

# Technical Data Sheet

Issue: 5.2  
June 2018

## Silverseal STD & HS Compound UIC of product-type: SSC & HSC



**FIRE STOPPING & COMPARTMENTATION SYSTEMS**

CE Certification  
Air Permeability  
Movement Rigid Walls  
Pipes Linear joints  
Acoustic Rating  
Trays Rigid Floors  
CE Certification  
Air Permeability



CE Certific  
Penetration Seals  
Movement Rigid W  
Metallic Pipes Lin  
Flexible Walls Ac  
Cable Trays Rigid  
Plastic Pipes CE C  
Air Permeability



**UAE Certificate of Compliance**

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ETA 14-0280  
ETA 15-0281

CE-1121-CPR-JA5039  
CE-1121-CPR-JA5066



FSi Limited  
Westminster Industrial Estate  
Tamworth Road  
Measham  
DE12 7DS  
UK

[www.fsilttd.com](http://www.fsilttd.com)

Email: [technical@fsilttd.com](mailto:technical@fsilttd.com)  
Tel: +44 (0) 1530 515130  
Fax: +44 (0) 1530 273564





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# Product Technical Data - HS

ETA 14-0280  
CE-1121-CPR-JA5039

## Product Overview

### Technical Description of the Product

Silverseal HS Compound is a Gypsum based mortar material, used to reinstate the fire resistance performance of floor constructions where they have been provided with apertures for the penetrations of multiple services. Silverseal HS Compound is supplied as a dry material, and is mixed with water to the required ratio prior to installation.

Silverseal HS Compound when mixed is self-supporting in a floor to spans of 1800mm. Temporary non combustible shuttering is required to support the wet weight of the Silverseal HS Compound. The seal is high strength, non-combustible and is load bearing. Silverseal HS Compound has a fire resistance to EN1366-3 up to EI120, including BS476 Pt 20 and BS6399-1 Loading for Buildings "Code of Practice for dead and applied loads".

### Intended Use

The intended use of Silverseal HS Compound is to reinstate the fire resistance performance of rigid floor constructions where they are penetrated by various cables and metallic pipes.

The specific elements of construction that the system Silverseal HS Compound may be used to provide a penetration seal in, are as follows:

- Fire resistance testing to EN 1366-3: 2009.
- Classified as EI 120 using EN 13501-2.

### Key Product Points

- Rapid setting, zero shrinkage formulation - can be used as pourable or trowel grade, gas tight seals.
- Excellent workability ranging from stiff to pourable mix.
- Good load bearing performance in floor seals. (Consult FSi Technical Department for details).



# Product Technical Data - HS

ETA 14-0280  
CE-1121-CPR-JA5039

Silverseal HS Compound is intended for sealing around all types of M&E service penetrations through floors and walls, where a rigid seal is required. The unique Silverseal HS Compound enables even the most demanding applications to be covered.

## Mixing

Silverseal HS Compound can be mixed preferably by mechanical paddle or manually if required. Measure out the correct amount of clean water into a clean container to achieve the desired consistency.

(Silverseal HS Compound: water ratio):

**Pourable Mix ratio of 3 - 3½: 1**

**Trowelable Mix ratio of 4: 1**

Gradually add the Silverseal HS Compound stirring continually. Continue mixing until the Silverseal HS Compound is mixed to a smooth even consistency. Any spillage should be wiped up with a damp cloth before setting occurs. May stain pipes and services. Mix only enough material sufficient for use within the recommended pot life (20-30 minutes). Pot life and set times will be reduced for lower water content and higher temperatures.

Installation should not be carried out when temperatures are above 35°C. Setting times are normally between 30 and 90 minutes. **Warning:** Do not attempt to extend working time by remixing with additional water once the mortar has started to set, as this will interfere with the setting process. Always mix in clean buckets. Using dirty buckets containing remains of compound from earlier mixes may reduce working time.

Fit damming board/shuttering to bottom of opening. Damming materials must be able to support the wet weight of the compound under pouring conditions. Pour Silverseal HS Compound to the required 100mm thickness.

