

UL-EU CERTIFICATE

Certificate No. UL-EU-01275-EN
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Certificate Holder Siderise Insulation Limited
Forge Industrial Estate,
Maesteg,
Mid Glamorgan,
CF34 0AH

Manufacturer A/003

Certified Product Type Fire Stop - Sealant
Product Trade Name Siderise FR-A Fire Rated Acrylic Sealant
Trademark N/A
Rating/Classification See Appendix

Harmonised Technical Specifications EAD 350454-00-1104, September 2017/ EAD 350141-00-1106, September 2017 / EN 13501-2
Expiry date 2033-08-15



A handwritten signature in blue ink, appearing to read 'Chris Johnson', is written over a white rectangular background.

Authorized Certification Decision Maker
Chris Johnson

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shall remain valid through the Expiration date, unless a Standard identified on this Certificate is amended or withdrawn prior to that date or there is a non-compliance with the Agreement.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 Siderise FR-A Fire Rated Acrylic Sealant for fire stopping where there are joints in or between walls & floors or service penetrations through floors and walls. The detailed scope is given in pages 3 to 94 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:

- i) Inspection and surveillance of factory production control by UL
- ii) Fire resistance test data in accordance with EN 1366-3 and 1366-4
- iii) Classification in accordance with EN 13501-2
- iv) Durability and Serviceability as defined in EAD 350141-00-1106*

* Siderise FR-A Fire Rated Acrylic Sealant has been tested in accordance with BS EN ISO 8339: 2005 and BS EN ISO 9046: 2004 to demonstrate its suitability for use in internal conditions with humidity lower than 85 % RH, excluding temperatures below 0°C, without exposure to rain or UV. These conditions are designated Z₂ in EAD 350454-00-1104, September 2017 and EAD 350141-00-1106.

The movement capability of Siderise FR-A Fire Rated Acrylic Sealant joint seals is restricted to ≤ 7.5%

Siderise FR-A Fire Rated Acrylic Sealant is a sealant used to form a penetration seal around metallic pipes, plastic pipes, composite 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. It is also used to form linear gap seals where gaps are present in wall and floor constructions and linear joint seals where wall and floor constructions abut.

Siderise FR-A Fire Rated Acrylic Sealant is supplied in liquid form contained within 310 & 380 ml cartridges and 300 to 600 ml foil packs. The sealant is gunned into the aperture in the separating element/elements and around the service or services, to a specified depth utilising a backing material.



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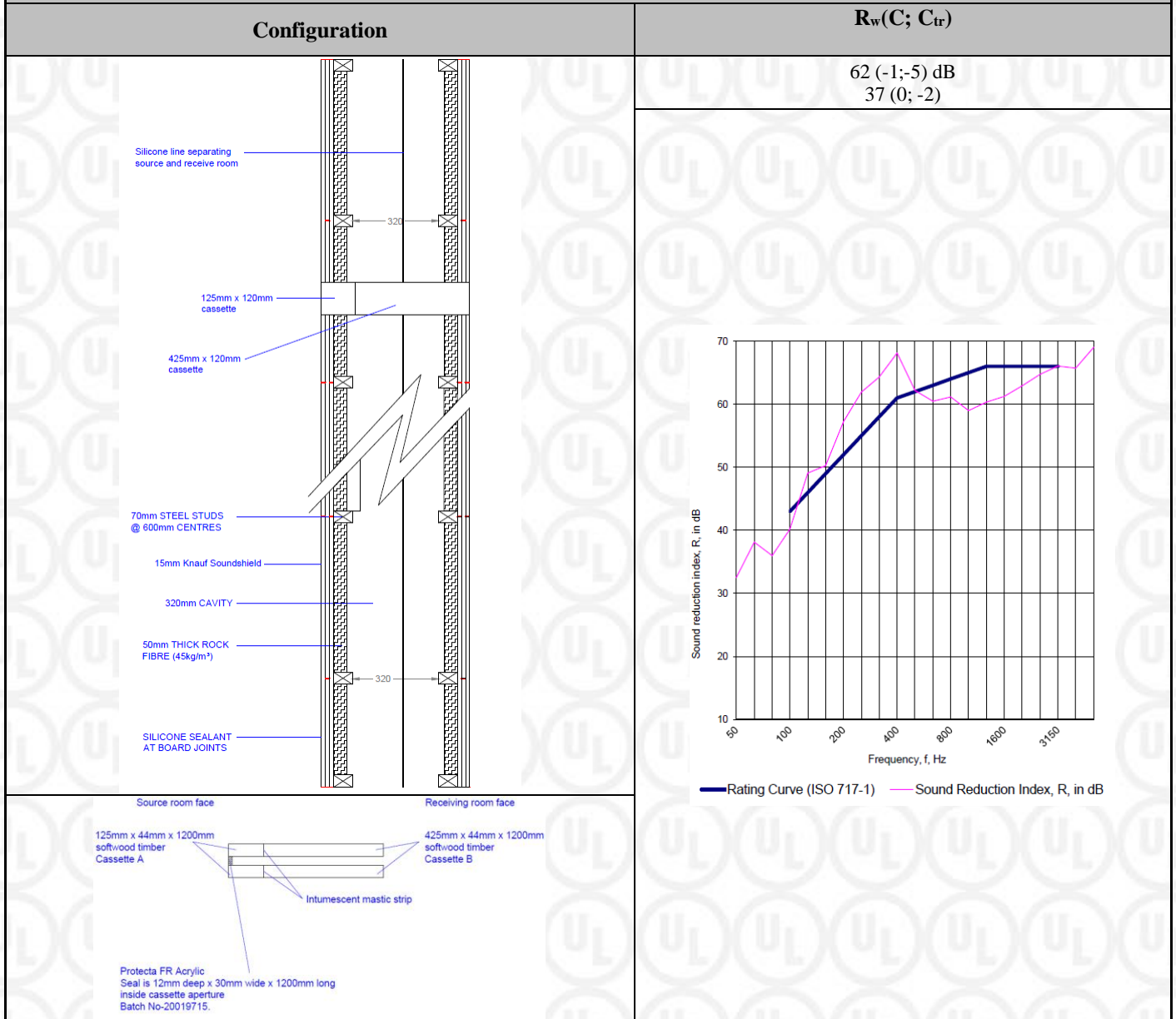
| Product-type: Sealant | | Intended use: Linear Joint, Gap Seal & Penetration Seal |
|--|--|--|
| Assessment method | Essential characteristic | Product Performance |
| BWR 2 Safety in case of fire | | |
| EN 13501-1 | Reaction to fire | Class B-s1, d0 |
| EN 13501-2 | Resistance to fire | See pages 4 & 94 |
| 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) | See page 95# |
| 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 | Durability | Z ₂ |
| 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 | Rw(C;Ctr)= 62 (-1;-5) dB* |
| 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 |
| *12 mm depth | | |
| # Applicable to penetration seals only | | |



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Siderise FR-A Fire Rated Acrylic Sealant: Acoustic performance according to BS EN ISO 10140-2:2010



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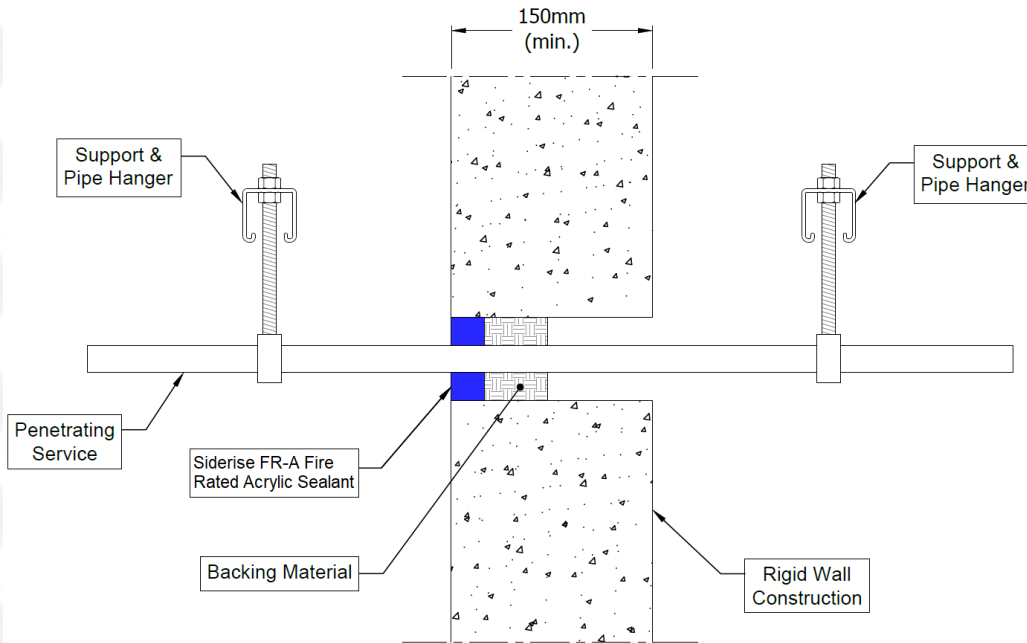
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Rigid wall constructions according to 1.2.1 with wall thickness of minimum 150 mm

Single side penetration seal with cables

Penetration Seal: Cables (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to either side of the wall (or at any position in between), backed with 'AES Fibre $\geq 128\text{kg/m}^3$ '. Minimum separation between cables and the edge of the seal of 7 mm.

Construction details:



| Services | Sealant depth | Backing | Maximum seal size | Classification |
|---|---------------|--|----------------------|----------------|
| Single electrical cables up to 21 mm Ø | 25 mm | 48 mm deep AES Fibre $\geq 128\text{kg/m}^3$ | 87 mm Ø | E 240, EI 90 |
| Blank seals | 25 mm | 48 mm AES Fibre $\geq 128\text{kg/m}^3$ insulation | 300 x 300 mm | E 240, EI 60 |
| Electric cables up to 21 mm diameter, single. | | | 35 x 35 mm / 36 mm Ø | E 240, EI 120 |
| Blank seals | | | | |
| Electric cables up to 21 mm diameter, single. | | | | |



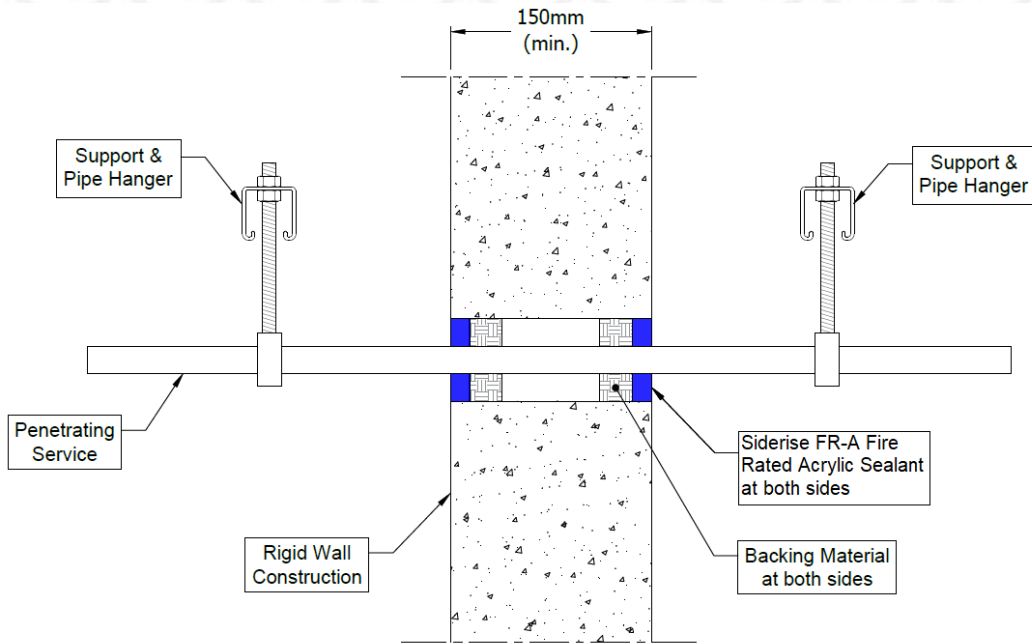
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Double side penetration seal with cables

Penetration Seal: Cables fitted with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with stone wool or mineral fibre insulation. Maximum seal size of 300 x 300 mm and minimum separation between cables and the edge of the seal of 10 mm.

