Seals in floors								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services – Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe)	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Masonry/ Concrete	150	75 x 75	16 mm diameter/2.25 mm wall	Any position within floor	60	500 mm min. of 20 mm Stone wool insulation 80 kg/m <sup>3</sup> CI or LI	240	180
		600 x 1200	16 mm diameter/2.25 mm wall				240	90
			20 mm diameter/2.5 mm wall				240	90
			26 mm diameter/3 mm wall					
			32 mm diameter/3 mm wall					
			40 mm diameter/3.5 mm wall					
			50 mm diameter/4 mm wall					
		63 mm diameter/4.5 mm wall						
		75 mm diameter/4.7 mm wall						
	2400 x 1200	16 mm diameter/2.25 mm wall	120		90			
		20 mm diameter/2.5 mm wall	120		90			
		26 mm diameter/3 mm wall						
		32 mm diameter/3 mm wall						
		40 mm diameter/3.5 mm wall						
		50 mm diameter/4 mm wall						
	63 mm diameter/4.5 mm wall							
	75 mm diameter/4.7 mm wall							

All pipe classifications are pipe end configurations C/C (U=Uncapped, C=Capped)

LI = Local Interrupted  
 CI = Continuous Interrupted



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Protecta FR Board: Service Penetration Seals comprising 1x 50 mm Protecta FR Board 2-S seals, in floors, at mid-depth - Maximum aperture size 2400 mm x 1200 mm						
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services* - PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1	Protecta FR Wrap	Wrap Position	Fire Resistance (mins.)	
					E	EI
Concrete	150	110 mm diameter/ 3.4 mm wall	1 off 50 x 3.6 mm	Central	90	90

\*min. separation 25 mm from seal edges and 30 mm from other services

All pipe classifications are pipe end configurations U/C and C/C (U=Uncapped, C=Capped).

Protecta FR Board: Service Penetration Seals comprising 1x 60 mm Protecta FR Board 2-S seals, in floors, at any position - Maximum aperture size 2400 mm x 1200 mm							
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services* - Mild or stainless steel pipe	Protecta FRWrap	Wrap Position	Insulation CS	Fire Resistance (mins.)	
						E	EI
Concrete	150	165 mm diameter/ 4.5-14.2 mm wall	1 off 50 x 3.6 mm	Fitted to the bottom of the seal	13 mm Kaiflex ST insulation	90	45
					19 mm Kaiflex ST insulation	90	90
			Not required	-	25-40 mm stone wool 80 kg/m3	90	60

CS = Continuous Sustained

\*min. separation 25 mm from seal edges and 30 mm from other services

All pipe classifications are pipe end configuration C/U (U=Uncapped, C=Capped).



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Protecta FR Wrap: Service Penetration Seals comprising 2x 60 mm Protecta FR Board 2-S seals (separated and flush to both faces), in floors - Maximum aperture size 2400 mm x 1200 mm							
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services - Mild or stainless steel pipe	Protecta FR Wrap	Wrap Position	Insulation CS	Fire Resistance (mins.)	
						E	EI
Concrete	150	40 mm diameter/ 1-14.2 mm wall	1 off 50 x 1.8 mm	Fitted to the bottom of the seal	13 mm Kaiflex ST insulation	180	120

CS = Continuous Sustained

\*min. separation 25 mm from seal edges and 30 mm from other services

All pipe classifications are pipe end configuration C/U (U=Uncapped, C=Capped).