## Load Bearing Floor

Seals in a concrete slab opening, e.g. within a service riser, the unique combination of structural properties of Silverseal HS Compound enables the finished seal to support considerable loads over quite large spans, without the need for steel reinforcement. Consult FSi Technical Department for details.

## Wall Penetrations

Silverseal HS Compound can be mixed and trowelled into a vertical opening, and worked around services without slumping. They can also be cast into blocks for building into larger openings, using a stiff mix of the same compound as bedding.

## Load Bearing Seals around Unsupported Fire Dampers

Silverseal HS Compound has been successfully tested at BRE around both single and multiple fire damper assemblies, supported only by the compound, in wall and floor openings. The excellent crushing strength and shear resistance of Silverseal HS Compound seal ensures that the installation frame will be retained in the wall or floor if the ductwork should collapse, even when the HVAC Installation frame is not tied back to the structure.

## Terminology

Fire performance in accordance with EN1366-3, EN1366-4, Classification 13501-2:2007 + A1:2009, ETAG-026, Air Permeability EN1026, Sound EN10140. Fire resistance classes are: E = Integrity, the product can withstand the fire from the non-fire side, I = Insulation, the product can withstand the temperature travelling down the service, U/U = Uncapped inside and outside the furnace, U/C = Uncapped inside and Capped outside the furnace, C/U = Capped inside and Uncapped outside the furnace.

## Setting and Hardening

Unlike cement-based fire stopping mortars, FSi Silverseal HS Compound will achieve maximum wet strength approximately four hours from casting. Ultimate strength is reached when dry and fully hardened. The drying time will be dependant on the prevailing ambient conditions.

Silverseal HS Compound is available in 20kg sacks. Add powder to clean tap water to the required consistency and coverage. Silverseal HS Compound is to be installed in accordance with installation requirements. Installation details and technical support are available from FSi Technical Department. Please contact FSi Technical Department for load bearing calculations at all times.



# Product Technical Data - HS

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Description	Result	Test Standards
Description	Grey coloured free flowing powder.	
Density	1750-1900 Kg/m <sup>3</sup>	
Loadbearing	2.5k N/m <sup>2</sup> UDL	BS 6399-1
Fire Resistance	EI 120 / E120 and 240mins	EN1366 / BS 476 pt 20
Classification	EN13501:2	
Acoustic Performance R'w (C; Ctr) (dB)	57 (-2;-6) dB at 100mm (With 50mm Stopseal Batt)	EN 10140
Max Unsupported Span	1800 mm (consult FSi Technical Department for larger spans)	
Thermal Conductivity (U Value) @100mm	0.45 - U Value I / 'R' 4.5	
Thermal Resistance 'R' (t/k) @100mm	0.22	
Expansion on Setting (%)	0.1	
Typical Yield	± 6 Bags per m <sup>2</sup> at 100mm depth	
BREEAM International	Compliant	GN22: BREEAM Recognised Schemes for VOC Emissions from Building Products
Expected Shelf Life	At least 6 months	Stored in accordance with packaging instructions
<p><b>WARNING:</b> As the load bearing performance particularly in un-reinforced situations is dependent on compressive membrane action against the concrete slab edge or other rigid boundary, it is essential to check that this is vertical, before commencing installation. Building up the seal in several operations with Pourable / floors the individual layers being allowed to set, will result in a weak laminated structure with severely reduced load bearing performance. Cutting out part of the finished seal to accommodate services, must not be undertaken without review by FSi Technical Department, to consider the effect on the structural integrity of the seal.</p>		

## Installation

Ensure that the aperture and services in question are tested with Silverseal HS Compound, and the site conditions are within the application specification.

All services and apertures need to be clean and clear of all dust and loose particles. The aperture temperature needs to be at 5°C or above at time of installation. Combustible services require closure device / material where they pass through the Silverseal HS Compound, see FSi PipeBloc PWP / EL.

Upon installation make sure that you install the Silverseal HS Compound to the recommended ratio for the aperture you are installing, make sure that you fill the full depth in a single pour to create a solid structure. Minimum 100mm depth in a single pour to achieve load bearing capabilities, consult FSi for specific requirements.

Once filled smooth off the Silverseal HS Compound to produce a professional finish.