Construction details:



| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|--|---------------|--|------------|----------------|
| Blank seals | 15 mm | 25 mm Stone wool 35 kg/m ³ | None | EI 240 |
| Electric cables up to 21 mm diameter, single or in a bundle. | | | | E 240, EI 120 |
| Electric cables 22-80 mm diameter, single or in a bundle. | | | | E 120, EI 60 |
| Blank seals | 25 mm | 48 mm AES Fibre ≥ 128kg/m ³ | | EI 240 |
| Electric cables up to 80 mm diameter, single or in a bundle. | | | | E 240, EI 60 |
| Cables up to 21 mm diameter, single or in a bundle up to 100 mm diameter | | | | EI 240 |



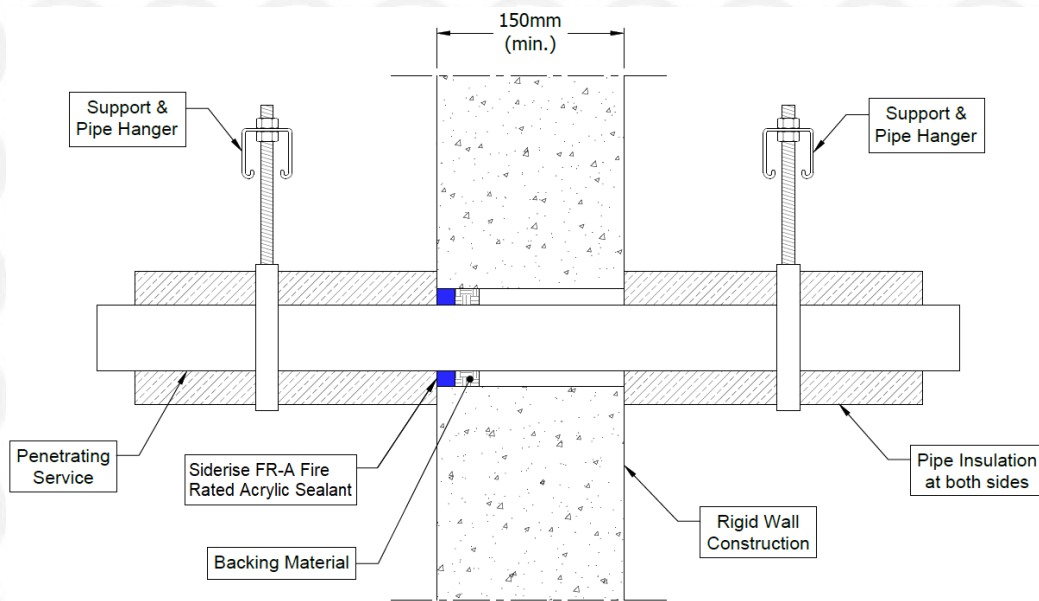
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Single side penetration seal with metallic (and composite) pipes

Penetration Seal: LI (Local Interrupted) of minimum length stated below or CI (Continuous Interrupted) insulated metallic and composite pipes (single) fitted at any position within the aperture, with 15 mm deep Siderise FR-A Fire Rated Acrylic Sealant to either side of the wall (or at any position between), backed with 20 mm deep minimum 40 kg/m³ stone wool insulation*.

Construction details:



| Services | Seal width around pipe | Insulation (minimum) | Classification |
|---|------------------------|---|-----------------------|
| Copper or steel pipe up to 54 mm diameter/ 0.9-14.2 mm wall | 8-9 mm | 1000 mm length 20 mm Stone wool insulation 80 kg/m ³ | E 240 C/U, EI 180 C/U |
| Copper or steel pipe up to 12 mm diameter/ 0.9-5 mm wall | 8 mm | | EI 240 C/U |
| Alupex composite pipe 75 mm diameter/ 7.5 mm wall | 30 mm | 25 mm AES Fibre ≥ 128kg/m ³ insulation, 600 mm long (min.) | EI 120 C/U |

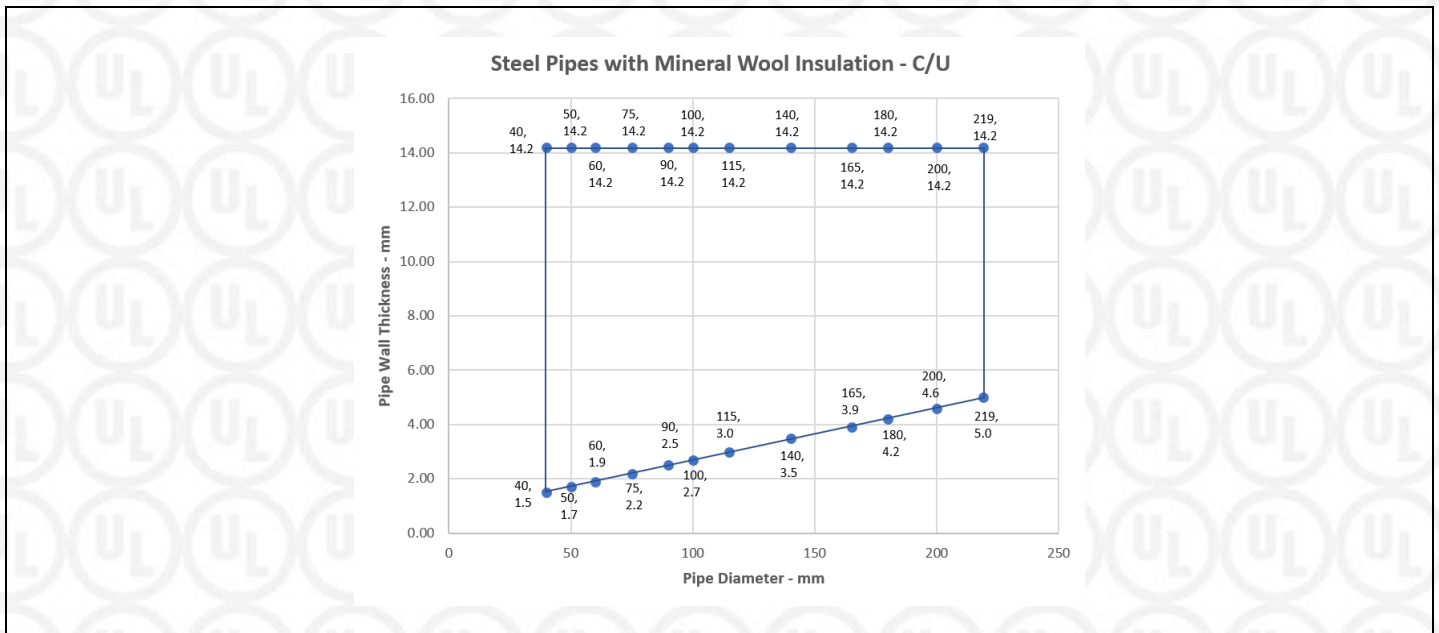


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| Services | Seal width around pipe | Insulation (minimum) | Classification |
|-------------------------------------|------------------------|--|----------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1.5-14.2 mm wall* | 6-18 mm | 1000 mm length of 20 mm Stone wool insulation 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1.5-14.2 mm wall* | | | |
| 50 mm diameter/1.7-14.2 mm wall* | | 1000 mm length of 30 mm Stone wool insulation 80 kg/m ³ | E 180 C/U, EI 90 C/U |
| 60 mm diameter/1.9-14.2 mm wall* | | | |
| 75 mm diameter/2.2-14.2 mm wall* | | | |
| 90 mm diameter/2.5-14.2 mm wall* | | | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 115 mm diameter/3-14.2 mm wall* | | | |
| 140 mm diameter/3.5-14.2 mm wall* | | | |
| 165 mm diameter/ 3.9-14.2 mm wall* | | | |
| 180 mm diameter/ 4.2-14.2 mm wall* | | | |
| 200 mm diameter/ 4.6-14.2 mm wall* | | | |
| 219 mm diameter/ 5.0-14.2 mm wall* | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes



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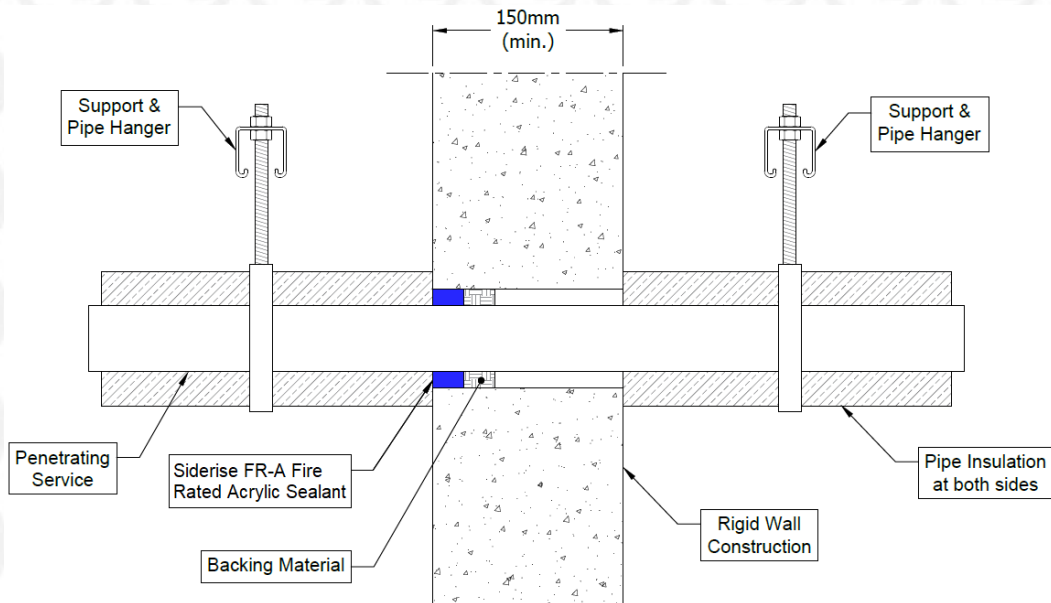
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Single side penetration seal with metallic (and composite) pipes

Penetration Seal: LI (Local Interrupted) of minimum length stated below or CI (Continuous Interrupted) insulated metallic and composite pipes (single) fitted at any position within the aperture, with 25 mm deep Siderise FR-A Fire Rated Acrylic Sealant to either side of the wall (or at any position between), backed with 25 mm deep minimum 40 kg/m³ stone wool insulation*.

Construction details:



| Services | Maximum Seal size | Insulation (minimum) | Classification |
|--|-------------------|---|-----------------------------|
| Copper or steel pipe up to 54 mm diameter/0.9-14.2 mm wall | 300 x 300 mm | 1000 mm length 20 mm Stone wool insulation 80 kg/m ³ | E 240 C/U, EI 60 C/U |
| Alupex composite pipe 75 mm diameter/7.5 mm wall | | 25 mm AES Fibre ≥ 128kg/m ³ insulation, 600 mm long (min.) | |

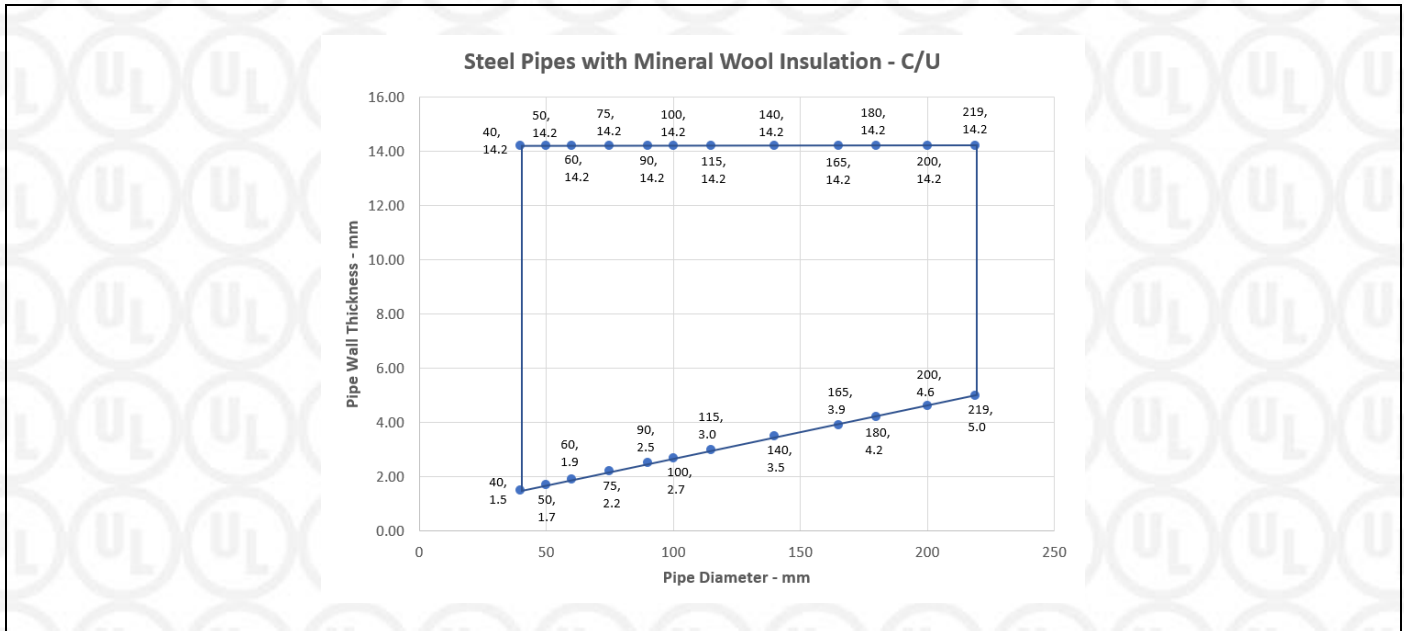


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| Services | Maximum seal size | Insulation (minimum) | Classification |
|-------------------------------------|-------------------|--|-----------------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1.5-14.2 mm wall* | 300 x 300 mm | 1000 mm length of 20 mm Stone wool insulation 80 kg/m ³ | E 240 C/U, EI 60 C/U |
| 40 mm diameter/1.5-14.2 mm wall* | | | |
| 50 mm diameter/1.7-14.2 mm wall* | | | |
| 60 mm diameter/1.9-14.2 mm wall* | | | |
| 75 mm diameter/2.2-14.2 mm wall* | | | |
| 90 mm diameter/2.5-14.2 mm wall* | | 1000 mm length of 30 mm Stone wool insulation 80 kg/m ³ | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 115 mm diameter/3-14.2 mm wall* | | | |
| 140 mm diameter/3.5-14.2 mm wall* | | | |
| 165 mm diameter/ 3.9-14.2 mm wall* | | | |
| 180 mm diameter/ 4.2-14.2 mm wall* | | | |
| 200 mm diameter/ 4.6-14.2 mm wall* | | | |
| 219 mm diameter/ 5.0-14.2 mm wall* | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes



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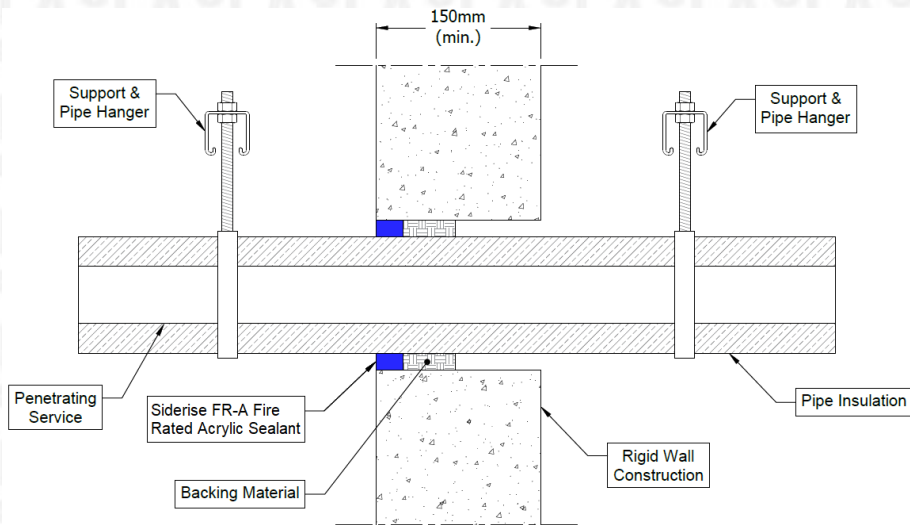
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Single side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic (single), with 25 mm deep Siderise FR-A Fire Rated Acrylic Sealant to either side of the wall (or at any position between), backed with 48 mm deep AES Fibre $\geq 128\text{kg/m}^3$ insulation. Minimum annular space 10 mm and minimum separation between penetrations seals of 30 mm. Maximum seal size 300 x 300 mm or 504 mm \varnothing .

Construction details:



Single side penetration seal with pipes

| Services | Insulation | Classification |
|-------------------------------------|--|-------------------|
| Mild or stainless steel pipe | | |
| 40 mm diameter/1-14.2 mm wall | 20 mm thick stone, mineral wool min. 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1-14.2 mm wall* | 30-80 mm thick stone, mineral wool min. 80 kg/m ³ | EI 180 C/U |
| 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, see below graph for intermediate sizes

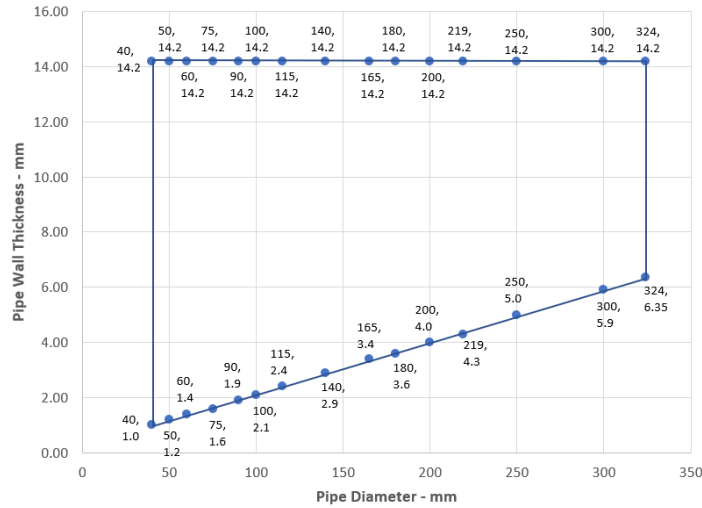
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Steel Pipes with Mineral Wool Insulation - C/U



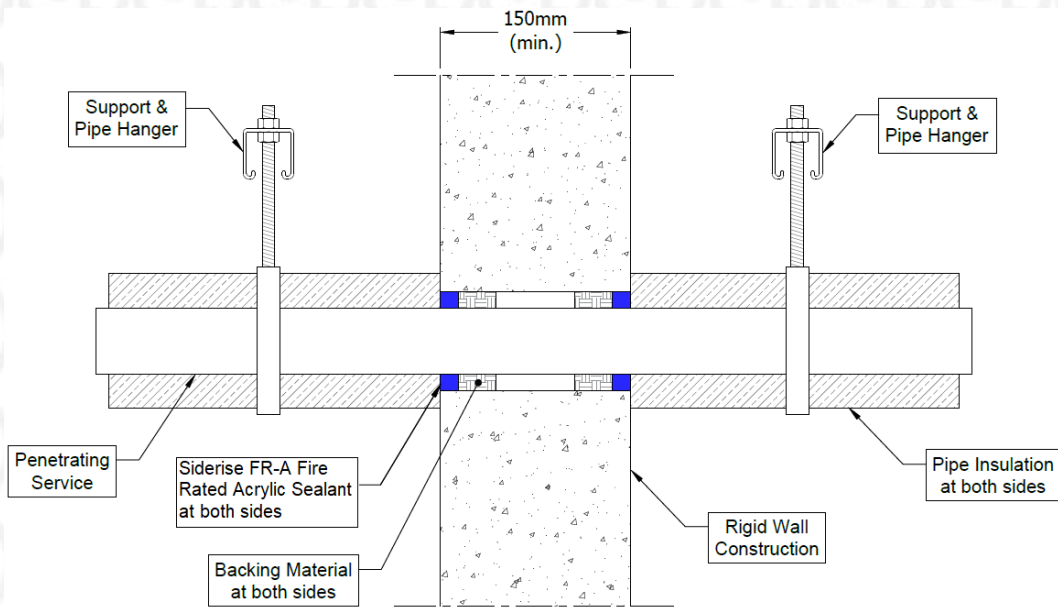
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Double side penetration seal with metallic pipes

Penetration Seal: 1000 mm (min.) LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes (single) fitted at any position within the aperture, with 15 mm deep Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with 20 or 30 mm deep minimum 40 kg/m³ stone wool insulation.

Construction details:



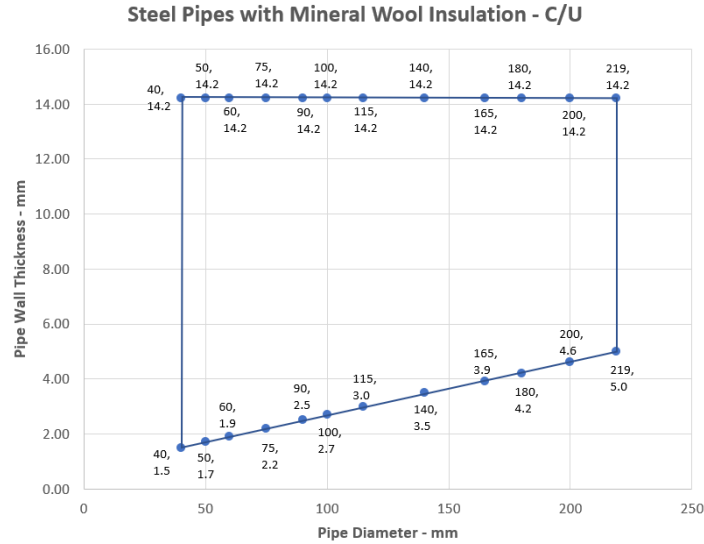
| Services | Maximum seal size | Insulation (minimum) | Classification |
|-------------------------------------|-------------------|--|-------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1.5-14.2 mm wall* | 300 x 300 mm | 20 mm Stone wool insulation 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1.5-14.2 mm wall* | | | |
| 50 mm diameter/1.7-14.2 mm wall* | | 30 mm Stone wool insulation 80 kg/m ³ | E 240, EI 120 C/U |
| 60 mm diameter/1.9-14.2 mm wall* | | | |
| 75 mm diameter/2.2-14.2 mm wall* | | | |
| 90 mm diameter/2.5-14.2 mm wall* | | | |
| 100 mm diameter/2.7-14.2 mm wall* | | | |
| 115 mm diameter/3-14.2 mm wall* | | | |
| 140 mm diameter/3.5-14.2 mm wall* | | | |
| 165 mm diameter/ 3.9-14.2 mm wall* | | | |
| 180 mm diameter/ 4.2-14.2 mm wall* | | | |
| 200 mm diameter/ 4.6-14.2 mm wall* | | | |
| 219 mm diameter/ 5.0-14.2 mm wall* | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes



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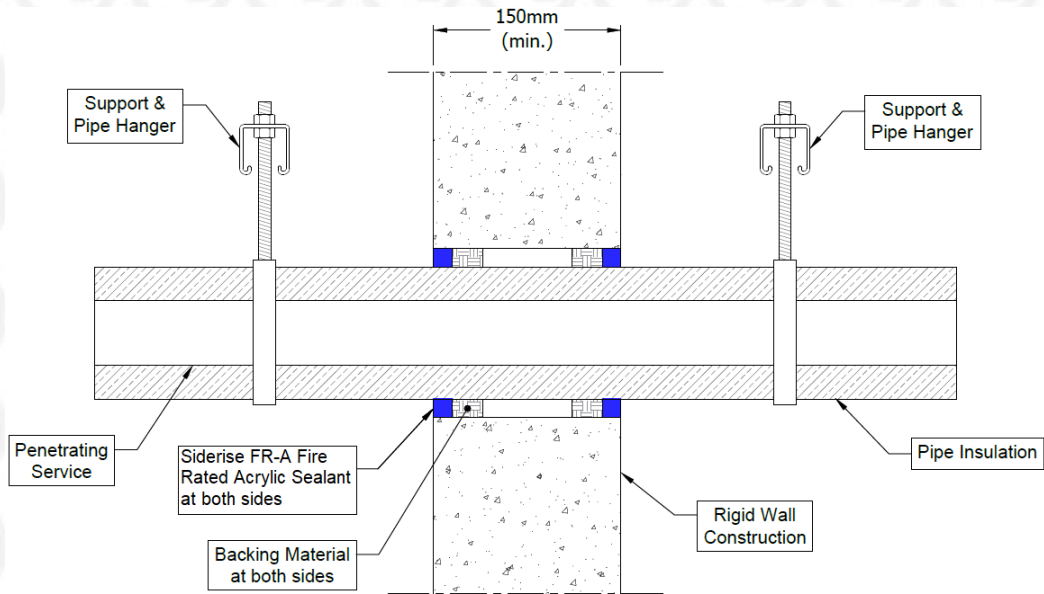
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Double side penetration seal with metallic pipes

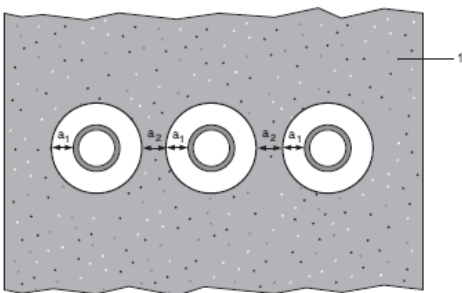
Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with 15 mm Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with 25 mm deep stone wool insulation minimum 35 kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2). Maximum seal size 300 x 300 mm / 504 mm Ø

Construction details:



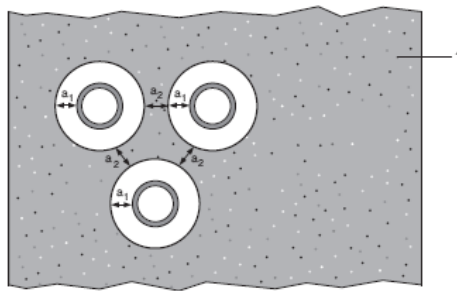
Configuration 1:

Option 1



Configuration 2:

Option 2



Key

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



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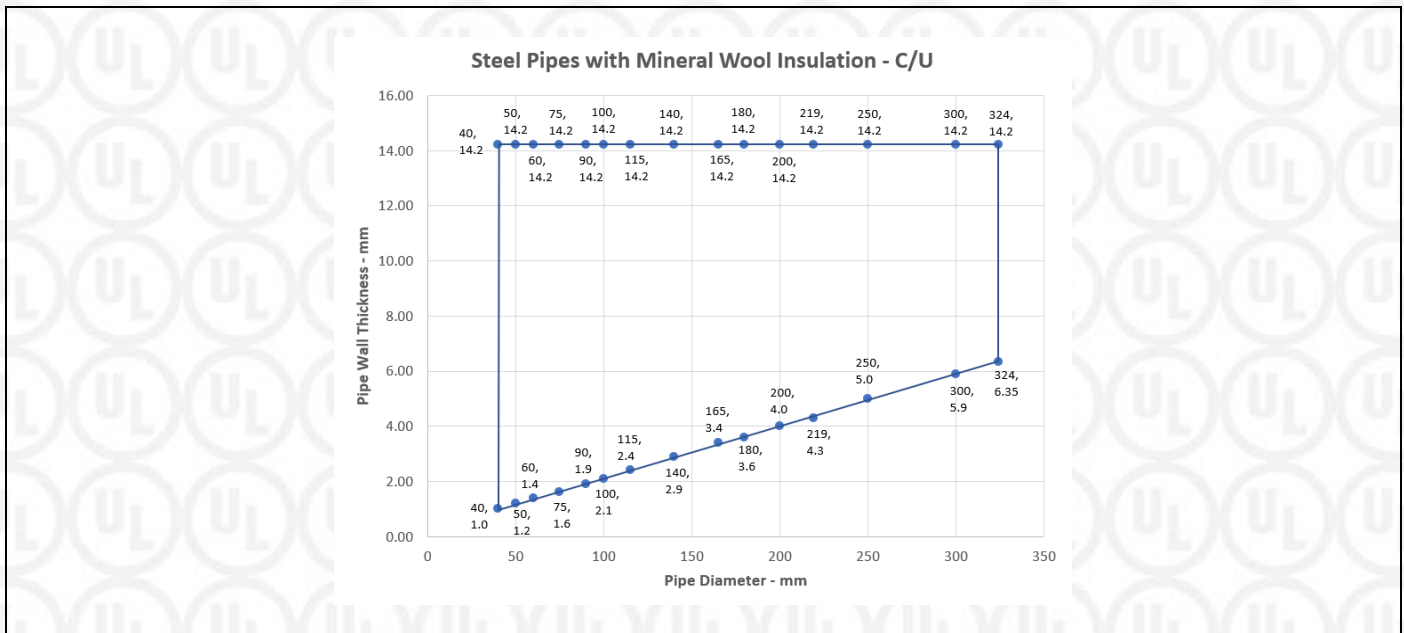
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Double side penetration seal with pipes

| Services | Insulation | Classification |
|-------------------------------------|--|-------------------|
| Mild or stainless steel pipe | | |
| 40 mm diameter/1-14.2 mm wall | 20 mm thick stone, mineral wool min. 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1-14.2 mm wall* | | |
| 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* | 30-80 mm thick stone, mineral wool min. 80 kg/m ³ | |
| 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, see below graph for intermediate sizes



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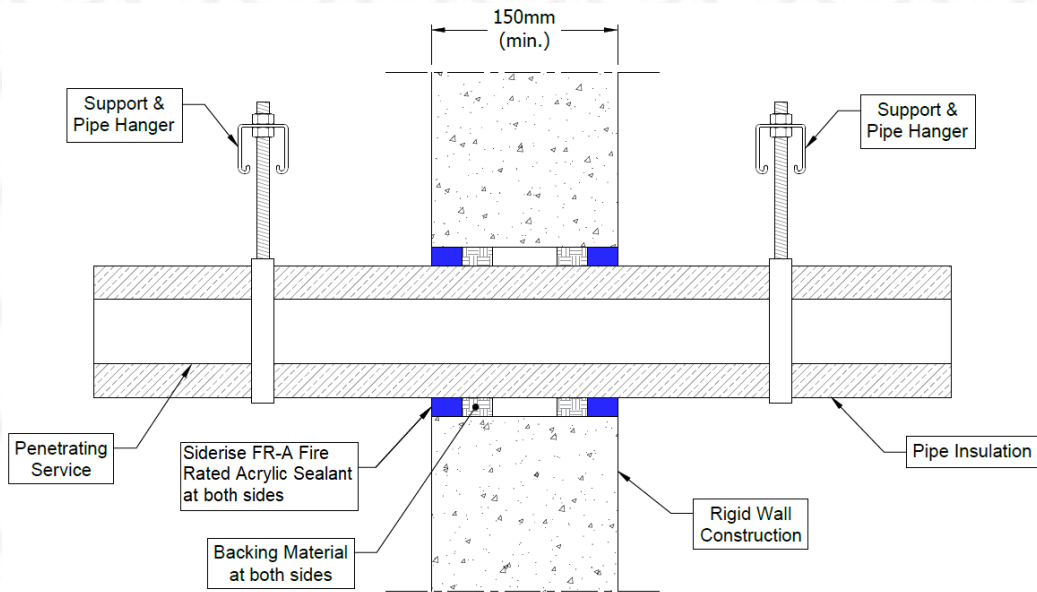
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Double side penetration seal with metallic pipes with combustible insulation

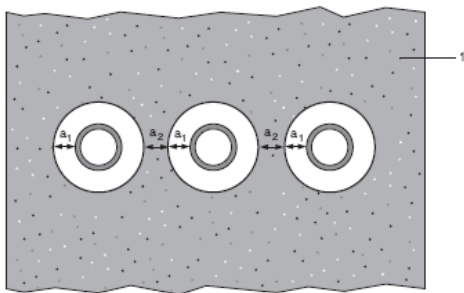
Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with 25 mm Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with 25 mm deep stone wool insulation minimum 35 kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2). Maximum seal size 300 x 300 mm / 300 mm Ø

Construction details:



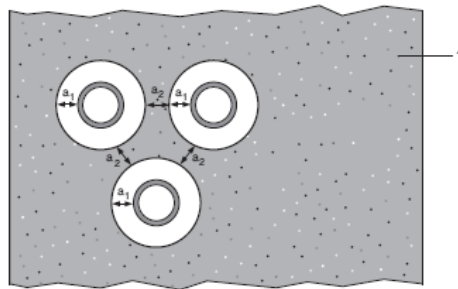
Configuration 1:

Option 1



Configuration 2:

Option 2



Key

1 Supporting construction

a1 Pipe / top edge of seal separation

a2 Pipe / side edge of seal separation

a3 Pipe / pipe separation



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Double side penetration seal with metallic pipes with combustible insulation

| Services | Insulation | Classification |
|-------------------------------------|--|-----------------------|
| Mild or stainless steel pipe | | |
| 22 mm diameter/2-11 mm wall | 13 mm thick Elastomeric insulation minimum class B-s3,d0 | E 240 C/U, EI 180 C/U |
| 22-114 mm diameter/2-14.2 mm wall | 13-25 mm thick Elastomeric insulation minimum class B-s3,d0 | E 120 C/U, EI 90 C/U |
| 22-114 mm diameter/2-14.2 mm wall | 25-50 mm thick Elastomeric insulation minimum class B-s3,d0 | EI 60 C/U |



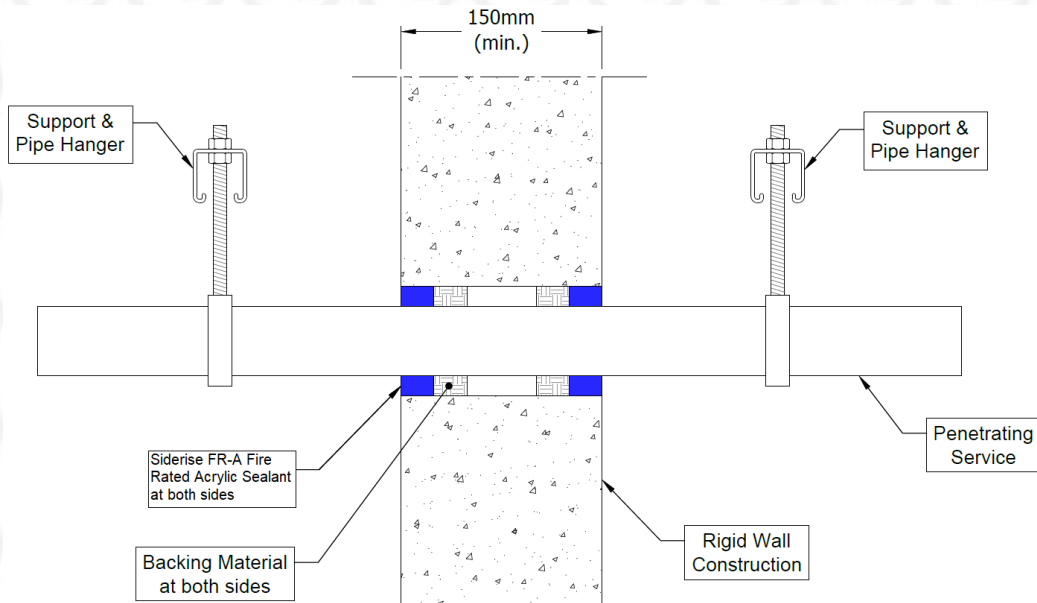
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Double side penetration seal with plastic pipes

Penetration Seal: Plastic and metal pipes (single) fitted at any position within the aperture, with 25 mm Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with 25 mm deep stone wool insulation minimum 35 kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2). Maximum seal size 300 x 300 mm / 300 mm Ø

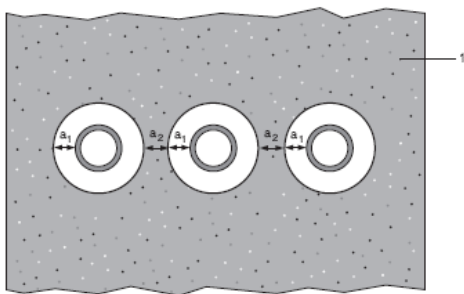
Construction details:



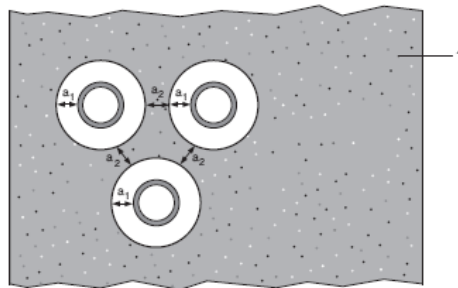
Configuration 1:

Configuration 2:

Option 1



Option 2



Key

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



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Double side penetration seal with plastic pipes

| Pipe material | Size | Classification |
|--|-----------------------------------|-----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | 6-32 mm diameter/1.0-2.4 mm wall | EI 240 U/C |
| PVC with bundle of cables up to 21 mm diameter | 6-32 mm diameter/1.0-2.4 mm wall | E 240 U/C, EI 120 U/C |
| PVC with bundle of cables up to 21 mm diameter | 40 mm diameter/3.0 mm wall | E 240 U/C, EI 120 U/C |
| PP pipe according to EN 1451-1 or DIN 8077/8078 | 32 mm diameter/2.0-4.4 mm wall | EI 180 C/U |
| | 12-32 mm diameter/1.8-4.4 mm wall | EI 240 C/U |
| PP with bundle of cables up to 21 mm diameter | 12-32 mm diameter/1.8-4.4 mm wall | E 180 U/C, EI 120 U/C |
| PP with bundle of cables up to 21 mm diameter | 40 mm diameter/3.7 mm wall | E 180 U/C, EI 120 U/C |
| 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 | 20-32 mm diameter/2.0 mm wall | EI 240 C/U |
| | 20-32 mm diameter/2.0-4.4 mm wall | EI 120 C/U |
| PE with bundle of cables up to 21 mm diameter | 20-32 mm diameter/2.0-4.4 mm wall | EI 120 U/C |
| PE with bundle of cables up to 21 mm diameter | 40 mm diameter/3.7 mm wall | EI 240 U/C |
| Copper and steel pipe | 6-12 mm diameter/0.6-6.0 mm wall | E 240 C/C, EI 120 C/C |
| Steel pipe | 4-65 mm diameter/1.0-14.2 mm wall | E 240 C/U, EI 20 C/U |



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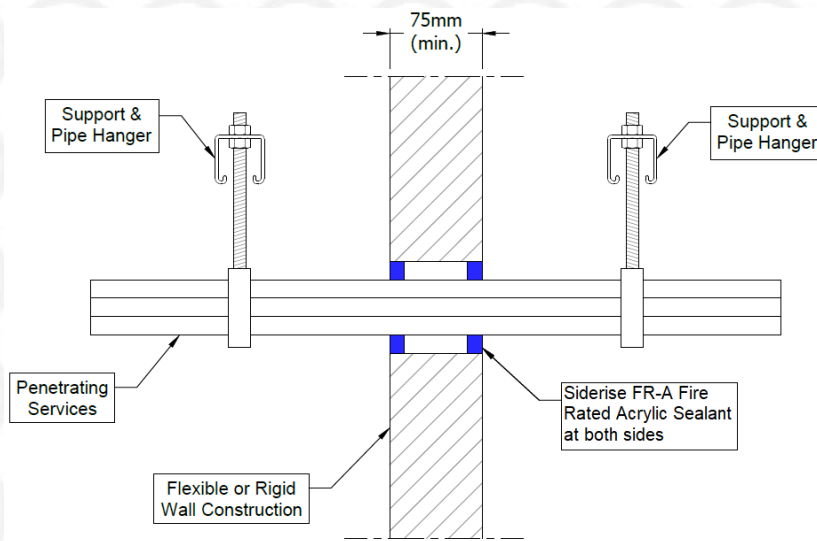
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Flexible and rigid wall constructions according to 2. 2) with wall thickness of minimum 75 mm

Double side penetration seal with cables

Penetration Seal: Cables (single or bundles up to 100 mm Ø) and pipes fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2), maximum seal size 150 x 150 mm / 344 mm diameter (when incorporating a pipe of seal diameter -20 mm).