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Protecta FR Board: Service Penetration Seals comprising 2x 60 mm Protecta FR Board 2-S seals (back to back, flush to the soffit), in floors - Maximum aperture size 2400 mm x 1200 mm							
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services* - Copper pipe	Protecta FR Wrap	Wrap Position	Insulation CS	Fire Resistance (mins.)	
						E	EI
Concrete	150	12-54 mm diameter/1-1.2 mm wall	1 off 50 x 3.6 mm	Fitted to both sides of the seal	9-13 mm Kaiflex ST insulation	240	60
					13-25 mm Kaiflex ST insulation	180	45
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services - Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe)	Wrap	Wrap Position	Insulation CS	Fire Resistance (mins.)	
						E	EI
Concrete	150	16 mm diameter/2.25 mm wall	1 off 50 x 3.6 mm	Fitted to both sides of the seal	9 mm Kaiflex ST insulation	120	120
		20 mm diameter/2.5 mm wall					
		26 mm diameter/3 mm wall					
		32 mm diameter/3 mm wall					
		40 mm diameter/3.5 mm wall					
		50 mm diameter/4 mm wall					
		63 mm diameter/4.5 mm wall					
		75 mm diameter/4.7 mm wall					
		16 mm diameter/2.25 mm wall			13-25 mm Kaiflex ST insulation	60	45
		20 mm diameter/2.5 mm wall					
		26 mm diameter/3 mm wall					
		32 mm diameter/3 mm wall					
		40 mm diameter/3.5 mm wall					
		50 mm diameter/4 mm wall					
		63 mm diameter/4.5 mm wall					
		75 mm diameter/4.7 mm wall					

CS = Continuous Sustained

\*min. separation 40 mm from seal edges and 100 mm from other services

All pipe classifications are pipe end configuration C/C (C=Capped).





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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	75	1200 wide x 600 high	Electrical cables up to 21 mm Ø	To both faces of wall	30 (x2)	None	45	45
			Electrical cables up to 80 mm Ø				45	30
			Telecom cables up to 21 mm Ø				45	20
			Steel cable trays & ladders				45	45
			Unsheathed wires up to 24 mm Ø					
			uPVC* pipe 6 mm diameter / 1.0 mm wall					
			uPVC* pipe 32 mm diameter / 1.8 mm wall					

\* PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1

PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	75	1200 wide x 600 high	4 mm diameter/0.7-14.2 mm wall	To both faces of wall	30 (x2)	None	45	45
			22 mm diameter/2.0-14.2 mm wall				45	30
			40 mm diameter/1.0-14.2 mm wall*			30 mm Stone wool insulation 80 kg/m <sup>3</sup>	45	45
			40 mm diameter/1.0-14.2 mm wall*				30 mm Stone wool insulation 80 kg/m <sup>3</sup>	45
			50 mm diameter/1.7-14.2 mm wall*					
			60 mm diameter/1.8-14.2 mm wall*					
			75 mm diameter/2.1-14.2 mm wall*					
			90 mm diameter/2.3-14.2 mm wall*					
			100 mm diameter/2.5-14.2 mm wall*					
			115 mm diameter/2.8-14.2 mm wall*					
			140 mm diameter/3.2-14.2 mm wall*					
			165 mm diameter/ 3.6-14.2 mm wall*					
			180 mm diameter/ 3.9-14.2 mm wall*					
			200 mm diameter/ 4.2-14.2 mm wall*					
			219 mm diameter/ 4.5-14.2 mm wall*					
			250 mm diameter/ 5.0-14.2 mm wall*					
			300 mm diameter/ 5.9-14.2 mm wall*					
324 mm diameter/ 6.35-14.2 mm wall*								

\* Typical pipe diameters shown, intermediate sizes are possible

\*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise

CS = Continuous Sustained



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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	2400 wide x 1200 high	None (blank)	To both faces of wall	50 (x2)	None	120	120
			Single electrical cables up to 21 mm Ø				120	60
			Electrical cables up to 80 mm Ø (single, bundled and on trays)				60	60
			Cables up to 21mm Ø in tied bundles up to 100mm Ø					
			Steel cable trays & ladders				60	60
			Steel conduit up to 16 mm Ø				60	45
			copper conduit up to 16 mm Ø				60	30
			Unsheathed wires up to 24 mm Ø				60	60
PVC conduit up to 16 mm Ø								

