UL-EU CERTIFICATE

Certificate No.
UL-EU-01300-EN

Issue date
18-11-2024

Issue No.
1

Re-Issue date
-

Expiry date
17-11-2034

UKAS PRODUCT CERTIFICATION
4705

Certificate Holder:
Greentech Thermal Insulation Products Mfg Co LLC

Address:
PO Box 3350
New Industrial Area
Umm AL Quwain
United Arab Emirates

Product:
HEATSHIELD S500

Places of production:
U/002

Standard:
EAD 350454-00-1104, September 2017,
EAD 350141-00-1106, September 2017

Authorised Signatory:

Chris Johnson
Issued by UL International (UK) Ltd

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shall remain valid through the Expiration date, unless a Standard identified on this Certificate is amended or withdrawn prior to that date or there is a non-compliance with the Agreement.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 HEATSHIELD S500, is a fire-resistant sealant used to form linear gap seals where gaps are present in wall and floor constructions and to form a penetration seal around metallic pipes, combustible cable conduits and electrical cables to reinstate the fire resistance performance of wall and floor constructions, where they have been provided with apertures for the penetration of services.
The detailed scope is given in pages 4 to 19 of this Certificate. This shows the thickness and acceptable dimensions, substrates and orientations required to provide fire resistance periods of up to 120 minutes (EI 120).

The product is certificated on the basis of:

i) Inspection and surveillance of factory production control by UL
ii) Fire resistance test data in accordance with EN 1366-3:2009, EN 1366-3:2021 and EN 1366-4:2021
iii) Classification in accordance with EN 13501-2:2016
iv) Durability and Serviceability as defined in EAD 350454-00-1104, September 2017 and EAD 350141-00-1106, September 2017.

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I. SPECIFIC PARTS OF THE UL-EU CERTIFICATION

1 Technical description of the product

1. HEATSHIELD S500 is a fire-resistant sealant used to form linear gap seals where gaps are present in wall and floor constructions and to form a penetration seal around metallic pipes, combustible cable conduits and electrical cables to reinstate the fire resistance performance of wall and floor constructions, where they have been provided with apertures for the penetration of services..

2. The HEATSHIELD S500 is supplied in liquid form contained within 300 ml cartridges and 600 ml foil packs.

   a) For linear joint systems the sealant is:

      i) gunned into the aperture in the separating element/elements to a specified depth utilising a backing material.

   b) For penetration seal systems the sealant is:

      i) applied around the service or services as a bead and backfilled with mineral wool which is installed into the aperture in the separating element/elements and around the service or services flush to both surfaces of wall to a specified depth or flush to both surfaces of floor to entire depth of floor. The bead of HEATSHIELD S500 sealant is then adhered to substrate and penetrant by forming a concave shaped seam.
      ii) gunned into the aperture in the separating element/elements and around the service or services, to a specified depth utilising mineral fibre insulation backing material.

3. Greentech Thermal Insulation Products Mfg Co LLC submitted a written declaration that HEATSHIELD S500 does not contain substances which have to be classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the EGDS - taking into account the installation conditions of the construction product and the release scenarios resulting from there.

   In addition to the specific clauses relating to dangerous substances contained in this UL-EU certificate, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

4. The use category of HEATSHIELD S500in relation to BWR 3 (Hygiene, health and environment) is IA1 S/W2.

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2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350141-00-1106: 2017 and EAD 350454-00-1104: 2017

Detailed information and data is given in Annex A.

The intended use of system HEATSHIELD S500 is to reinstate the fire resistance performance of gaps and joints in rigid wall constructions, gaps and joints between rigid floor constructions and to reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they are penetrated by various metal pipe services with and without combustible insulation, plastic pipes, combustible cable conduits, composite pipes and electrical cables.

1.1 The specific elements of construction that the system HEATSHIELD S500 may be used to provide a gap or joint seal in, are as follows:

Rigid walls: The wall must have a minimum thickness of 120 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 450 kg/m^3.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 650 kg/m^3.

1.2 The specific elements of construction that the system HEATSHIELD S500 may be used to provide a penetration seal in, are as follows:

Flexible walls: The wall must have a minimum thickness of 135 mm and comprise steel or timber studs* lined on both faces with minimum 2 layers of 15 mm thick boards. The insulation of the flexible wall shall be nominal 60 mm thick with a density of 100 kg/m^3. Flexible wall solutions may also be used in rigid walls, with a minimum density of 350 kg/m^3.

Rigid walls: The wall must have a minimum thickness of 125 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 450 kg/m^3.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 650 kg/m^3.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

2. The system HEATSHIELD S500 may be used to provide a linear joint, gap seal or penetration seal system with specific supporting constructions and substrates (for details see Annex A).

3. The maximum permitted joint/gap width for system HEATSHIELD S500 is 40 mm.

4. The maximum movement capability of system HEATSHIELD S500 is ≤ 7.5% (not tested to EAD 350141-00-1106).

5. The first support (service support construction) for penetrants in flexible and rigid walls has to be at maximum 450 mm (measured from the surface of the separating element). In rigid floors the first support has to be at maximum 250 mm from top surface of floor.

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6. The designation U/U, C/U, U/C or C/C indicates whether or not the product under test are capped during the fire test.
The first letter refers to the situation in the furnace and the second to the situation outside the furnace (see table).

Test condition	Configuration	
	Inside the furnace	Outside the furnace
U/U	Uncapped	Uncapped
C/U	Capped	Uncapped
U/C	Uncapped	Capped
C/C	Capped	Capped

The tests carried out with uncapped ends (U/U) correspond to the most unfavorable situation, since the fire can spread more easily because the two ends are open.
The results of these tests may therefore be applied in all situations (U/U, C/U, U/C and C/C).
The C/U tests may be used in the following situations: C/U, U/C and C/C. The U/C tests may in turn be used for situations U/C and C/C, while the C/C tests may only be used in the C/C situation.

7. Where PVC conduits are mentioned in Annex A, this includes PVC-U rigid conduits according to EN 61386-1 and EN 61386-21.