Construction details:



| Services | Sealant depth | Backing | Classification |
|--|---------------|--------------|---------------------|
| None (blank) | 12.5 mm | Any material | EI 60 |
| Cables up to 21 mm Ø, single | | None | E 60, EI 45 |
| Cables up to 21 mm Ø, in bundles up to 100 mm Ø | | | E 45, EI 30 |
| Mild or stainless steel pipe | | | |
| 4 mm diameter /0.7-2.0 mm wall | 12.5 mm | None | E 60 C/U, EI 45 C/U |
| 5-22 mm diameter /0.7-11 mm wall* | | | E 60 C/U, EI 30 C/U |
| Mild or stainless steel pipe with minimum 80 kg/m³ density stone wool insulation Continuous Sustained (CS) | | | |
| 40 mm diameter /1-14.2 mm wall, 20 mm insulation | 12.5 mm | None | E 60 C/U, EI 45 C/U |
| 40-324 mm diameter /1.0-14.2 mm wall, 30 mm insulation* | | | |
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | | | |
| 6-32 mm Ø/1.0-1.8 mm wall, with bundle of cables up to 21 mm diameter* | 12.5 mm | None | E 60 U/C, EI 45 U/C |

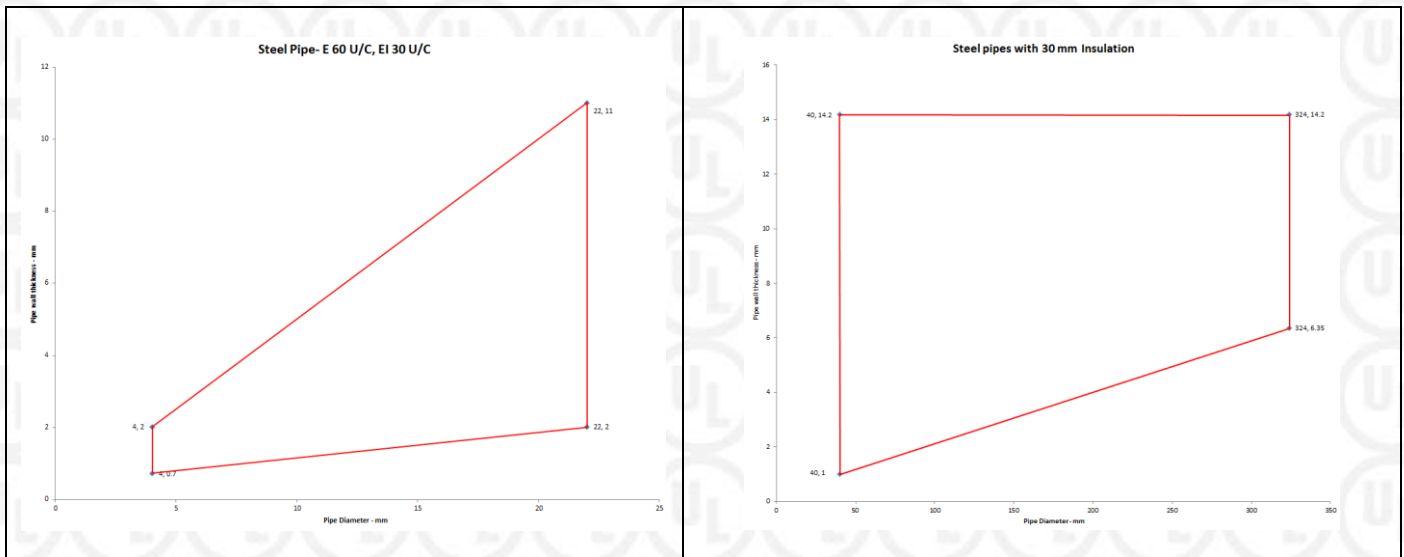


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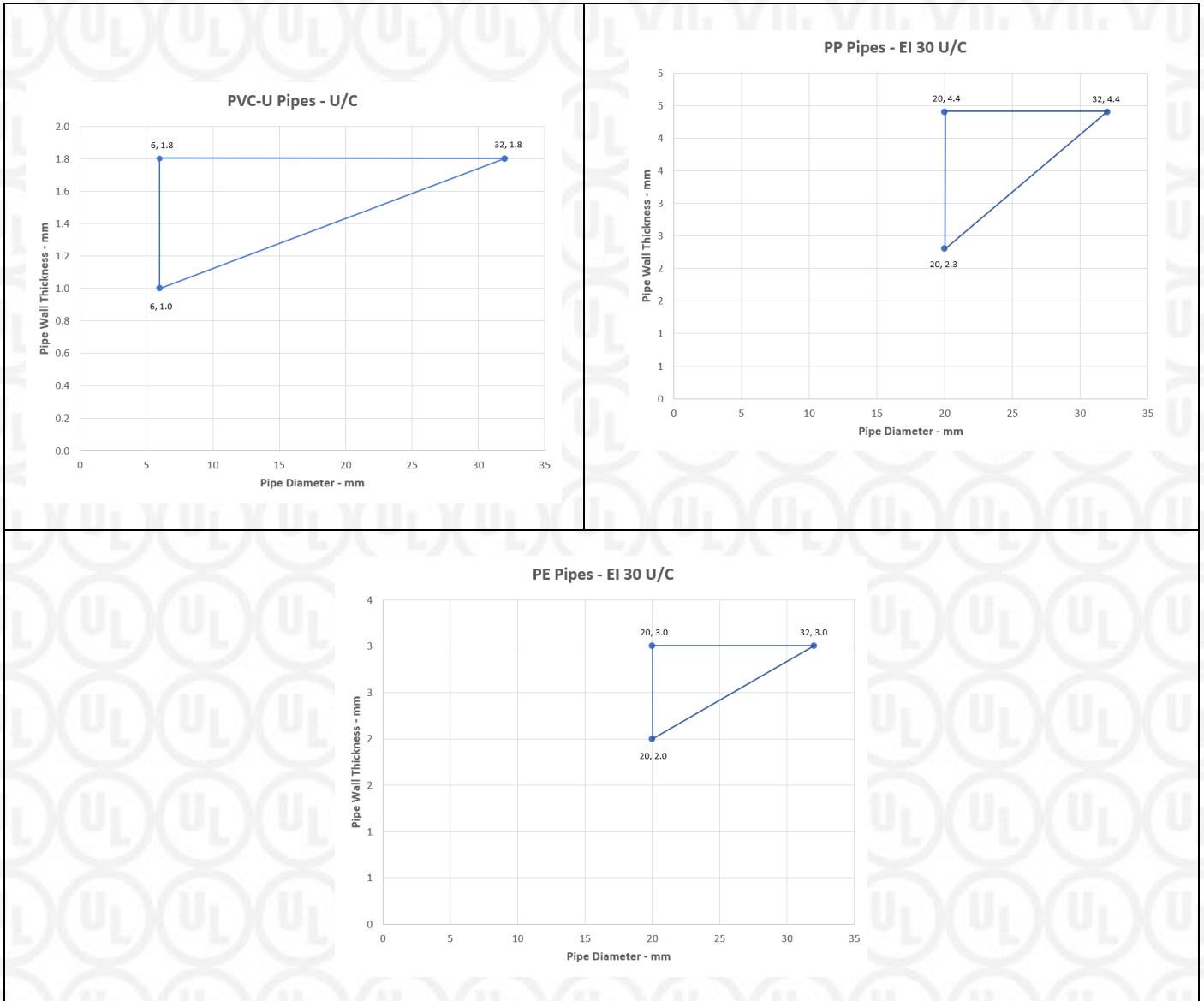
| Services | Sealant depth | Backing | Classification |
|---|---------------|---------|---------------------|
| PP pipe according to EN 1451-1 or DIN 8077/8078 | | | |
| 20 mm Ø/2.3 mm wall | 12.5 mm | None | EI 45 U/C |
| 21-32 mm Ø/2.3-4.4 mm wall* | | | EI 30 U/C |
| 21-32 mm Ø/2.3-4.4 mm wall, with bundle of cables up to 21 mm diameter* | | | E 45 U/C, EI 30 U/C |
| 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 | | | |
| 20 mm Ø/2.0 mm wall | 12.5 mm | None | EI 45 U/C |
| 21-32 mm Ø/2.0-3.0 mm wall* | | | EI 30 U/C |
| 21-32 mm Ø/2.0-3.0 mm wall, with bundle of cables up to 21 mm* diameter | | | E 45 U/C, EI 30 U/C |

* See below graphs for interpolated pipe sizes



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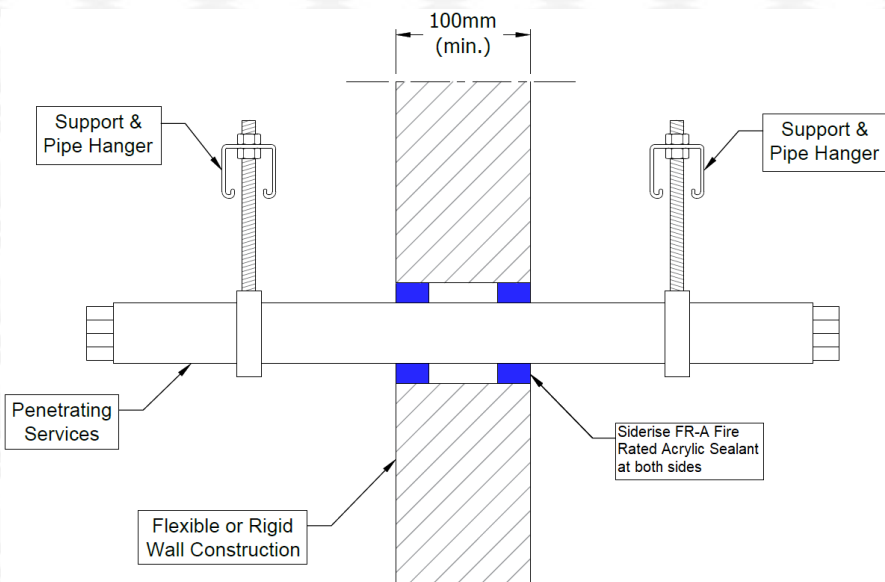
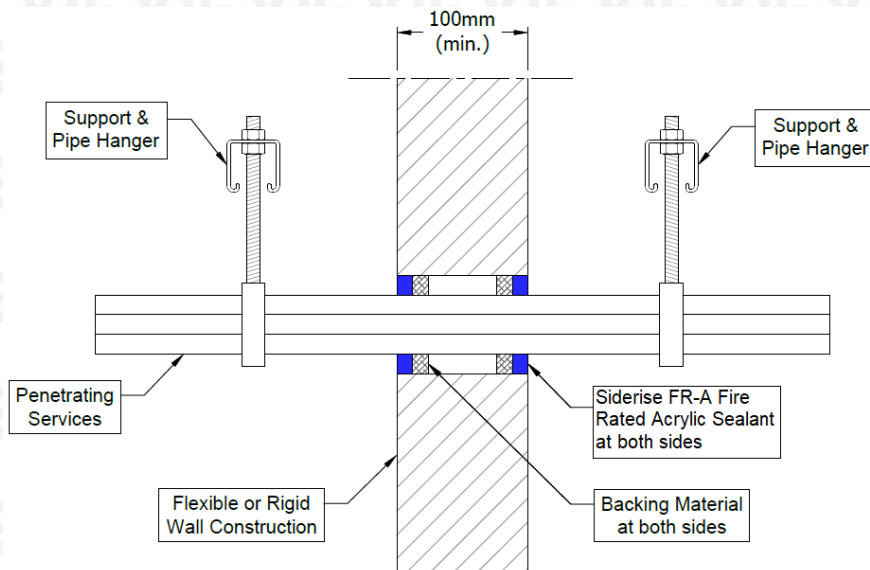
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Flexible and rigid wall constructions according to 2.2) with wall thickness of minimum 100 mm

Double side penetration seal with cables

Penetration Seal: Cables (single or bundles up to 100 mm Ø) and conduits fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall.