\*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise



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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	40 mm diameter/1-14.2 mm wall	To both faces of wall	50 (x2)	20 mm Stone wool insulation 80 kg/m <sup>3</sup>	120	120
			40 mm diameter/1-14.2 mm wall*			30-80 mm thick stone, mineral wool min. 80 kg/m <sup>3</sup>		
			50 mm diameter/1.2-14.2 mm wall*					
			60 mm diameter/1.4-14.2 mm wall*					
			75 mm diameter/1.6-14.2 mm wall*					
			90 mm diameter/1.9-14.2 mm wall*					
			100 mm diameter/2.1-14.2 mm wall*					
			115 mm diameter/2.4-14.2 mm wall*					
			140 mm diameter/2.9-14.2 mm wall*					
			165 mm diameter/ 3.4-14.2 mm wall*					
			180 mm diameter/ 3.6-14.2 mm wall*					
			200 mm diameter/ 4.0-14.2 mm wall*					
			219 mm diameter/ 4.3-14.2 mm wall*					
			250 mm diameter/ 5.0-14.2 mm wall*					
			300 mm diameter/ 5.9-14.2 mm wall*					
324 mm diameter/ 6.35-14.2 mm wall*								

\*\* All pipe classifications are Capped/Un capped (C/U) unless identified otherwise  
 #Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PEX pipe in pipe system	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	15 mm diameter x 2.5 mm wall inner /25mm diameter outer	To both faces of wall	50 (x2)	None	90	90
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	4 mm diameter/1-14.2 mm wall	To both faces of wall	50 (x2)	None	120	120
			22 mm diameter/2-14.2 mm wall				120	60
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Copper, mild or stainless steel pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	6 mm diameter/0.7-14.2 mm wall	To both faces of wall	50 (x2)	None	120	60

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls



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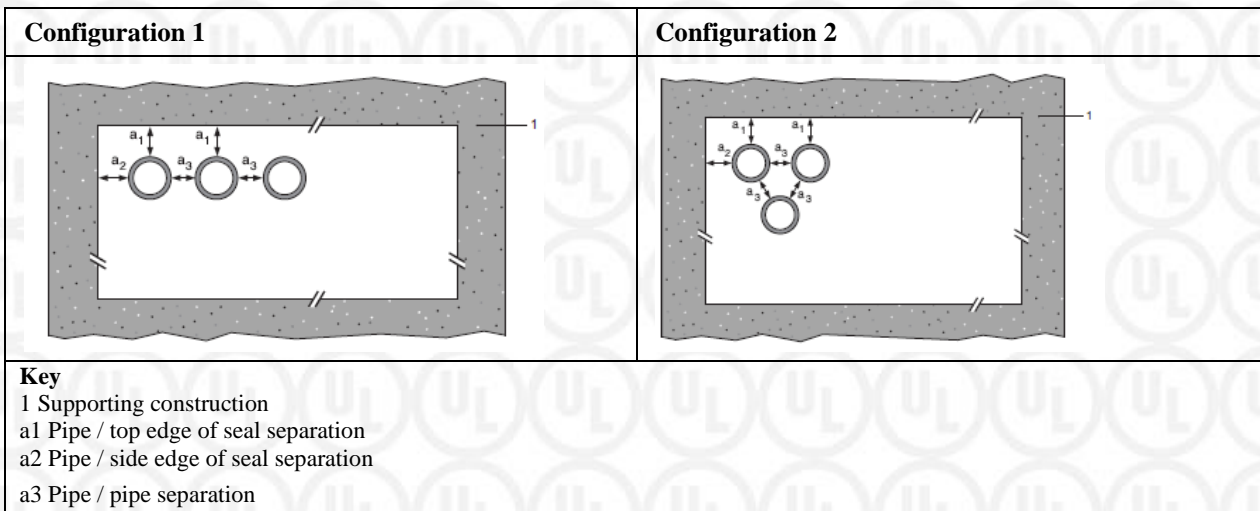
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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PE-Xb/Al/PE-Xb pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	16 -20 mm diameter/2.0 mm wall	To both faces of wall	50 (x2)	None	120	120	
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PVC-U* pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	6 mm diameter/1.0 mm wall	To both faces of wall	50 (x2)	None	120	120	
			6-32 mm diameter/1.8-2.4 mm wall				90	60	
			32 mm diameter/2.4 mm wall				90	90	
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PE^ pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	20 mm diameter/2.0 mm wall	To both faces of wall	50 (x2)	None	120	90	
			20-32 mm diameter/2.0-3.0 mm wall				60	60	
			32 mm diameter/3.0 mm wall				90	90	
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PE^ pipe **	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)		
							E	EI	
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	20 mm diameter/2.2 mm wall	To both faces of wall	50 (x2)	None	120	60	
			32 mm diameter/1.8 mm wall						

\* PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1

^ PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls



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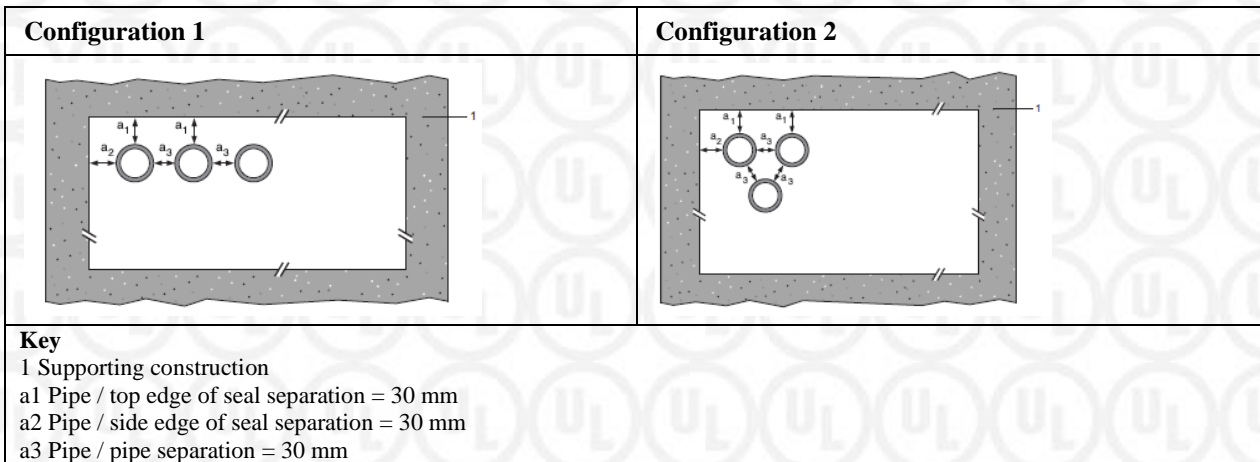
PROTECTA FR BOARD 1S (2x50mm board) with Protecta FR Wrap: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Protecta FR Wrap	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	40 mm diameter/1-14.2 mm wall	Flush to both faces	3 layers 50 x 1.8 mm to both faces	32 mm thick K-flex Elastomeric insulation	90	90
			40 mm diameter/1-14.2 mm wall*			32-50 mm thick K-flex Elastomeric insulation		
			50 mm diameter/1.2-14.2 mm wall*					
			60 mm diameter/1.4-14.2 mm wall*					
			75 mm diameter/1.6-14.2 mm wall*					
			90 mm diameter/1.9-14.2 mm wall*					
			100 mm diameter/2.1-14.2 mm wall*					
			115 mm diameter/2.4-14.2 mm wall*					
			140 mm diameter/2.9-14.2 mm wall*					
			165 mm diameter/ 3.4-14.2 mm wall*					
			180 mm diameter/ 3.6-14.2 mm wall*					
			200 mm diameter/ 4.0-14.2 mm wall*					
			219 mm diameter/ 4.3-14.2 mm wall*					
			250 mm diameter/ 5.0-14.2 mm wall*					
			300 mm diameter/ 5.9-14.2 mm wall*					
324 mm diameter/ 6.35-14.2 mm wall*								