# Performance Data - HS

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## Wall Openings

For small holes and gaps, trowel a stiff mix into the opening to the correct depth. For larger holes, use an appropriate non combustible shuttering material to support the mix until it sets, or, if a fair faced finish is required to both sides, consider using a sandwich construction. Alternatively, the Silverseal HS Compound may be pre- cast into convenient sized blocks, a stiff mix being used as a bedding mortar. All combustible services (Plastic Pipes etc.) should have a tested fire rated closure device/material fitted prior to the pouring of the Silverseal HS Compound. These are typically FSi intumescent pipe wraps.

## Floor Openings

When sealing holes in floor slabs, appropriate shuttering must be installed, cut to fit tightly around any services within the opening, to support the wet mix until it sets. Non-combustible shuttering materials, such as mineral fibre slab, can be left in place, but combustible materials must be removed, after the mix has set. For complex penetrations it may be preferable, to initially form a thin seal around all services, with a nominal 5mm layer of the Silverseal HS Compound mix. Once this has set the remaining depth of seal should be poured in one operation. All combustible services (Plastic Pipes etc.) should have a tested fire rated closure device/material fitted prior to the pouring of the Silverseal HS Compound. These are typically FSi intumescent pipe wraps.

## RIGID FLOOR

Penetration seal with Silverseal HS Compound installed to 100mm depth of the floor, maximum seal size 1800mm x 1800mm, minimum floor thickness of 150mm.	
Penetration Specification	Classification
Copper pipe 40-107 mm $\varnothing$ and 1.5 – 14.2 mm wall, insulated with 'LI' (local interrupted 500mm) 50 mm thick Rockwool H&V Pipe Section min 150kg/m <sup>3</sup> .	E 60 C/U EI 15 C/U
Steel pipe 40-115 mm $\varnothing$ and 3.5 – 14.2 mm wall, insulated with 'LI' (local interrupted 500mm) 50 mm thick Rockwool H&V Pipe Section min 150kg/m <sup>3</sup> .	EI120 C/U
Steel pipe 160 mm $\varnothing$ and 5– 14.2 mm wall, insulated with 'LI' (local interrupted 500mm) 50 mm thick Rockwool H&V Pipe Section min 150kg/m <sup>3</sup> .	E 120 C/U EI 90 C/U
Electrical cables up to 80 mm $\varnothing$ , insulated with 25mm thick Rockwool Duct Wrap 500mm long min 45kg/m <sup>3</sup> .	E 120 EI 60
Non-sheathed wire up to 24 mm $\varnothing$ insulated with 25mm thick Rockwool Duct Wrap 500mm long min 45kg/m <sup>3</sup> .	EI 120

Penetration seal with Silverseal HS Compound installed to 150mm depth of the floor, maximum seal size 1800mm x 1800mm, minimum floor thickness of 150 mm.	
Penetration Specification	Classification
Telecom cables in bundles of up to 100 mm diameter with 25mm thick Rockwool Duct Wrap 500mm long min 45kg/m <sup>3</sup> .	EI120

Extended scope of works available through BRE Assessment CC297598



# Performance Data - HS

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## RIGID FLOOR

150mm Rigid Floor.				
Aperture Size	Seal Composition	Services	Capping	Classification
1400mm x 700mm	The aperture was sealed with a 100mm Silverseal HS Compound. The compound was poured in around the service penetrations flush with the exposed face of the floor.	Electrical cables up to 21mm dia	N/A	EI 120
		Electrical cables 33mm to 80mm dia		E 120, EI 90
		Cable Trays and Ladders		Ei 120
		100mm diameter bundle telecommunication cable type "F"		EI 90
		Unsheathed electrical cables up to 17mm dia		
		Unsheathed electrical cables 18-24mm dia		
		Steel or Copper Conduits up to 16mm		
Plastic conduits up to 16mm				