8. The provisions made in this UL-EU Certificate are based on an assumed working life of the HEATSHIELD S500 of 10 years, provided that the conditions laid down in the manufacturers datasheet and instructions for the packaging/transport/ storage/installation/use/repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

9. Type Z_1: intended for uses in internal conditions with humidity equal to or higher than 85% RH, excluding temperatures below 0°C (no exposure to frost or changing frost-thaw but permanent or alternating condensation). Since the requirements for Type Z_1 are met, also the requirements for Type Z_2 are fulfilled.

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3 Performance of the product and references to the methods used for its assessment

Product-type: Sealant		Intended use: Linear Joint & Gap Seal; Penetration Seal
Basic requirement for construction work	Essential characteristic	Performance
BWR 2 Safety in case of fire		
EN 13501-1	Reaction to fire	Class E
EN 13501-2	Resistance to fire	Annex A
BWR 3 Hygiene, health and environment		
Declaration of manufacturer & EN 16516	Content, emission and/or release of dangerous substances	Use categories: IA1, S/W2 Declaration of manufacturer
EN 1026:2000	Air permeability (material property)	No performance determined
EAD 350141-00-1106, Annex C & EN 12390-8	Water permeability (material property)	No performance determined
BWR 4 Safety in use		
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 ISO 11600 & EAD 350141-00-1106, Clause 2.2.13	Adhesion	No performance determined
EAD 350141-00-1106, Clause 2.2.12 / EAD 350454-00-1104, Clause 2.2.9	Durability	Z_1
EAD 350141-00-1106, Clause 2.2.13	Movement capacity	No performance determined
EAD 350141-00-1106, Clause 2.2.14	Cycling of perimeter seals for curtain walls	No performance determined
EAD 350141-00-1106, Clause 2.2.15	Compression set	No performance determined
EAD 350141-00-1106, Clause 2.2.16	Linear expansion on setting	No performance determined
BWR 5 Protection against noise		
EN 10140-1,2,4,5/ EN ISO 717-1	Airborne sound insulation	No performance determined
BWR 6 Energy economy and heat retention		
EN 12664, EN 12667, EN 12939, EN ISO 8990, EN ISO 6946, EN ISO 10456	Thermal properties	No performance determined
EN ISO 12572, EN 12086, EN ISO 10456	Water vapour permeability	No performance determined

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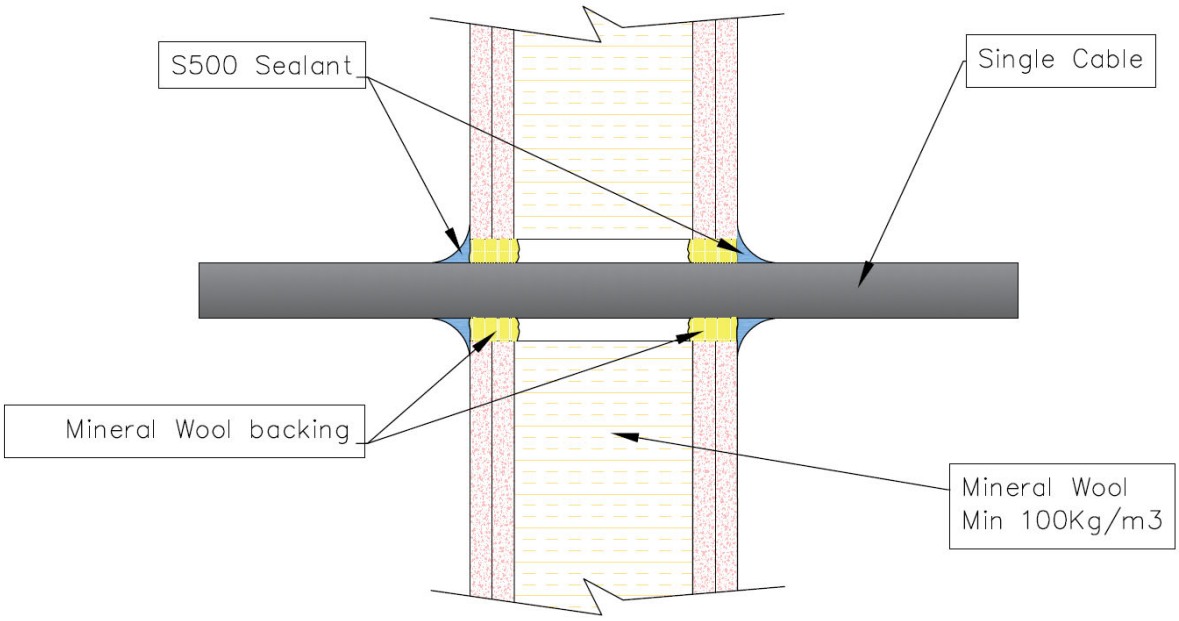
ANNEX A – Resistance to Fire Classification (Penetration Seal Systems) – HEATSHIELD S500

A.1 Flexible wall constructions according to 1.2.1 with wall thickness of minimum 135 mm

A.1.1 Double sided penetration seal with cables

Penetration Seal: Cables (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.1.1.1

Services	Opening size [mm]	S500 sealant details	Backing material	Annular space	Classification
Electrical cable N2XH (5x1.5 mm^2) with a maximum outer diameter of 14 mm	Ø ≤ 25	Bead of 10 mm x 10 mm	30 mm deep stone wool (ρ ≥ 50 kg/m^3) flush with both surfaces of wall	5-6 mm	**E 120** **EI 120**