\* Typical pipe diameters shown, intermediate sizes are possible

\*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

CS = Continuous Sustained



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PROTECTA FR BOARD 1S (2x50mm board) with Protecta FR Wrap: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe **	Seal Position	Protecta FR Wrap	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	40 mm diameter/1-14.2 mm wall	Flush to both faces	1 off 50 x 1.8 mm fitted centrally	13 mm thick Kaiflex ST insulation	120	120
			40 mm diameter/1-14.2 mm wall*					
			50 mm diameter/1.3-14.2 mm wall*					
			60 mm diameter/1.6-14.2 mm wall*					
			75 mm diameter/2-14.2 mm wall*					
			90 mm diameter/2.4-14.2 mm wall*					
			100 mm diameter/2.7-14.2 mm wall*					
			115 mm diameter/3.1-14.2 mm wall*					
			140 mm diameter/3.8-14.2 mm wall*					
165 mm diameter/ 4.5-14.2 mm wall*								
					2 off 50 x 3.6 mm, one fitted flush to each face of the seal	13 - 32 mm thick Kaiflex ST insulation	120	60

\* Typical pipe diameters shown, intermediate sizes are possible

\*\* All pipe classifications are pipe end configurations U/C, U/U, C/U and C/C (U=Uncapped, C=Capped).

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

CS = Continuous Sustained



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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls										
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)			
							E	EI		
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	Copper pipe up to 54 mm diameter/1-14.2 mm wall	To both faces of wall	50 (x2)	500 mm min. length 20 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	120***	120		
			Alupex composite pipe 75 mm diameter/7.5 mm wall			600 mm min. length of 25 mm Protecta Mineral Fibre BIO LI or CI			60	60
			Mild or stainless steel pipe 114 mm diameter/11 mm wall			None			90	20
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)			
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	40 mm diameter/1-14.2 mm wall	To both faces of wall	50 (x2)	20 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI	120	120		
			40 mm diameter/1-14.2 mm wall*			30 mm Stone wool insulation 80 kg/m <sup>3</sup> LI or CI			120	90
			50 mm diameter/1.2-14.2 mm wall*							
			60 mm diameter/1.4-14.2 mm wall*							
			75 mm diameter/1.7-14.2 mm wall*							
			90 mm diameter/2-14.2 mm wall*							
			100 mm diameter/2.2-14.2 mm wall*							
			115 mm diameter/2.5-14.2 mm wall*							
			140 mm diameter/3-14.2 mm wall*							
			165 mm diameter/3.5-14.2 mm wall*							
			180 mm diameter/3.8-14.2 mm wall*							
200 mm diameter/4.2-14.2 mm wall*										
219 mm diameter/4.5-14.2 mm wall*										

\* Typical pipe diameters shown, intermediate sizes are possible  
 \*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise  
 \*\*\* Capped/Capped (C/C)  
 #Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

LI = Local Interrupted  
 CI = Continuous Interrupted



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PROTECTA FR BOARD 2S: Service Penetration Seals in walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services – Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD pipe)	Seal Position	Minimum Seal Depth (mm)	Service insulation	Fire Resistance (mins.)	
							E	EI
Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	16 mm diameter/2.25 mm wall	To both faces of wall	50 (x2)	20 mm Stone wool insulation 80 kg/m <sup>3</sup> CI	120	120
			20 mm diameter/2.5 mm wall				60	60
			26 mm diameter/3 mm wall					
			32 mm diameter/3 mm wall					
			40 mm diameter/3.5 mm wall					
			50 mm diameter/4 mm wall					
			63 mm diameter/4.5 mm wall					
75 mm diameter/4.7 mm wall								