PipeBloc PCP, Fixed onto the underside ONLY of Silverseal HS Compound with a minimum thickness of 100mm PE, ABS & SAN+PVC Pipes								
Aperture Size	Seal Composition	Services	Collar Reference	Intumescent Material	Capping	Formation	Collar Fixing	Classification
1400mm x 700mm	The aperture was sealed with a 100mm Silverseal HS Compound. The compound was poured in around the service penetrations flush with the exposed face of the floor.	PE Pipe 32mm Ø 2.9mm Wall thickness	32mm PipeBloc PCP	30mm (W) x 4mm (T)	U/C	Cluster Formation of Pipes with 0mm separation	Anchor Fixings	EI 120
		PE Pipe 40mm Ø 2.9mm Wall thickness	40mm PipeBloc PCP					
		PE Pipe 50mm Ø 2.9mm Wall thickness	50mm PipeBloc PCP					
		PE Pipe 55mm Ø 2.9mm - 4.4mm Wall thickness	55mm PipeBloc PCP	30mm (W) x 6mm (T)				
		PE Pipe 63mm Ø 2.9mm - 4.4mm Wall thickness	63mm PipeBloc PCP					
		PE Pipe 75mm Ø 2.8mm - 6.7mm Wall thickness	75mm PipeBloc PCP	30mm (W) x 8mm (T)				
		PE Pipe 82mm Ø 2.8mm - 6.7mm Wall thickness	82mm PipeBloc PCP					
		PE Pipe 90mm Ø 2.7mm - 10.0mm Wall thickness	90mm PipeBloc PCP	30mm (W) x 10mm (T)				
		PE Pipe 100mm Ø 2.7mm - 10.0mm Wall thickness	100mm PipeBloc PCP					
		PE Pipe 110mm Ø 2.7mm - 10.0mm Wall thickness	110mm PipeBloc PCP					
		PE Pipe 125mm Ø 3.1mm Wall thickness	125mm PipeBloc PCP					
		PE Pipe 140mm Ø 3.9mm - 5.8mm Wall thickness	140mm PipeBloc PCP					
		PE Pipe 160mm Ø 4.9mm - 9.5mm Wall thickness	160mm PipeBloc PCP	40mm (W) x 18mm (T)				



# Performance Data - HS

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## RIGID FLOOR

PipeBloc PCP, Fixed onto the underside ONLY of Silverseal HS Compound with a minimum thickness of 100mm PVC-U , PVC-C.								
Aperture Size	Seal Composition	Services	Collar Reference	Intumescent Material	Capping	Formation	Collar Fixing	Classification
1400mm x 700mm	The aperture was sealed with a 100mm Silverseal HS Compound. The compound was poured in around the service penetrations flush with the exposed face of the floor.	PVC Pipe 32mm Ø 1.8mm Wall thickness	32mm PipeBloc PCP	30mm (W) x 4mm (T)	U/C	Cluster Formation of Pipes with 0mm separation	Anchor Fixings	EI 120
		PVC Pipe 40mm Ø 1.8mm Wall thickness	40mm PipeBloc PCP					
		PVC Pipe 50mm Ø 1.8mm Wall thickness	50mm PipeBloc PCP					
		PVC Pipe 55mm Ø 2.3mm - 3mm Wall thickness	55mm PipeBloc PCP	30mm (W) x 6mm (T)				
		PVC Pipe 63mm Ø 2.3mm - 3mm Wall thickness	63mm PipeBloc PCP	30mm (W) x 8mm (T)				
		PVC Pipe 75mm Ø 3.1mm - 4.8mm Wall thickness	75mm PipeBloc PCP					
		PVC Pipe 82mm Ø 3.1mm - 4.8mm Wall thickness	82mm PipeBloc PCP					
		PVC Pipe 90mm Ø 4.2mm - 7.4mm Wall thickness	90mm PipeBloc PCP	30mm (W) x 10mm (T)				
		PVC Pipe 100mm Ø 4.2mm - 7.4mm Wall thickness	100mm PipeBloc PCP					
		PVC Pipe 110mm Ø 4.2mm - 7.4mm Wall thickness	110mm PipeBloc PCP					
		PVC Pipe 125mm Ø 6mm Wall thickness	125mm PipeBloc PCP	40mm (W) x 12mm (T)				
		PVC Pipe 140mm Ø 6.1mm - 7.5mm Wall thickness	140mm PipeBloc PCP	40mm (W) x 16mm (T)				
		PVC Pipe 160mm Ø 6.2mm - 9.5mm Wall thickness	160mm PipeBloc PCP	40mm (W) x 18mm (T)				



# Performance Data - HS

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## RIGID FLOOR

PipeBloc PCP, Fixed onto the underside ONLY of Silverseal HS Compound with a minimum thickness of 100mm PP Pipes.