Construction details:



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| Services | Sealant depth | Backing | Maximum aperture | Classification |
|--|---------------|---|------------------|----------------|
| None (blank) | 12.5 mm | Stone wool 20 mm deep 35-140 kg/m ³ | 300 x 300 mm* | EI 120 |
| Cables up to 21 mm Ø, single or in bundles up to 50 mm Ø | 12.5 mm | Stone wool 12.5 mm deep min. 33 kg/m ³ | | E 120, EI 90 |
| Electrical cables up to 21 mm Ø, single or in bundles up to 100 mm Ø | 25 mm | Stone wool 20 mm deep min. 40 kg/m ³ | | EI 120 |
| Electrical cables up to 80 mm Ø, single or in bundles up to 100 mm Ø | | 25 mm AES Fibre ≥ 128kg/m ³ | | E 120, EI 60 |
| Single 'E cable' - 1 x 185 mm ² core HD603.3 electrical cable with PVC insulation, PVC sheath and 23-27 mm diameter | 12.5 mm | Stone wool 20 mm deep min. 140 kg/m ³ | 600 x 600 mm | E 120, EI 60 |
| Single or bundled electrical cables up to 21 mm Ø, with or without trays | 12.5 mm | 25 mm AES Fibre ≥ 128kg/m ³ | | E 90, EI 60 |
| Single or bundled electrical cables up to 80 mm Ø, with or without trays | | | | E 90, EI 30 |
| Single or bundled electrical conduits up to 32 mm Ø, with or without trays | | | | E 60, EI 45 |

* Or 30 mm wide x 3000 mm high for cables up to 21 mm Ø

| Services | Sealant depth | Backing | Maximum Annular space | Classification |
|---|---------------|---------|-----------------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1, PVC-C according to EN 1566-1 | | | | |
| Maximum diameter 40 mm, wall thickness 1.0-1.9 mm for PVC pipes, fully or partially filled conduits with cables up to 21 mm diameter | 25 mm | none | 30 mm | EI 120 U/C |
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 | | | | |
| Maximum diameter 40 mm, wall thickness 2.0-3.0 mm for PE pipes, fully or partially filled conduits with cables up to 21 mm diameter | 25 mm | none | 30 mm | EI 90 U/C |
| PP pipe according to EN 1852-1: 2009 or DIN 8077/8078 | | | | |
| Maximum diameter 40 mm, wall thickness 1.8-2.2 mm for PP pipes, fully or partially filled conduits with cables up to 21 mm diameter | 25 mm | none | 30 mm | EI 90 U/C |



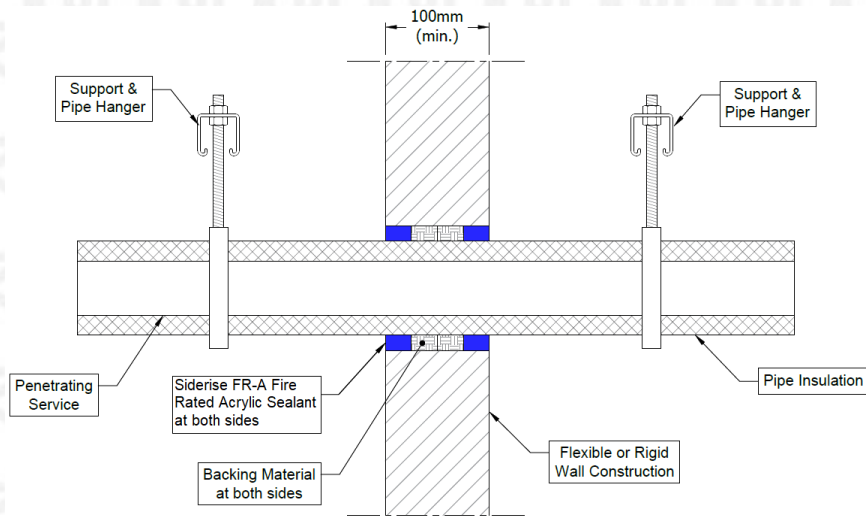
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Double side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with stone wool insulation or 'AES Fibre $\geq 128\text{kg/m}^3$ ', 300 x 300 mm maximum seal size.

Construction details:



| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|-------------------------------------|---------------|--|---|------------------------|
| Mild or stainless steel pipe | | | | |
| 22 mm diameter/3-10 mm wall | 25 mm | Stone wool 25 mm deep 35 kg/m ³ | None | EI 120 C/C |
| Maximum 165 mm diameter/ wall* | 12.5 mm | 12.5 mm stone wool 33 kg/m ³ | 9 mm Elastomeric insulation minimum class D-s3, d0 | E 90 C/U EI 45 C/U |
| | | | 13 -25 mm Elastomeric insulation minimum class D-s3, d0 | EI 60 C/U |
| 40 mm diameter/1-14.2 mm wall* | 12.5 mm | 20 mm Stone wool 40 kg/m ³ | 13 -19 mm Elastomeric insulation minimum class B-s3,d0 | EI 120 C/C |
| 40 mm diameter/1-14.2 mm wall* | 25 mm | 25 mm AES Fibre $\geq 128\text{kg/m}^3$ | | E 120 C/C EI 60 C/C |
| 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* | | | | |

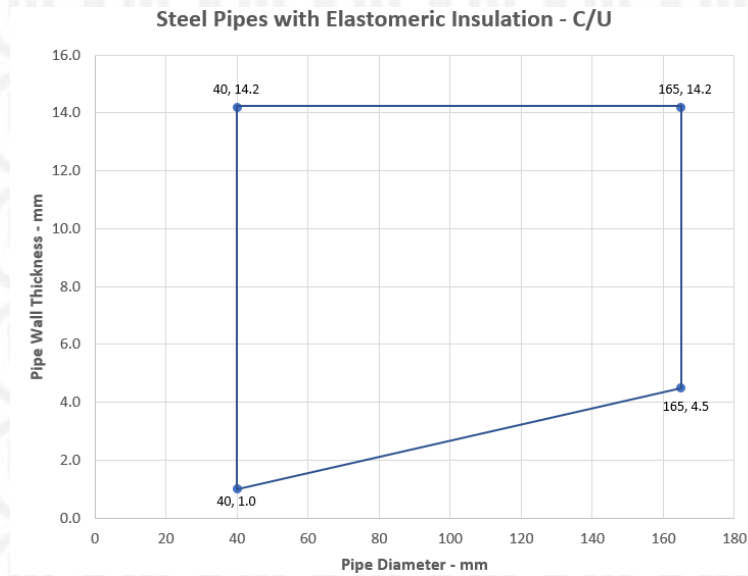
* Typical pipe diameters shown, see below graph for intermediate sizes

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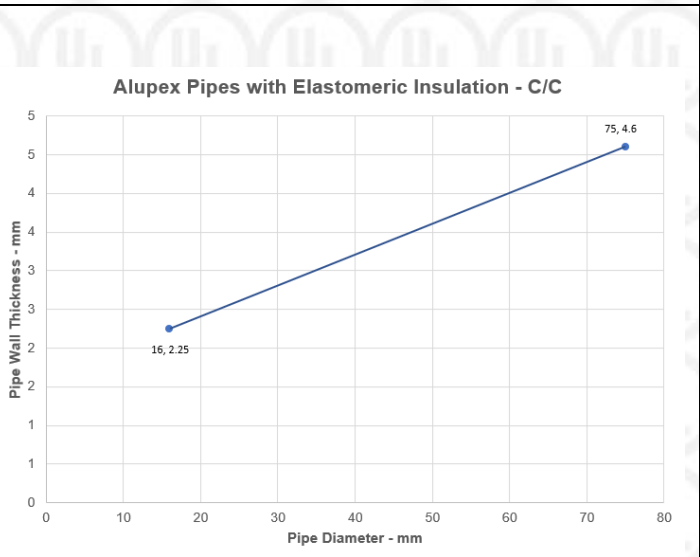
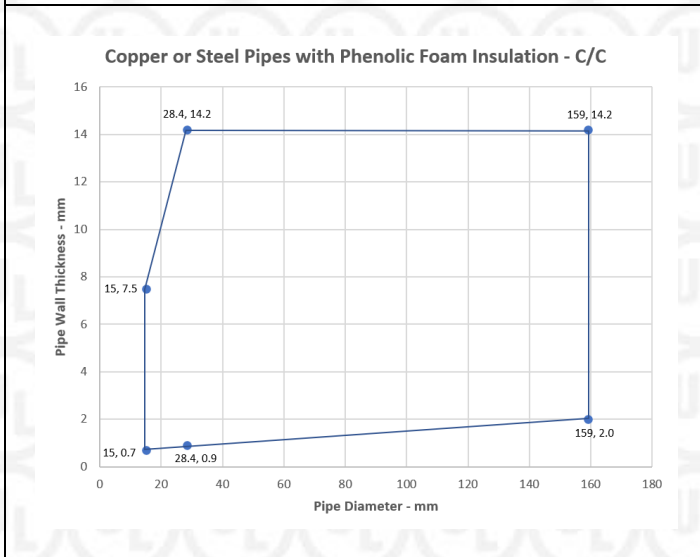
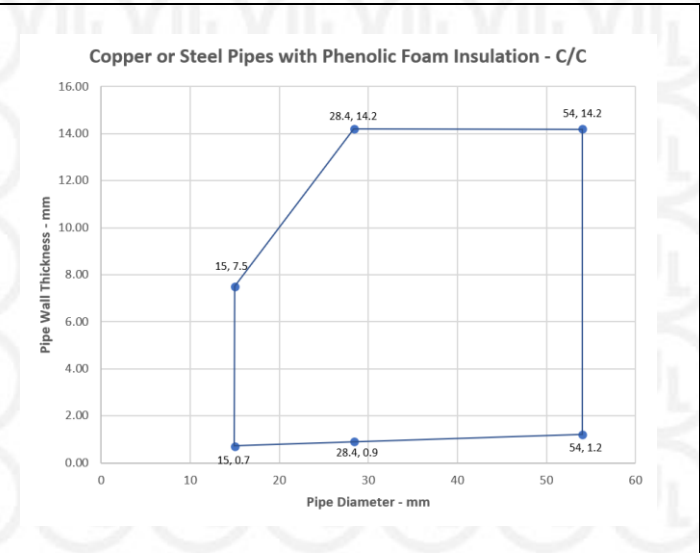
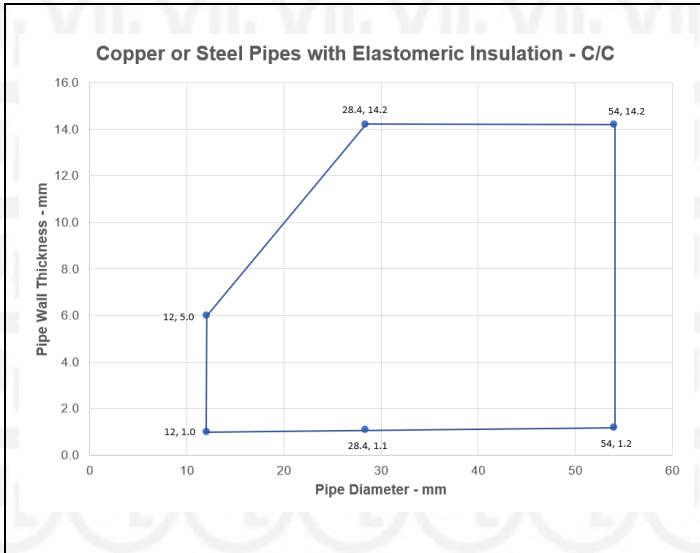
| Services | Sealant depth | Backing | Insulation | Classification |
|---|---------------|---|--|-------------------------|
| Copper or steel pipe | | | | |
| 12 mm diameter/1-6 mm wall | 25 mm | 25 mm AES Fibre \geq 128kg/m ³ | 9 mm Elastomeric insulation minimum class B-s3,d0 | EI 120 C/C |
| 12-54 mm diameter/1-14.2 mm wall* | | | 9-18 mm Elastomeric insulation minimum class B-s3,d0 | E 120 C/C, EI 60 C/C |
| 12-54 mm diameter/1-14.2 mm wall* | | | 19 mm Elastomeric insulation minimum class B-s3,d0 | E 120 C/C, EI 90 C/C |
| 12-54 mm diameter/1-14.2 mm wall* | | | 20-25 mm Elastomeric insulation minimum class B- s3,d0 | EI 60 C/C |
| 15-54 mm diameter/0.7-14.2 mm wall* | | None required | 15 mm Phenolic foam insulation | E 120 C/C, EI 60 C/C |
| 15-54 mm diameter/0.7-14.2 mm wall* | | | 16-30 mm Phenolic foam insulation | E 90 C/C, EI 60 C/C |
| 15-159 mm diameter/0.7-14.2 mm wall* | | | 15-100 mm Phenolic foam insulation | E 45 C/C, EI 30 C/C |
| 15-159 mm diameter/0.7-14.2 mm wall* | | 25 mm around one layer of Siderise FR Pipe Wrap (1.8 x 50 mm) | 100 mm Phenolic foam insulation | EI 60 C/C |
| Alupex Composite Pipe | | | | |
| 16 mm diameter/ wall* | 12.5 mm | 12.5 mm stone wool 33 kg/m ³ | 9 mm Elastomeric insulation minimum class D-s3, d0 | E 120 C/C EI 90 C/C |
| Maximum 75 mm diameter/ wall* | | | 13-24 mm Elastomeric insulation minimum class D-s3, d0 | E 90 C/C EI 60 C/C |
| | | | 25 mm Elastomeric insulation minimum class D-s3, d0 | EI 90 C/C |
| 16 mm diameter/2.25 mm wall | 25 mm | 25 mm AES Fibre \geq 128kg/m ³ | 9 mm Elastomeric insulation minimum class B-s3,d0 | EI 120 C/C |
| 16 mm diameter/2.25 mm wall | | | 9-25 mm Elastomeric insulation minimum class B- s3,d0 | EI 60 C/C |
| 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 | | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes



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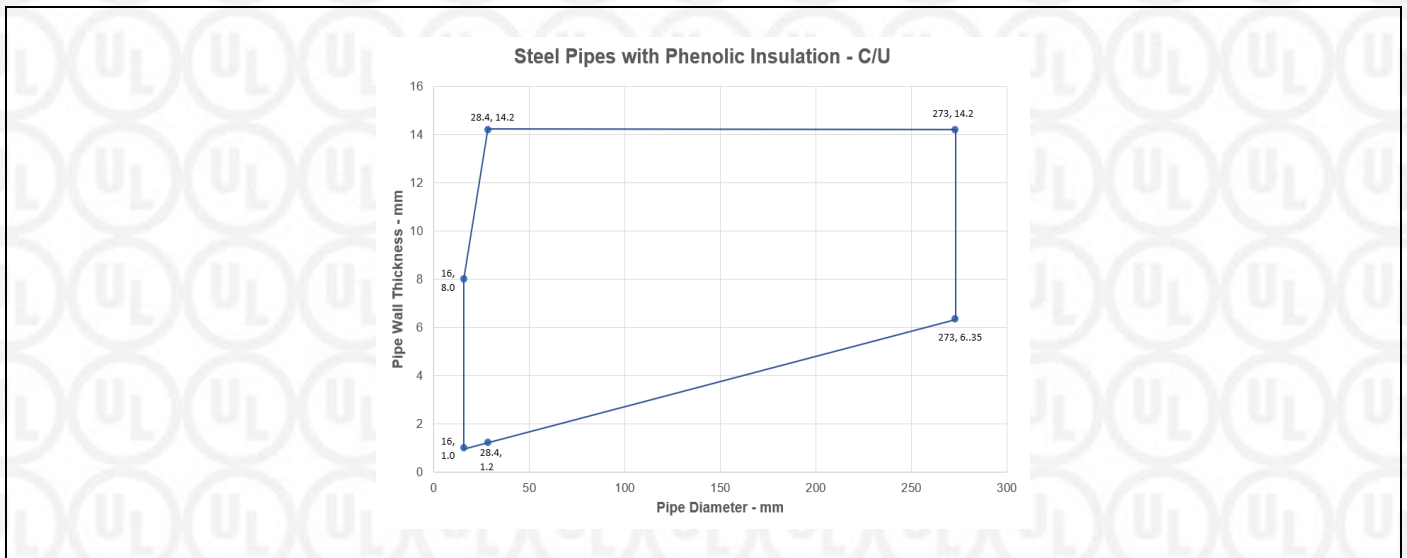


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| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|------------------------------|---------------|-------------------|-------------------------------------|---------------------|
| Mild or stainless steel pipe | | | | |
| 16 mm diameter/ wall* | 25 mm | None | 15 mm thick phenolic insulation | EI 90 C/U |
| Maximum 273 mm/ wall* | | | 25 mm thick phenolic insulation | E 90 C/U, EI 60 C/U |
| | | | 26-100 mm thick phenolic insulation | EI 60 C/U |

* Typical pipe diameters shown, see below graph for intermediate sizes



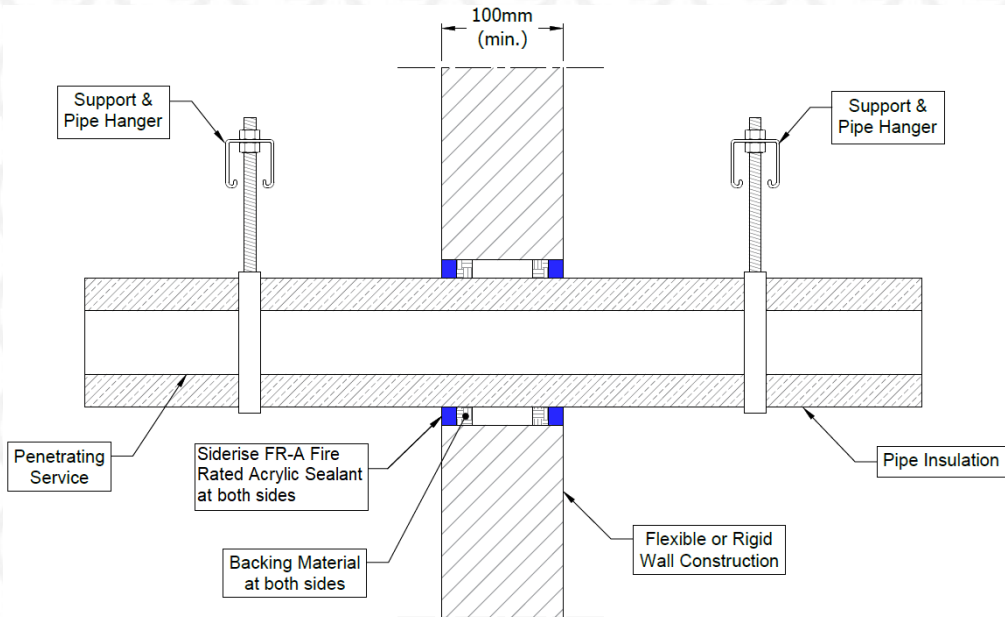
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Double side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with 12.5 mm Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with 12.5 mm deep stone wool insulation minimum 35 kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2). Maximum seal size 300 x 300 mm / 504 mm Ø

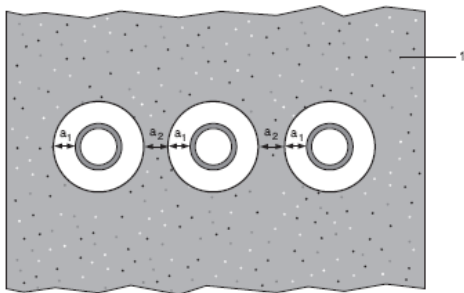
Construction details:



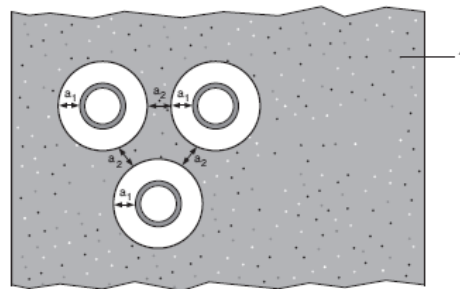
Configuration 1:

Configuration 2:

Option 1



Option 2



Key

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



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Double side penetration seal with pipes

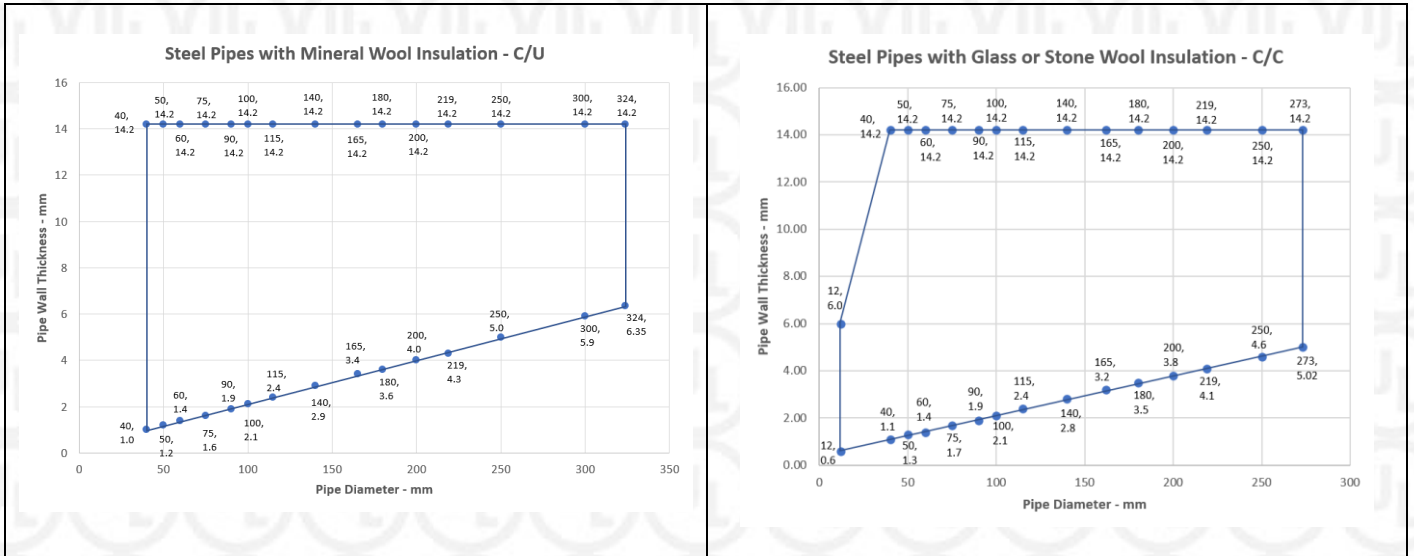
| Services | Insulation | Classification |
|-------------------------------------|---|--------------------------------------|
| Mild or stainless steel pipe | | |
| 40 mm diameter/1-14.2 mm wall | 20 mm thick stone, mineral wool min. 80 kg/m ³ | E 120 C/U EI 90 C/U |
| 40 mm diameter/1-14.2 mm wall* | 30-80 mm thick stone, mineral wool min. 80 kg/m ³ | |
| 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* | | |
| 12 mm diameter/0.6-6.0 mm wall | 20 mm thick glass or stone, mineral wool min. 75 kg/m ³ (CS, or LS at 550 mm each side) | EI 60 C/C |
| 40 mm diameter/1.1-14.2 mm wall* | 30-60 mm thick glass or stone, mineral wool min. 75 kg/m ³ (CS, or LS at 550 mm each side) | |
| 50 mm diameter/1.3-14.2 mm wall* | | |
| 60 mm diameter/1.4-14.2 mm wall* | | |
| 75 mm diameter/1.7-14.2 mm wall* | | |
| 90 mm diameter/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/2.8-14.2 mm wall* | | |
| 165 mm diameter/ 3.2-14.2 mm wall* | | |
| 180 mm diameter/ 3.5-14.2 mm wall* | | |
| 200 mm diameter/ 3.8-14.2 mm wall* | | |
| 219 mm diameter/ 4.1-14.2 mm wall* | | |
| 250 mm diameter/ 4.6-14.2 mm wall* | | |
| 273 mm diameter/ 5.0-14.2 mm wall* | | |

* See below graphs for interpolated pipe sizes



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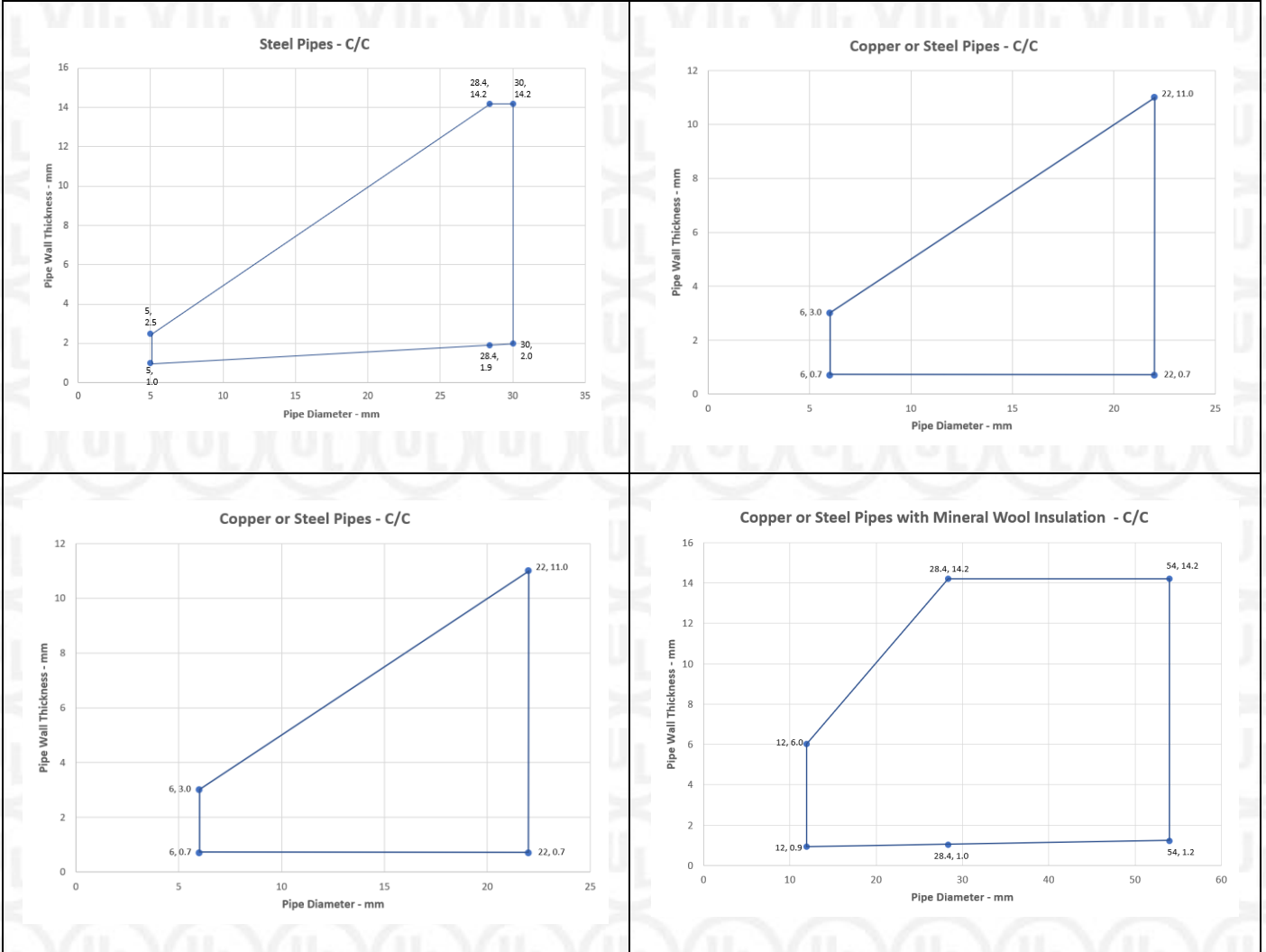
| Services | Insulation | Classification |
|---|--|----------------------|
| PEX pipe in pipe system | | |
| 15 mm diameter x 2.5 mm wall inner /25mm diameter outer | None | EI 120 C/C |
| Alupex pipe | | |
| 16-20 mm diameter/2.0 mm wall | None | EI 120 C/C |
| 16-75 mm diameter/2.25-4.6 mm | 20-50 mm thick glass wool or stone, mineral wool min. 75 kg/m ³ | EI 120 C/C |
| 16-75 mm diameter/2.25-4.7 mm | 60 mm thick glass wool or stone, mineral wool min. 75 kg/m ³ | EI 60 C/C |
| Mild or Stainless Steel pipe | | |
| 4 mm diameter/1.0-2.0 mm wall | None | EI 90 C/C |
| 5-30 mm diameter/1.0-14.2 mm wall* | | EI 120 C/U |
| 30 mm diameter/2.0-14.2 mm wall | | |
| Copper or Steel pipe | | |
| 6-12 mm diameter/0.7-6.0 mm wall* | None | E 90 C/C, EI 60 C/C |
| 13-22 mm diameter/0.7-11 mm wall* | | E 90 C/C, EI 30 C/C |
| 12-54 mm diameter/0.9-14.2 mm wall* | 20-80 mm thick stone, mineral wool min. 80 kg/m ³ | E 120 C/C, EI 60 C/C |
| 12-54 mm diameter/0.6-14.2 mm wall* | 20-60 mm thick glass wool or stone, mineral wool min. 75 kg/m ³ (CS, or LS at 550 mm each side) | EI 60 C/C |