All pipe classifications are pipe end configurations C/C (U=Uncapped, C=Capped)  
 #Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

LI = Local Interrupted  
 CI = Continuous Interrupted





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<b>Protecta FR Board: Service Penetration Seals comprising 2x 50 mm Protecta FR Board 1-S (flush to both faces), in flexible or rigid wall - Maximum aperture size unlimited width x 1200 mm high#.</b>							
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services* - Copper pipe	Protecta FR Wrap	Wrap Position	Insulation LS or CS Min. 350 mm	Fire Resistance (mins.)	
						E	EI
Gypsum board, Masonry/ Concrete	100	12 mm diameter/1 mm wall	2 off 50 x 3.6 mm	One fitted to each face of seal	9 mm Kaiflex ST insulation	120	120
		12-54 mm diameter/1-1.2 mm wall			9-13 mm Kaiflex ST insulation	120	90
		12-54 mm diameter/1-1.2 mm wall			13-25 mm Kaiflex ST insulation	120	60
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services - Geberit Mepla MLC (PE-Xb/Aluminium/PE-HD) pipe	Protecta FR Wrap	Wrap Position	Insulation LS or CS Min. 350 mm	Fire Resistance (mins.)	
						E	EI
Gypsum board, Masonry/ Concrete	100	16 mm diameter/2.25 mm wall	2 off 50 x 3.6 mm	One fitted to each face of seal	9-25 mm Kaiflex ST insulation	120	120
		20 mm diameter/2.5 mm wall					
		26 mm diameter/3 mm wall					
		32 mm diameter/3 mm wall					
		40 mm diameter/3.5 mm wall					
		50 mm diameter/4 mm wall					
		63 mm diameter/4.5 mm wall					
75 mm diameter/4.7 mm wall							

All pipe classifications are pipe end configuration C/C (C=Capped).

\*min. separation 40 mm from seal edges and 100 mm from other services

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls

LS = Local Sustained

CS = Continuous Sustained



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Protecta FR Board: Service Penetration Seals comprising 2x Protecta FR Board 1-S (flush to both faces), in flexible or rigid wall - Maximum aperture size unlimited width x 1200 mm high#.						
Substrate	Minimum Substrate Thickness (mm)	Penetrating Services - PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1	Protecta FR Wrap	Wrap Position	Fire Resistance (mins.)	
					E	EI
Gypsum board, Masonry/Concrete	100	315 mm diameter/ 9.2 mm wall	1 off 75 x 18 mm	Central	45	45

All pipe classifications are pipe end configuration C/C (C=Capped).

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls



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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls								
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
							E	EI
Gypsum Drywall/ Masonry/ Concrete	100	1200 wide x 600 high	Electrical cables up to 80 mm Ø	Any position within wall	50	None	60	60
			Telecom cables up to 21 mm Ø					
			Perforated Steel cable trays & ladders				60	45
			Unperforated steel cable trays					
			Unsheathed wires up to 24 mm Ø					
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services Mild or stainless steel pipe**	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
Gypsum Drywall/ Masonry/ Concrete	100	1200 wide by 600 high	40 mm diameter/1.0-14.2 mm wall*	Any position within wall	50	20 mm thick stone, mineral wool 80 kg/m <sup>3</sup>	90	60
			40 mm diameter/1.0-14.2 mm wall*					
			50 mm diameter/1.7-14.2 mm wall*					
			60 mm diameter/1.8-14.2 mm wall*					
			75 mm diameter/2.1-14.2 mm wall*					
			90 mm diameter/2.3-14.2 mm wall*					
			100 mm diameter/2.5-14.2 mm wall*					
			115 mm diameter/2.8-14.2 mm wall*					
			140 mm diameter/3.2-14.2 mm wall*					
			165 mm diameter/ 3.6-14.2 mm wall*					
			180 mm diameter/ 3.9-14.2 mm wall*					
			200 mm diameter/ 4.2-14.2 mm wall*					
			219 mm diameter/ 4.5-14.2 mm wall*					
			250 mm diameter/ 5.0-14.2 mm wall*					
300 mm diameter/ 5.9-14.2 mm wall*								
324 mm diameter/ 6.35-14.2 mm wall*								
			324 mm diameter/ 6.35-14.2 mm wall*			30 mm thick stone, mineral wool min. 80 kg/m <sup>3</sup>		
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PEX pipe in pipe system **	Seal Position	Minimum Seal Depth (mm)	Service insulation CS	Fire Resistance (mins.)	
Gypsum Drywall/ Masonry/ Concrete	100	2400 wide by 1200 high	15 mm diameter x 2.5 mm wall inner /25mm diameter outer	Flush to both faces	100 mm (2x50mm board)	None	90***	90***