Aperture Size	Seal Composition	Services	Collar Reference	Intumescent Material	Capping	Formation	Collar Fixing	Classification
1400mm x 700mm	The aperture was sealed with a 100mm Silverseal HS Compound. The compound was poured in around the service penetrations flush with the exposed face of the floor.	PP Pipe 32mm Ø 2.9mm Wall thickness	32mm PipeBloc PCP	30mm (W) x 4mm (T)	U/C	Cluster Formation of Pipes with 0mm separation	Anchor Fixings	EI 120
		PP Pipe 40mm Ø 2.9mm Wall thickness	40mm PipeBloc PCP					
		PP Pipe 50mm Ø 2.9mm Wall thickness	50mm PipeBloc PCP					
		PP Pipe 55mm Ø 2.9mm - 4.4mm Wall thickness	55mm PipeBloc PCP	30mm (W) x 6mm (T)				
		PP Pipe 63mm Ø 2.9mm - 4.4mm Wall thickness	63mm PipeBloc PCP					
		PP Pipe 75mm Ø 2.8mm - 6.7mm Wall thickness	75mm PipeBloc PCP	30mm (W) x 8mm (T)				
		PP Pipe 82mm Ø 2.8mm - 6.7mm Wall thickness	82mm PipeBloc PCP					
		PP Pipe 90mm Ø 2.7mm - 10.0mm Wall thickness	90mm PipeBloc PCP	30mm (W) x 10mm (T)				
		PP Pipe 100mm Ø 2.7mm - 10.0mm Wall thickness	100mm PipeBloc PCP					
		PP Pipe 110mm Ø 2.7mm - 10.0mm Wall thickness	110mm PipeBloc PCP					
		PP Pipe 125mm Ø 3.1mm Wall thickness	125mm PipeBloc PCP	40mm (W) x 12mm (T)				
		PP Pipe 140mm Ø 3.5mm - 8.0mm Wall thickness	140mm PipeBloc PCP	40mm (W) x 16mm (T)				
		PP Pipe 160mm Ø 4.0mm - 14.6mm Wall thickness	160mm PipeBloc PCP	40mm (W) x 18mm (T)				



# Product Technical Data - STD

ETA 15-0281  
CE-1121-CPR-JA5066

## Product Overview

### Technical Description of the Product

Silverseal Compound is a Gypsum based mortar material, used to reinstate the fire resistance performance of floor constructions where they have been provided with apertures for the penetrations of multiple services. Silverseal Compound is supplied as a dry material, and is mixed with water to the required ratio prior to installation.

Silverseal Compound when mixed is self-supporting in a floor to spans of 700mm. Temporary shuttering is required to support the wet weight of the Silverseal Compound. The seal is high strength, non-combustible and is load bearing. Silverseal Compound has a fire resistance to EN1366-3 up to EI120.

### Intended Uses

The intended use of Silverseal Compound is to reinstate the fire resistance performance of rigid wall and floor constructions where they are penetrated by various cables and metallic pipes.

The specific elements of construction that the System Silverseal Compound may be used to provide a penetration seal in, are as follows:

- Fire resistance testing to EN 1366-3: 2009.
- Classified as EI 120 using EN 13501-2.
- Fire Integrity up to 4 hours.

### Key Product Points

- Rapid setting, zero shrinkage formulation - can be used as pourable or trowel grade, gas tight seals.
- Excellent workability ranging from stiff to pourable mix.
- Good load bearing performance in floor seals. (Consult FSi Technical Department for details).



# Product Technical Data - STD

ETA 15-0281  
CE-1121-CPR-JA5066

Silverseal Compound is intended for sealing around all types of M&E service penetrations through floors and walls, where a rigid seal is required. The unique qualities of Silverseal Compound means even the most demanding applications can be covered.

## Mixing

Silverseal Compound can be mixed by mechanical paddle or manually if required. Measure out the correct amount of clean water into a clean container to achieve the desired consistency.