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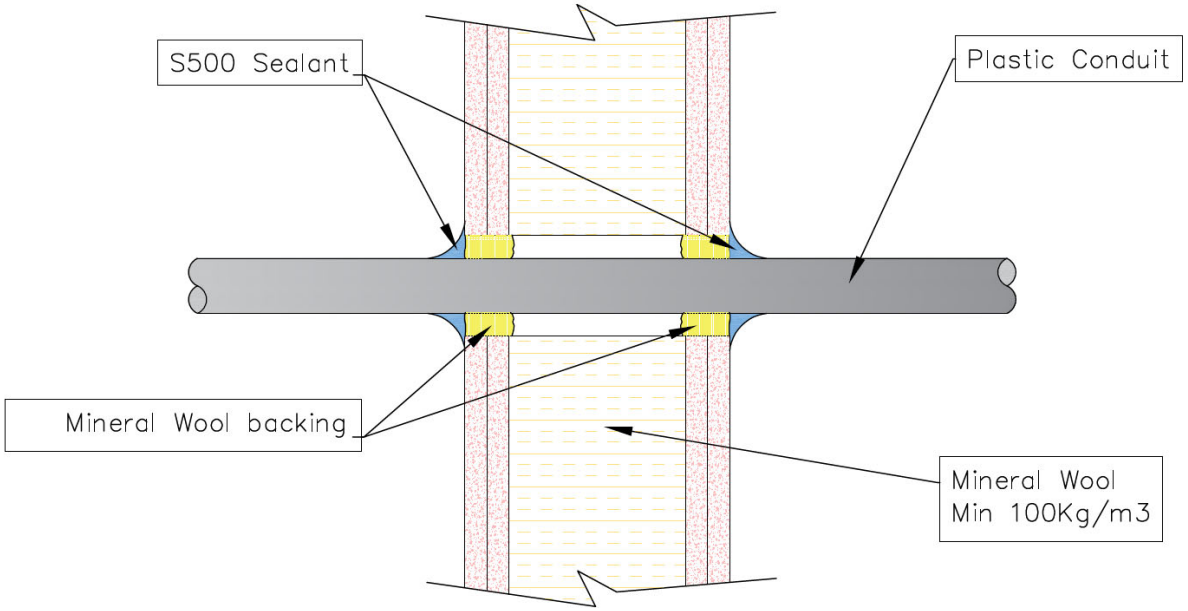
A.1.2 Double side penetration seal with plastic conduits

Penetration Seal: Combustible conduits (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.1.2.1

Services	Opening size [mm]	S500 sealant details	Backing material	Annular space	Classification
PVC conduit, Diameter ≤ 20 mm, wall thickness 1.6 mm	Ø ≤ 32	Bead of 10 mm x 10 mm	30 mm deep stone wool (50 kg/m^3) flush with both surfaces of wall	6 mm	**E 120-C/C** **EI 120-C/C**

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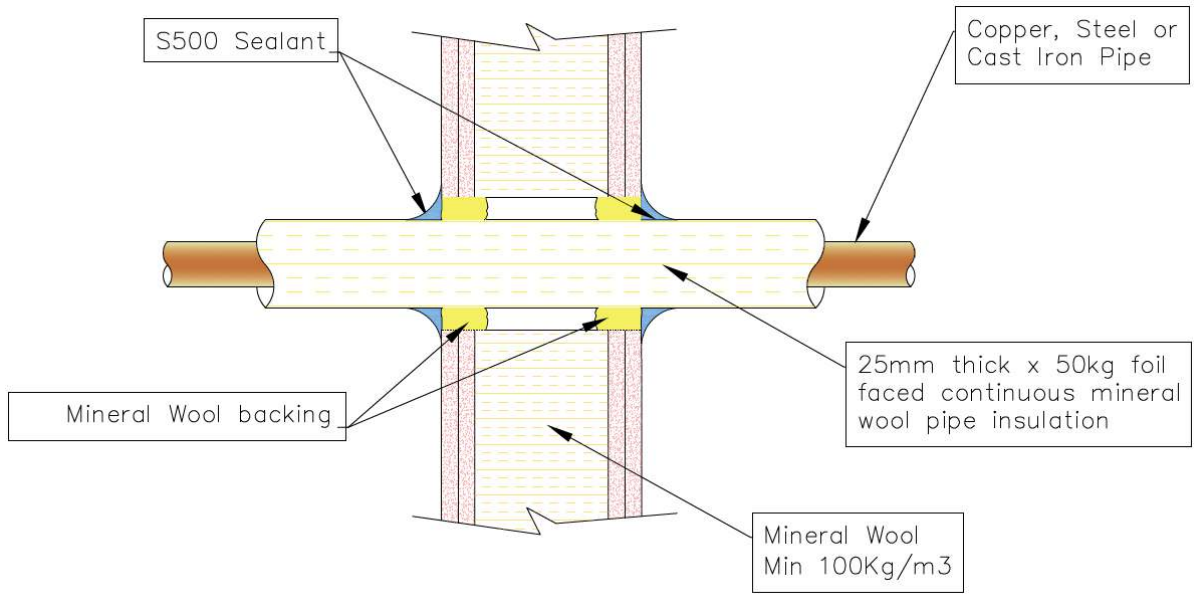
A.2.3 Double sides penetration seal with insulated metal pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.1.3.1

Services	Opening size [mm]	S500 sealant details	Backing material	Insulation	Annular space	Classification
Copper, steel or cast iron pipe up to 108 mm diameter and min. wall thickness of 1.5 mm	Ø ≤ 180	Bead of min. 11 mm x 10 mm	30 mm deep stone wool (50 kg/m^3) flush with both surfaces of wall	Min. 25 mm thick aluminium foil faced stone wool insulation (50 kg/m^3)	11 mm	**E 120-C/C** **EI 120-C/C**
Steel or cast iron pipe up to 152.4 mm diameter and min. wall thickness of 3.25 mm	Ø ≤ 220	Bead of min. 10 mm x 10 mm			9 mm	**E 120-C/C** **EI 120-C/C**