\* Typical pipe diameters shown, intermediate sizes are possible

\*\* All pipe classifications are Capped/Uncapped (C/U) unless identified otherwise

CS = Continuous Sustained



# Appendix UL-EU CERTIFICATE

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PROTECTA FR BOARD 1S: Service Penetration Seals in Walls									
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1	Seal Position	Minimum Seal Depth (mm)	Protecta FR collar Inlay (mm)	Collar Position	Fire Resistance (mins.)	
								E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	Diameter 32 mm, wall thickness 1.9 mm	Any position within wall	50	30 x 2.4	Each side of FR Board	90	45
			Diameter 40 mm, wall thickness 1.9 mm						
			Diameter 50 mm, wall thickness 3.7-6.6 mm						
			Diameter 55 mm, wall thickness 3.7-6.6 mm						
			Diameter 63 mm, wall thickness 3.7-6.6 mm						
			Diameter 75 mm, wall thickness 3.7-6.6 mm						
			Diameter 82 mm, wall thickness 3.7-6.6 mm						
			Diameter 90 mm, wall thickness 3.7-6.6 mm						
Diameter 110 mm, wall thickness 3.7-6.6 mm	30 x 4.2	90	30						
Diameter 110 mm, wall thickness 3.7-6.6 mm	30 x 5.0	90	60						
Diameter 110 mm, wall thickness 3.7-6.6 mm	30 x 6.0	90	60						
Substrate	Minimum Substrate Thickness (mm)	Maximum Opening Size (mm)	Penetrating Services PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1**	Seal Position	Minimum Seal Depth (mm)	Service insulation	Collar Position	Fire Resistance (mins.)	
								E	EI
Gypsum Drywall/ Masonry/ Concrete	100	Unlimited width x 1200 high#	Diameter 32 mm, wall thickness 3.4-10.0 mm	Any position within wall	50	30 x 3.0	Each side of FR Board	60	45
			Diameter 40 mm, wall thickness 3.4-10.0 mm						
			Diameter 50 mm, wall thickness 3.4-10.0 mm						
			Diameter 55 mm, wall thickness 3.4-10.0 mm						
			Diameter 63 mm, wall thickness 3.4-10.0 mm						
			Diameter 75 mm, wall thickness 3.4-10.0 mm						
			Diameter 82 mm, wall thickness 3.4-10.0 mm						
			Diameter 90 mm, wall thickness 3.4-10.0 mm						
Diameter 110 mm, wall thickness 3.4-10.0 mm	30 x 4.2								
Diameter 110 mm, wall thickness 3.4-10.0 mm	30 x 5.0								
Diameter 110 mm, wall thickness 3.4-10.0 mm	30 x 6.0								

All pipe classifications are pipe end configurations U/C (U=Uncapped, C=Capped)

#Uninterrupted separating studs will be required at 2400 mm centres or less in flexible walls



# Appendix UL-EU Certificate

<b>Certification Mark</b>	<b>UL-EU mark</b>
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The UL-EU Mark, as displayed below, shall appear on certified products only. Minimum size is not specified, as long as the Mark is legible. The following is suggested.



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