(Silverseal Compound: water ratio):

**Pourable Mix ratio of 2½: 1      Trowelable Mix ratio of 3: 1**

Gradually add the Silverseal Compound stirring continually. Continue mixing until the Silverseal Compound is mixed to a smooth even consistency. Any spillage should be wiped up with a damp cloth before setting occurs. May stain pipes and services. Mix only enough material sufficient for use within the recommended pot life (20-30 minutes). Pot life and set times will be reduced for lower water content and higher temperatures.

Installation should not be carried out when temperatures are above 35°C. Setting times are normally between 30 and 90 minutes. Warning: Do not attempt to extend working time by remixing with additional water once the mortar has started to set, as this will interfere with the setting process. Always mix in clean buckets. Using dirty buckets containing remains of compound from earlier mixes may reduce working time.

Fit damming board/shuttering to bottom of opening. Damming materials must be able to support the wet weight of the compound under pouring conditions. Pour Silverseal Compound to the required 100mm thickness.

## Load Bearing Floor

Seals in a concrete slab opening, e.g. within a service riser, the unique combination of structural properties of Silverseal Compound enable the finished seal to support considerable loads over quite large spans without the need for steel reinforcement. Consult FSi Technical Department for specific requirements and loadbearing information

## Wall Penetrations

Silverseal Compound can be mixed and trowelled into a vertical opening, and worked around services without slumping. They can also be cast into blocks for building into larger openings using a stiff mix of the same compound as bedding.

## Load Bearing Seals around Unsupported Fire Dampers

Silverseal Compound has been successfully tested at BRE around both single and multiple fire damper assemblies, supported only by the compound, in wall and floor openings. The excellent crushing strength and shear resistance of Silverseal Compound seal ensures that the installation frame will be retained in the wall or floor if the ductwork should collapse, even when the HVAC Installation frame is not tied back to the structure.

## Setting and Hardening

Unlike cement-based fire stopping mortars, FSi Silverseal compound achieves maximum wet strength approximately four hours after casting. Ultimate strength is reached when dry and fully hardened. The drying time will be dependant on the prevailing ambient conditions.

Silverseal Compound is available in 20kg sacks. Add powder to clean tap water to the required consistency and coverage. Silverseal Compound is to be installed in accordance with installation requirements. Extra installation details and technical support are available from FSi Technical Department. Please contact FSi Technical Department for load bearing calculations at all times.



# Product Technical Data - STD

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Description	Result	Test Standards
Description	Off White single part gypsum-based compound.	
Density	850 - 950 kg/m <sup>3</sup>	
Loadbearing	2.5k N/m <sup>2</sup> UDL	BS6399-1
Fire Resistance	EN1366 EI 120 / E120 / 240mins	EN1366 / BS 476 pt 20
Classification	EN13501:2	
Acoustic Performance R'w (C; Ctr) (dB)	55 (-1;-6) dB at 100mm (with 50mm Stopseal Batt)	EN 10140
Max Unsupported Span	700 mm (Consult FSi Technical Department for larger spans)	
Thermal Conductivity (U Value) @100mm	0.21 - U Value I / 'R' 2.1	
Thermal Resistance 'R' (t/k) @100mm	0.48	
Expansion on Setting (%)	0.1	
Typical Yield	± 4 Bags per m <sup>2</sup> at 100mm depth	
BREEAM International	Compliant	GN22: BREEAM Recognised Schemes for VOC Emissions from Building Products
Expected Shelf Life	At least 6 months	Stored in accordance with packaging instructions

**WARNING:** As the load bearing performance particularly in un-reinforced situations is dependent on compressive membrane action against the concrete slab edge or other rigid boundary, it is essential to check that this is vertical, before commencing installation. Building up the seal in several operations with Pourable / floors the individual layers being allowed to set, will result in a weak laminated structure with severely reduced load bearing performance. Cutting out part of the finished seal to accommodate services, must not be undertaken without review by FSi Technical Department, to consider the effect on the structural integrity of the seal.

## Installation

Ensure that the aperture and services in question are tested with Silverseal Compound, and the site conditions are within the application specification.

All services and apertures need to be clean and clear of all dust and loose particles. The aperture temperature needs to be at 5°C or above at time of installation. Combustible services require closure device / material where they pass through the Silverseal Compound, see FSi PipeBloc PWP / EL.