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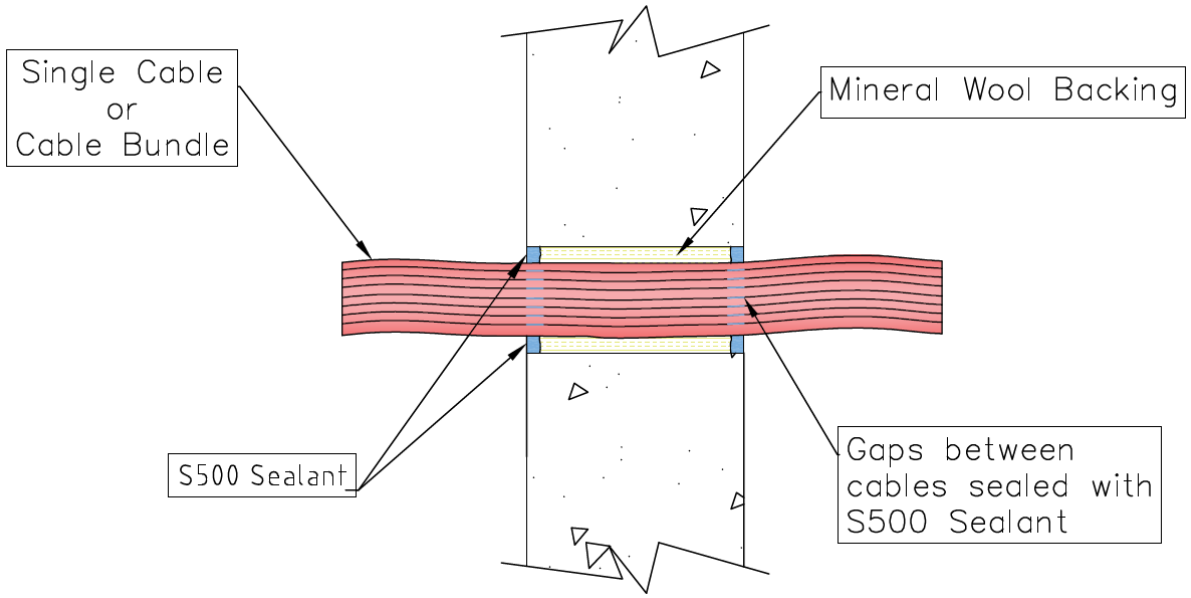
A.2 Rigid wall constructions according to 1.2.1. with wall thickness of minimum 125 mm

A.2.3 Double side penetration seal with cables

Penetration Seal: Cables (single or bundles) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.2.1.1

Services	Opening size [mm]	S500 sealant details	Backing material	Annular space	Classification
Electrical cable(s), single or bundle of up to 10 No., of NYY-J (5x1.5 mm^2) with a maximum outer diameter of 14 mm	Ø ≤ 82	10 mm depth flush with both surfaces of wall	Mineral stone wool (50 kg/m^3) recessed 10 mm into opening	18 mm	**E 120** **EI 120**
Electrical cable(s), single or bundle of up to 6 No., of NYM-J (5x2.5 mm^2) with a maximum outer diameter of 14 mm	Ø ≤ 102			32 mm	**E 120** **EI 120**
Single electrical cable of H07V (1x185 mm^2) EN 50525-2-31 with a maximum outer diameter of 23 mm	Ø ≤ 82	12 mm depth flush with both surfaces of wall	Mineral stone wool (50 kg/m^3) recessed 12 mm into opening	30 mm	**E 120** **EI 20**

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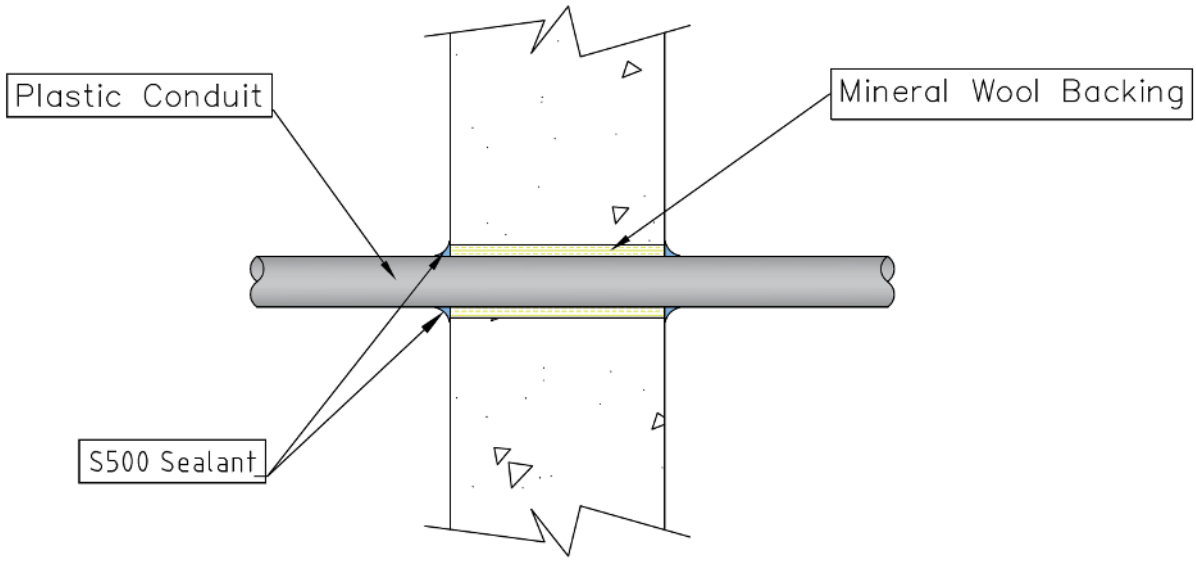
A.2.3 Double side penetration seal with plastic conduits

Penetration Seal: Combustible conduits (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.2.2.1

Services	Opening size [mm]	S500 sealant details	Backing material	Annular space	Classification
PVC conduit, Diameter ≤ 20 mm, wall thickness 1.6 mm	Ø ≤ 32	Bead of 10 mm x 10 mm	Mineral stone wool (50 kg/m^3) flush with both surfaces of wall	6 mm	**E 120-C/C** **EI 120-C/C**

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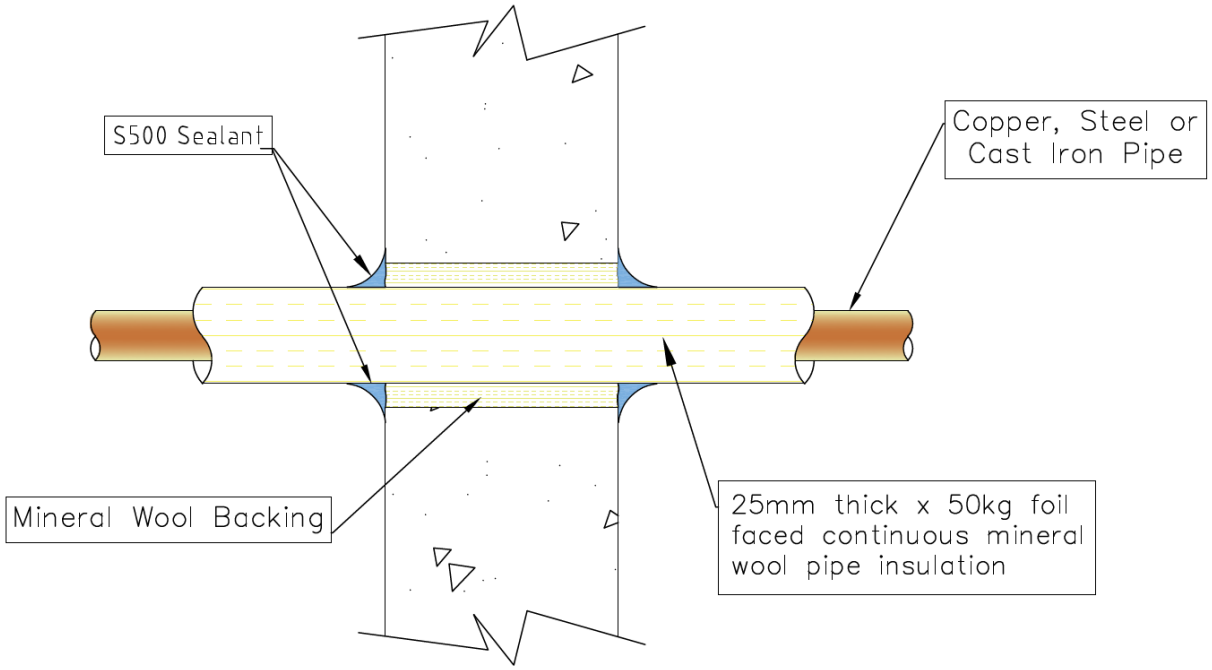
A.2.3 Double side penetration seal with insulated metal pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.2.3.1

Services	Opening size [mm]	S500 sealant details	Backing material	Insulation	Annular space	Classification
Copper, steel or cast iron pipe up to 15 mm diameter and min. wall thickness of 0.7 mm	Ø ≤ 71	Bead of min. 10 mm x 10 mm	Mineral stone wool (50 kg/m^3) flush with both surfaces of wall	Min. 25 mm thick aluminium foil faced stone wool insulation (50 kg/m^3)	3 mm	**E 120-C/C** **EI 120-C/C**
Copper, steel or cast iron pipe up to 108 mm diameter and min. wall thickness of 1.5 mm	Ø ≤ 180	Bead of min. 11 mm x 10 mm			11 mm	**E 120-C/C** **EI 120-C/C**
Steel or cast iron pipe up to 152.4 mm diameter and min. wall thickness of 3.25 mm	Ø ≤ 220	Bead of min. 10 mm x 10 mm			9 mm	**E 120-C/C** **EI 120-C/C**

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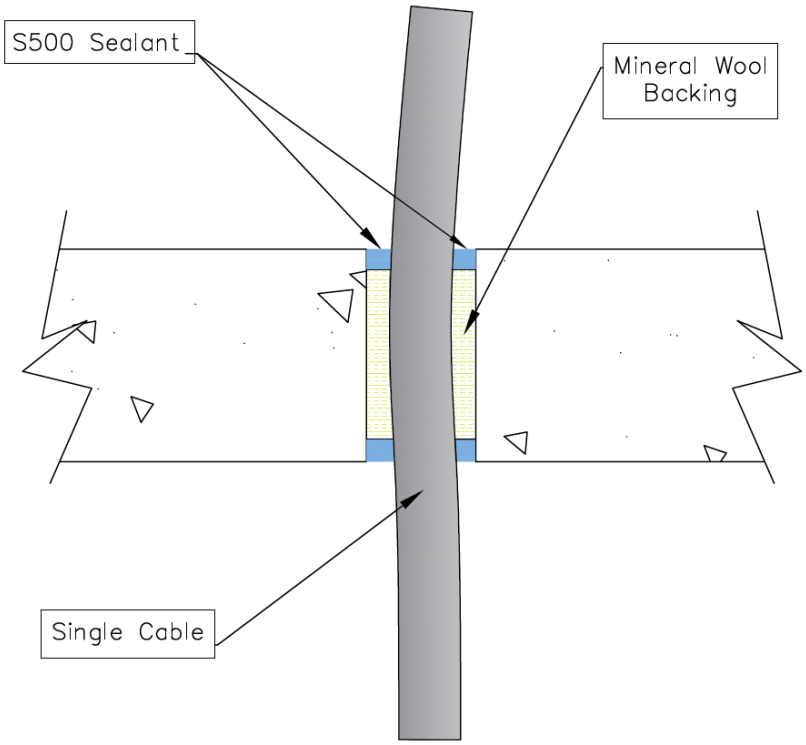
A.3 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

A.3.1 Double side penetration seal with cables

Penetration Seal: Cables (single or bundles) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.3.1.1

Services	Opening size [mm]	S500 sealant details	Backing material	Annular space	Classification
Electrical cable(s), single or bundle of up to 5 No., of NYY-J (5x1.5 mm^2) with a maximum outer diameter of 14 mm	Ø ≤ 82	10 mm depth flush with both surfaces of floor	Mineral stone wool (50 kg/m^3) recessed 10 mm into opening	22 mm	**E 120** **EI 120**
Electrical cable(s), single or bundle of up to 10 No., of NYM-J (5x2.5 mm^2) with a maximum outer diameter of 14 mm	Ø ≤ 50	12 mm depth flush with both surfaces of floor	Mineral stone wool (50 kg/m^3) recessed 12 mm into opening	12 mm	**E 120** **EI 120**
Single electrical cable of H07RN-F (4x95 mm^2) with a maximum outer diameter of 60 mm	Ø ≤ 71				**E 120** **EI 120**