Upon installation make sure that you install the Silverseal Compound to the recommended ratio for the aperture you are installing, make sure that you fill the full depth in a single pour to create a solid structure. Minimum 100mm depth in a single pour to achieve load bearing capabilities, consult FSi for specific requirements.

Once filled smooth off the Silverseal Compound to produce a professional finish.



# Performance Data - STD

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CE-1121-CPR-JA5066

## Wall Openings

For small holes and gaps, trowel a stiff mix into the opening to the correct depth. For larger holes, use an appropriate damming material to support the mix until it sets, or, if a fair faced finish is required to both sides, consider using a sandwich construction. Alternatively, the Silverseal Compound may be pre- cast into convenient sized blocks, a stiff mix being used as a bedding mortar. All combustible services (Plastic Pipes etc.) should have a tested fire rated closure device/material fitted prior to the pouring of the Silverseal Compound. These are typically FSi intumescent pipe wraps.

## Floor Openings

When sealing holes in floor slabs, appropriate shuttering must be installed, cut to fit tightly around any services within the opening to support the wet mix until it sets. Non-combustible shuttering materials, such as mineral fibre slab, can be left in place, but combustible materials must be removed, after the mix has set. For complex penetrations it may be preferable to initially form a thin seal around all services, with a nominal 5-10mm layer of the Silverseal Compound mix. Once this has set, the remaining depth of seal should be poured in one operation. All combustible services (Plastic Pipes etc.) should have a tested fire rated closure device/material fitted prior to the pouring of the Silverseal Compound. These are typically FSi intumescent pipe wraps.

## Yield

Typical number of 20kg bags per m<sup>2</sup> at 100mm thick for Silverseal Compound is 4 Bags. Service sizes and mixing ratios could possibly effect yield.

For further information see Installation Manual.

## RIGID FLOOR

**Penetration seal with Silverseal Compound installed to 100mm depth of the floor, maximum seal size 1100mm x 1100mm, minimum floor thickness of 150 mm.**

Penetration Specification	Classification
Copper and cast iron pipe 18 - 107mm Ø and 0.8 – 1.5mm wall thickness, insulated with Rockwool H&V wrap.	E 240 C/U and C/C EI 30 C/U and C/C
Steel pipe 40 - 165mm Ø and 3 -5mm wall thickness, insulated with Rockwool H&V wrap.	E 240 C/U and C/C EI 120 C/U and C/C
Electrical cables, maximum 80mm Ø, insulated with Rockwool Ductwrap.	EI 120
Non-sheathed wire, maximum 24mm Ø, insulated with Rockwool Ductwrap.	E 240 EI60
Telecomm cable, maximum 21mm Ø in bundles up to 100mm diameter, insulated with Rockwool Duct-wrap. Seal thickness 100mm.	EI60

**Penetration seal with Silverseal Compound installed locally to 150mm depth, maximum seal size 1100mm x 1100mm, minimum floor thickness of 150mm.**

Penetration Specification	Classification
Telecom cable maximum 21mm Ø in bundles up to 100mm diameter, insulated with Rockwool Ductwrap Seal thickness 150mm.	EI 180



# Performance Data - STD

ETA 15-0281  
CE-1121-CPR-JA5066

## RIGID WALL

Penetration seal with Silverseal Compound installed to 100mm depth of the wall, maximum seal size 1100mm x 1100mm, minimum thickness of 150 mm.	
Penetration Specification	Classification
Copper and cast iron pipe 18- 107mm Ø and 0.8 – 1.5mm wall thickness, insulated with Rockwool H&V wrap.	E 240 C/U and C/C EI 30 C/U and C/C
Steel pipe 40 - 165mm Ø and 3 - 5mm wall thickness, insulated with Rockwool H&V wrap.	E 240 C/U and C/C EI 120 C/U and C/C
Electrical cables, maximum 80mm Ø, insulated with Rockwool Ductwrap.	E 180 EI120
Non-sheathed wire, maximum 24mm Ø, insulated with Rockwool Ductwrap.	E 240 EI180
Telecomm cable, maximum 21mm Ø in bundles up to 100mm diameter, insulated with Rockwool Ductwrap. Seal thickness 100mm.	EI180
Steel cable trays and cable ladders up to 500mm wide, insulated with Rockwool Ductwrap.	EI90