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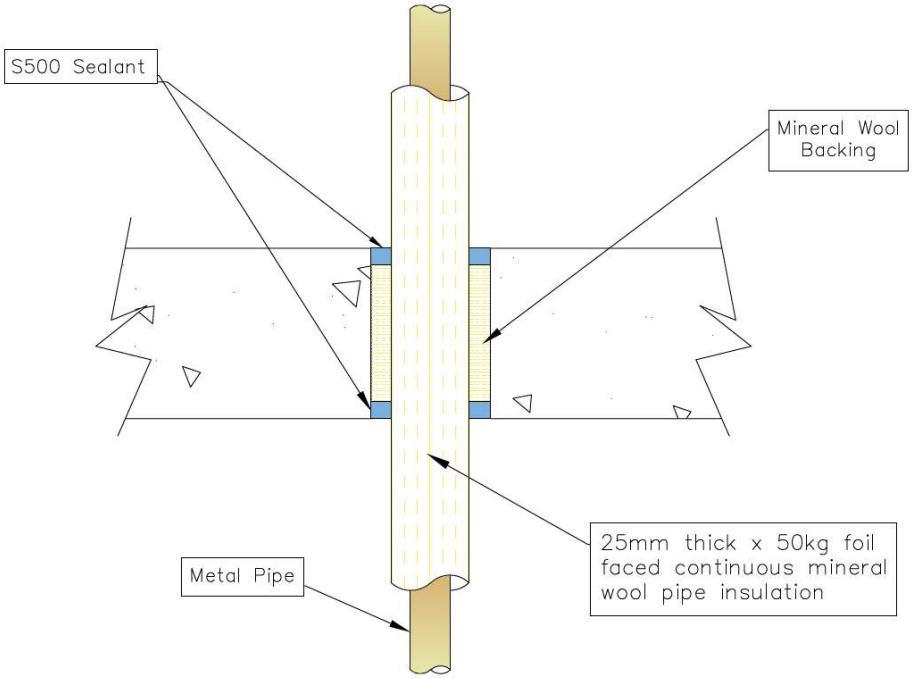
A.3.2 Double side penetration seal with insulated metal pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.3.2.1

Services	Opening size [mm]	S500 sealant details	Backing material	Insulation	Annular space	Classification
Steel or cast iron pipe up to 22.2 mm diameter and min. wall thickness of 1.2 mm	Ø ≤ 102	Depth of 12 min. flush with both surfaces of floor	Mineral stone wool (50 kg/m^3) recessed 12 mm into opening	Min. 25 mm thick aluminium foil faced stone wool insulation (50 kg/m^3)	15 mm	**E 120-C/C EI 90-C/C**
Copper, steel or cast iron pipe up to 108 mm diameter and min. wall thickness of 1.5 mm	Ø ≤ 180				11 mm	**E 120-C/C EI 90-C/C**
Steel or cast iron pipe up to 152.4 mm diameter and min. wall thickness of 3.25 mm	Ø ≤ 244	10 mm depth flush with both surfaces of floor	30 mm deep stone wool (50 kg/m^3) recessed 10 mm from both surfaces of floor		21 mm	**E 120-C/C EI 90-C/C**

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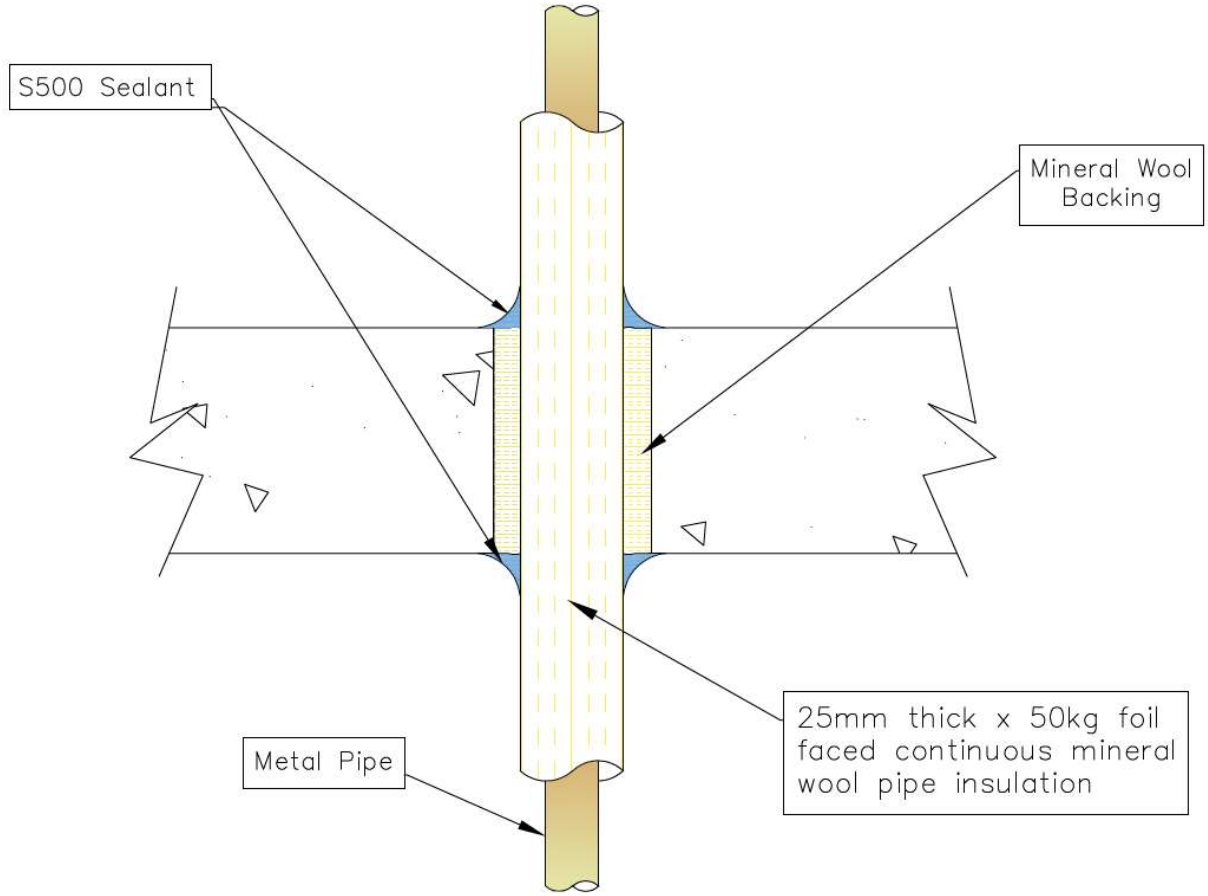
A.3.3 Double side penetration seal with insulated metal pipes (S500 bead application)

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) centered within the aperture and sealed with HEATSHIELD S500. Minimum separation between penetration seals of 100 mm.

Construction details:



A.3.3.1

Services	Opening size [mm]	S500 sealant details	Backing material	Insulation	Annular space	Classification
Copper, steel or cast iron pipe up to 15 mm diameter and min. wall thickness of 0.7 mm	Ø ≤ 71	Bead of min. 12 mm x 12 mm	Mineral stone wool (50 kg/m^3) flush with both surfaces of floor	Min. 25 mm thick aluminium foil faced stone wool insulation (50 kg/m^3)	3 mm	**E 120-C/C** **EI 120-C/C**
Copper, steel or cast iron pipe up to 67 mm diameter and min. wall thickness of 1.2 mm	Ø ≤ 132				7.5 mm	**E 120-C/C** **EI 120-C/C**

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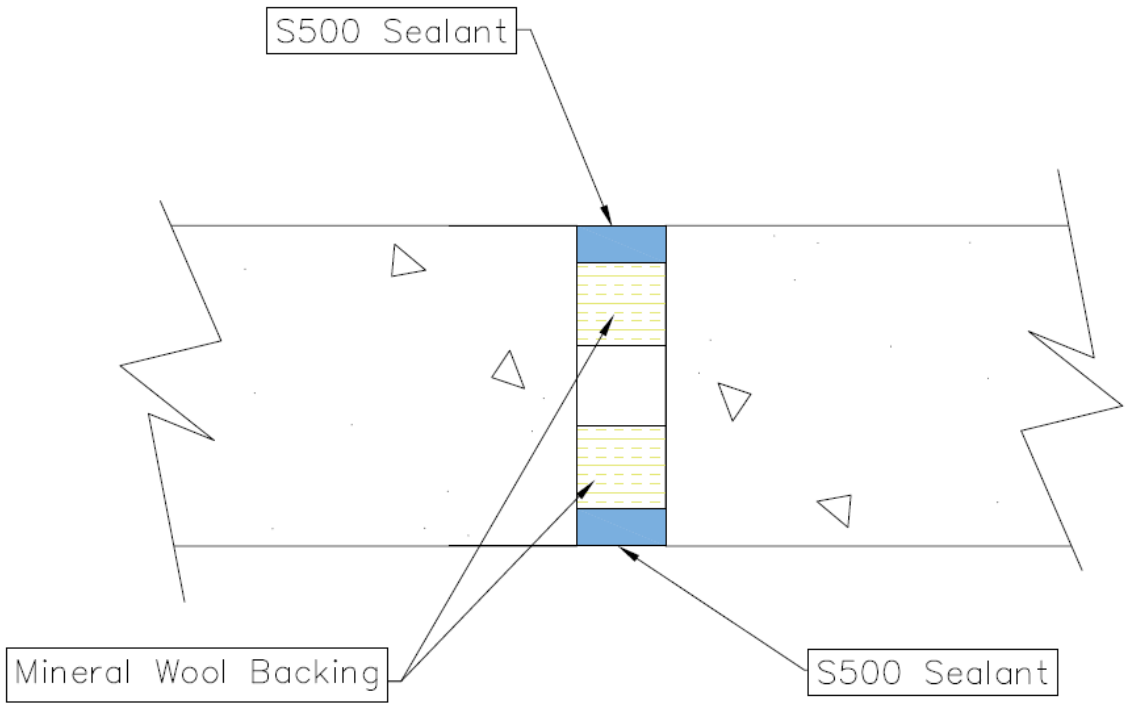
Resistance to Fire Classification (Linear Joint Seals) – HEATSHIELD S500

A.4 Rigid wall constructions according to 1.2.1 with wall thickness of minimum 120 mm

A.4.1 Linear joint seals between walls (vertical)

Joint Seal: HEATSHIELD S500 to both sides of the wall backed with mineral stone wool (50kg/m^3) with a min. compression of 50% across the joint width. Backing material to be recessed from surface of wall to accommodate required sealant thickness.

Construction details:



A.4.1.1

Substrate	Sealant depth [mm]	Maximum joint width [mm]	Backing (minimum)	Classification
Concrete	12	15	45 mm depth	**EI 240-V-X-B-W10 to W15**
	12	25	45 mm depth	**EI 240-V-X-B-W10 to W25**
	20	40	40 mm depth	**EI 240-V-X-B-W10 to W40**
	7.5	15	50 mm depth	**EI 240-V-X-B-W10 to W15**