Extended scope of works available through BRE Assessment CC297598



# Extended Scope of Works

## Direct field of application – DiAP and Extended Field of Application- EXAP

DiAP and EXAP rules are an output from European harmonization of fire testing methods, classifications and product standards where applicable. At a national level, experienced persons or fire test organisations have previously provided assessments of expected performance based on expert judgement and opinion, however these rules allow interpretation through the specific EN 1366 test standard.

DiAP and EXAP rules are provided in the EN 1366 and EN 15882 test standards series. They are derived from information obtained from tests carried out in accordance with relevant EN 1366 tests at recognised laboratories in Europe. The test results achieved by a particular design may be directly applied to a limited number of variations without recourse to expert advice, providing the design remains substantially as tested. EXAPs shall be based on primary test evidence to a specific part of the EN 1366 series and may be supplemented by appropriate test evidence generated from other sources, or other relevant historical data. The EXAP rules consider changes in the tested design beyond the scope of direct application and may also consider variations to the tested design.

### Direct field of application - DiAP

Fire Stopping systems of this type are often complicated by extensive changes in modern buildings and their influence on the fire hazard should be considered carefully. The fire hazard can be reduced by providing penetration seals at the points where the services pass through fire separating elements (walls/floors).

The impact of fire on a construction or service system can vary considerably. A strict scientific approach to the problem of adequate testing of a sealing system would, therefore, be to design a series of tests each of which corresponds to a specified fire situation and arrangement. However, such an approach would probably fail due to its economic consequences, as tests of this type are very timeconsuming and costly. The method of test described in the EN 1366 series has therefore been designed with the intention of covering a wide range of fire situations in a minimum of tests. To allow a wider field of application, standard configurations are defined on the basis of general experience and historic data wherever possible. As frequently a number of influencing parameters was considered when defining the standard configurations, not all of which may be addressed explicitly in the field of direct application rules (e.g. metalscreen of cables). To allow nevertheless flexibility a modular approach was taken as far as possible so that various combinations of standard configuration elements can be used to fit the needs of the user.

Where a nonstandard configuration was used, the field of application is restricted to what was tested, however the field of direct application rules given in the various parts of the EN 1366 series may be applied, subject to deviating rules given in the annexes of each part. Rules cover supporting construction, orientation, penetrating services, service supports, penetration seal size, distances and overall configurations of penetration seal materials and services to be included.

### Extended Field of Application- EXAP

The purpose EXAP document is to provide the principles and guidance for the preparation of extended application documents for penetration sealing systems tested in accordance with the EN 1366 and EN 15882 series. The field of the extended application document is additional to the direct field of application given within the relevant part of EN 1366 and may be applied to or based on a single test, or a number of tests, which provide the relevant information for the formulation of an extended application.

There are a number of practical limitations on the size and design of elements that can be tested by the standard methods of fire resistance test. When these elements are required to be larger, or are of a modified design, there is a necessity to be able to confirm their performance, without the ability of being able to test them. To achieve this, extended application documents for the various elements are used.

Due to the diverse nature of materials and constructions used to seal openings in fire resistant separating elements it has been necessary to separate the extended application principles into generic seal types within the specific EXAP EN 15882 series. Often more than one variation is to be incorporated, should this be the case the overall effect shall be considered. Principles common to all generic seal types are given in the EXAP and rules for each specific generic seal type are given. The Annex provide rules for the application of test results and provides information relating to the extended application of those test results on for service penetrations.

Variables for each seal type, which require consideration included are as follows:

- 1) Separating element;
- 2) Type of service;
- 3) Size of service;
- 4) Seal size and configuration
- 5) Material changes (components or formulation) – comparison test approach, reduced test program
- 6) Orientation
- 7) Penetration seals at the head of walls (like a linear joint) – consider the issue of movement
- 8) Penetration seals at slab edges (like a linear joint) – consider the issue of movement
- 9) Distances of penetration seals to other openings in the separating element e.g. doors



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