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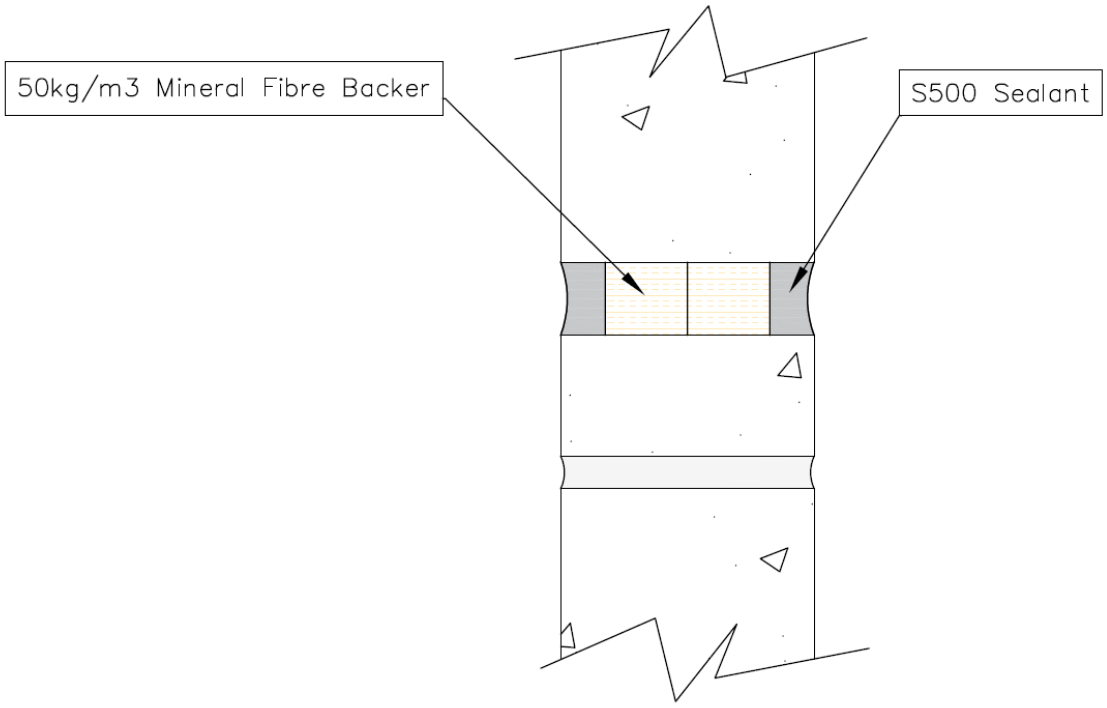
A.4.2 Linear joint seals between walls (horizontal)

Joint Seal: HEATSHIELD S500 to both sides of the wall backed with mineral stone wool (50kg/m^3) with a min. compression of 50% across the joint width. Backing material to be recessed from surface of wall to accommodate required sealant thickness.

Construction details:



A.4.2.1

Substrate	Sealant depth [mm]	Maximum joint width [mm]	Backing (minimum)	Classification
Concrete	12	15	45 mm depth	**EI 240-T-X-B-W10 to W15**
	15	30	45 mm depth	**E 240-T-X-B-W10 to W30** **EI 180-T-X-B-W10 to W30**

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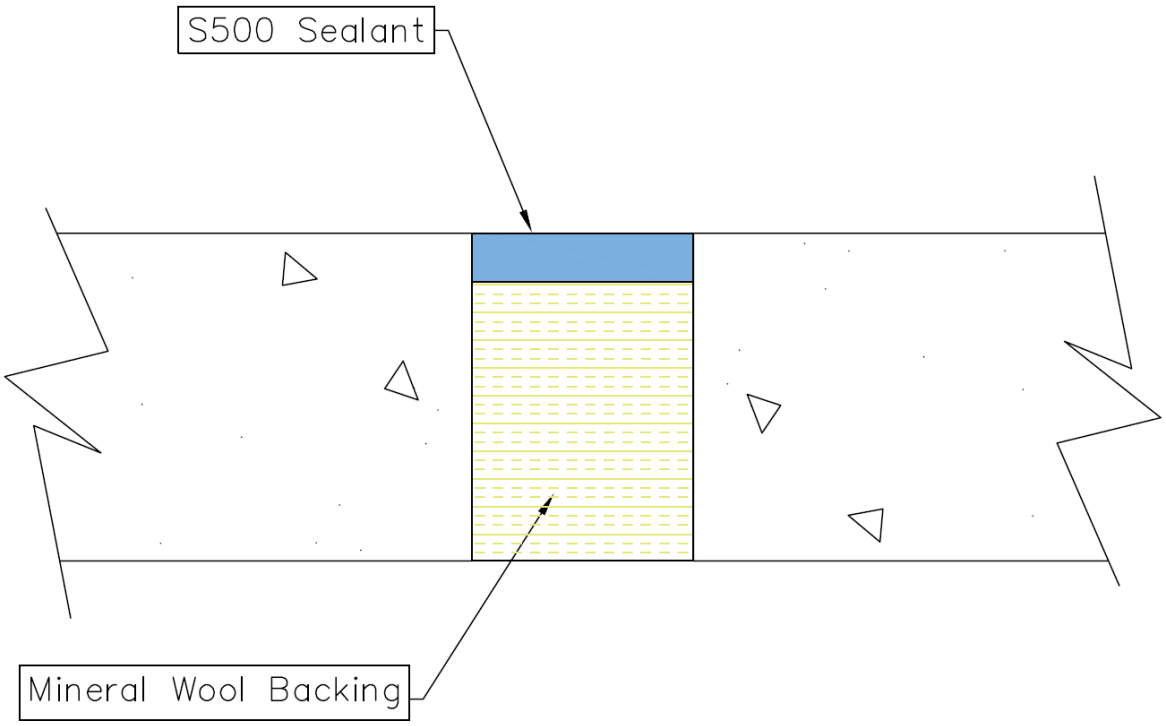
A.5 Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

A.5.1 Linear joint or gap seal between floor slabs

Joint Seal: HEATSHIELD S500 applied flush to top side of floor backed with mineral stone wool (50kg/m^3) with a min. compression of 50% across the joint width. Backing material to be recessed from top surface of floor to accommodate required sealant thickness.

Construction details:



A.5.1.1

Substrate	Sealant depth [mm]	Maximum joint width [mm]	Backing (minimum)	Classification
Concrete	12	15	138 mm depth	**EI 120-H-X-B-W 00 to W 15**
	12	25	138 mm depth	**EI 120-H-X-B-W 00 to W 25**

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Appendix UL-EU CERTIFICATE UL-EU-01300-EN

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.

The minimum height of the registered trademark symbol ® shall be 1 mm. When the overall diameter of the UL-EU Mark is less than 9.5 mm, the trademark symbol may be omitted if it is not legible to the naked eye.

The UL-EU Mark may appear on a label, nameplate, or may be cast, stamped or molded into the product. When appearing on a label or nameplate, the Manufacturer's name or trademark along with a model number are also required on that same label or nameplate. If cast, stamped or molded, the Manufacturer's name or trademark and model number shall also appear elsewhere on the product.

All content shall be in accordance with the details provided on this UL-EU Certificate.

PROCUREMENT

The Production site may reproduce the Mark or obtain it from a UL authorized supplier. The list of UL authorized suppliers can be found on UL's online directory at www.ul.com.

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