* See below graphs for interpolated pipe sizes



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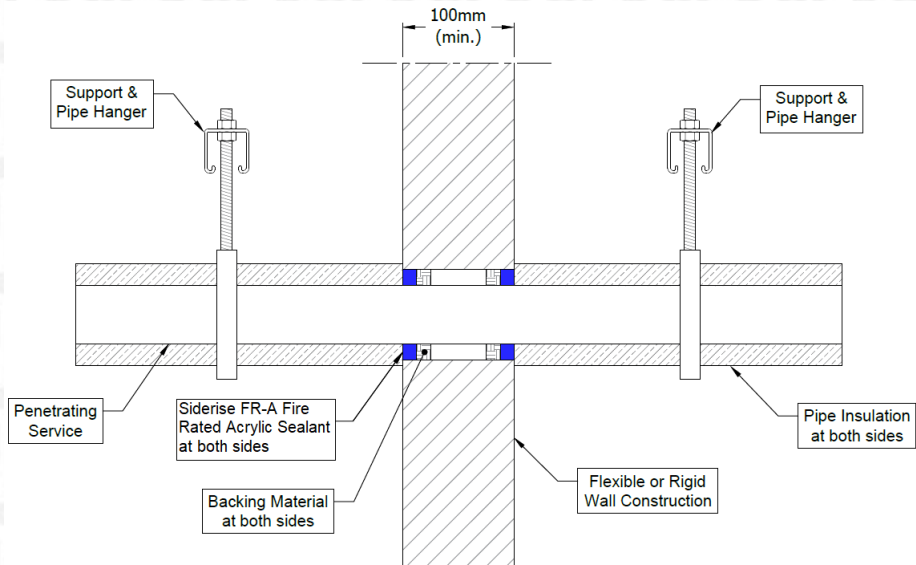
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Double side penetration seal with composite pipes

Penetration Seal: CI (Continuous Interrupted) or LI (Locally Interrupted) insulated composite pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, minimum 10 mm seal width around service, maximum seal size 300 x 300 mm, backed with stonewool.

Construction details:



| Services | Sealant depth | Backing (minimum) | Insulation (minimum) | Classification |
|------------------------------|---------------|--|---|-------------------|
| Alupex Composite Pipe | | | | |
| 16 mm diameter/2.25 mm wall | 12.5 mm | 12.5 mm stonewool 40 kg/m ³ | 20 mm stonewool 80 kg/m ³ , 500 mm length from both sides of the seal | EI 120 C/C |
| 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 | 12.5 mm | 12.5 mm stonewool 33 kg/m ³ | 20 mm glass wool 75 kg/m ³ , 500 mm length from both sides of the seal | EI 120 C/C |
| 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 | | | | |



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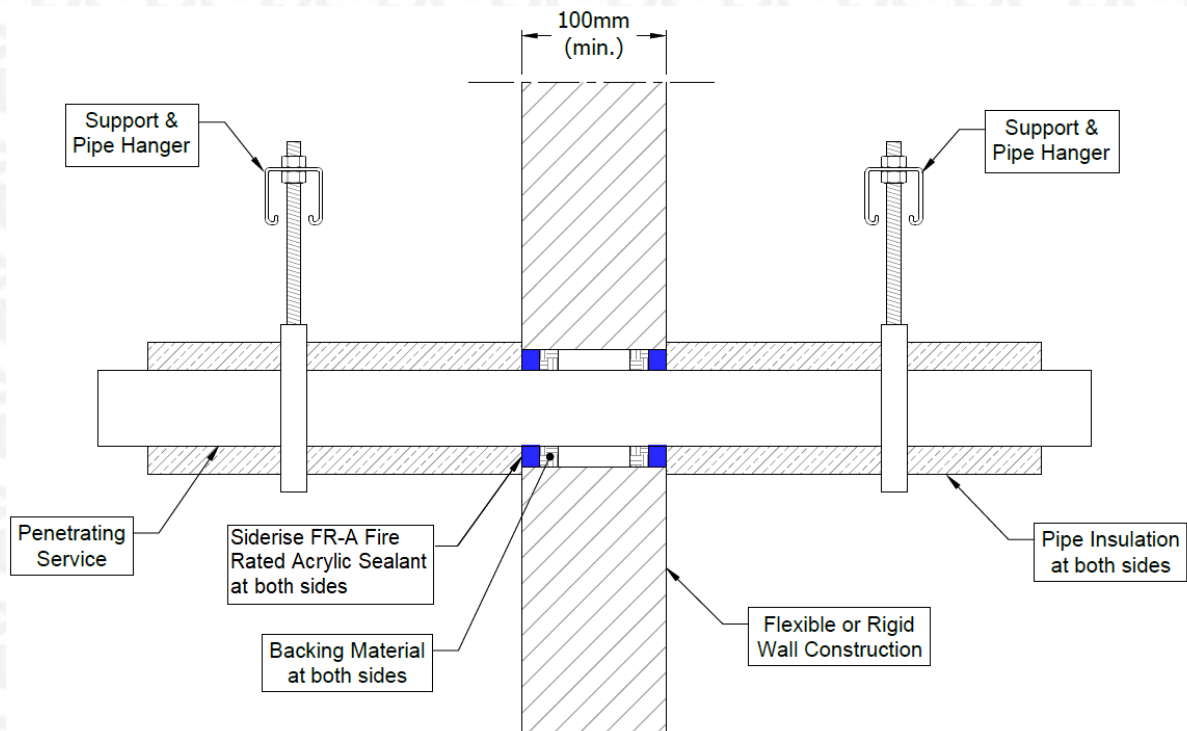
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Double side penetration seal with metallic (and composite) pipes

Penetration Seal: LI (Local Interrupted) of minimum length stated below or CI (Continuous Interrupted) insulated metallic pipes and composite (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, min. 10 mm seal width around service, backed with stone wool insulation or 'AES Fibre $\geq 128\text{kg/m}^3$ '.

Construction details:



| Services | Sealant depth | Backing (minimum) | Insulation (minimum) | Classification |
|---|---------------|---|--|---------------------------------|
| Maximum aperture size 300 x 300 mm | | | | |
| Copper or steel pipe up to 54 mm diameter/1-14.2 mm wall | 12.5 mm | 20 mm Stone wool 40 kg/m ³ | 500 mm length of 20 mm stone wool 80 kg/m ³ | EI 120 C/U |
| Copper or steel pipe up to 159 mm diameter/0.6-14.2 mm wall | | 12.5 mm stone wool 33 kg/m ³ | 1000 mm length of 30 mm stone wool 80 kg/m ³ | EI 60 C/C |
| Copper or steel pipe up to 54 mm diameter/0.6-14.2 mm wall | | 12.5 mm stone wool 33 kg/m ³ | 500 mm length of 20 mm glass wool 75 kg/m ³ | E 120 C/C, EI 60 C/C |
| Copper or steel pipe up to 108 mm diameter/0.6-14.2 mm wall | | 12.5 mm stone wool 33 kg/m ³ | 500 mm length of 30 mm glass wool 75 kg/m ³ | E 120 C/C, EI 30 C/C |
| Alupex composite pipe 75 mm diameter/7.5 mm wall | | 20 mm Stone wool 140 kg/m ³ | 600 mm length of 25 mm AES Fibre $\geq 128\text{kg/m}^3$ | EI 60 C/U |



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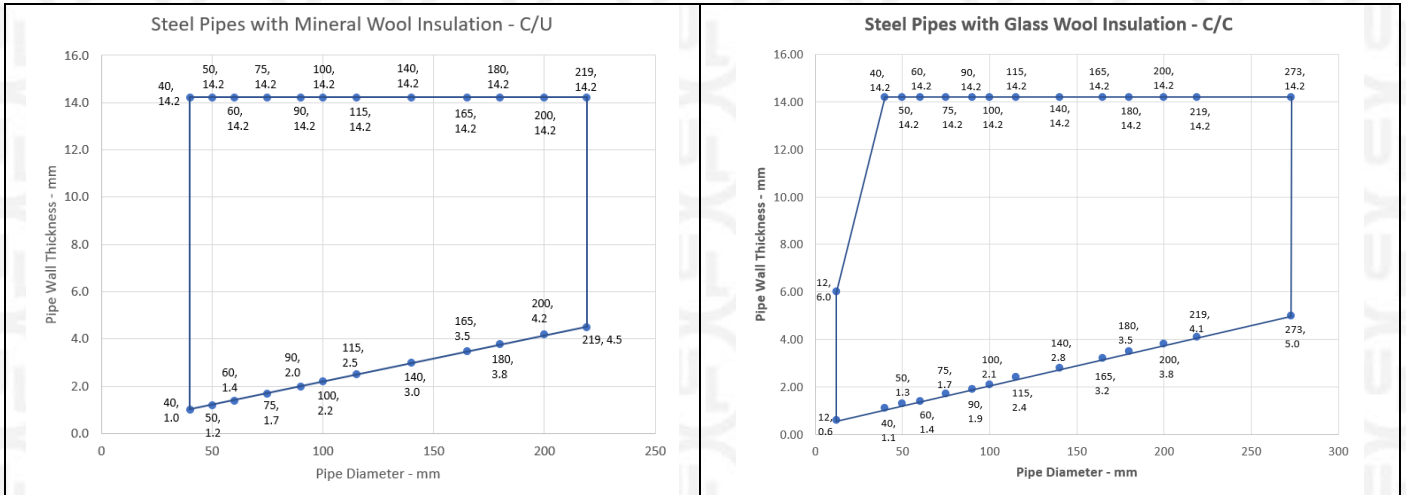
| Services | Sealant depth | Backing (minimum) | Insulation (minimum) | Classification |
|------------------------------------|---------------|--|--|----------------------|
| Mild or stainless steel pipe | | | | |
| Maximum aperture size 300 x 300 mm | | | | |
| 40 mm diameter/1-14.2 mm wall | 12.5 mm | 20mm Stone wool 40 kg/m ³ | 500 mm length of 20 mm stone wool 80 kg/m ³ | EI 120 C/U |
| 40 mm diameter/1-14.2 mm wall* | | | 500 mm length of 30 mm stone wool 80 kg/m ³ | |
| 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* | 12.5 mm | 20mm Stone wool 40 kg/m ³ | 500 mm length of 30 mm stone wool 80 kg/m ³ | E 120 C/U, EI 90 C/U |
| 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* | | | | |
| 12 mm diameter/0.6-6.0 mm wall | 12.5 mm | 12.5mm Stone wool 33 kg/m ³ | 500 mm length of 30 mm glass wool 75 kg/m ³ | E 120 C/C, EI 60 C/C |
| 40 mm diameter/1.1-14.2 mm wall* | | | | |
| 50 mm diameter/1.3-14.2 mm wall* | | | | |
| 60 mm diameter/1.4-14.2 mm wall* | | | | |
| 75 mm diameter/1.7-14.2 mm wall* | | | | |
| 90 mm diameter/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/2.8-14.2 mm wall* | | | | |
| 165 mm diameter/3.2-14.2 mm wall* | | | | |
| 180 mm diameter/3.5-14.2 mm wall* | | | | |
| 200 mm diameter/3.8-14.2 mm wall* | | | | |
| 219 mm diameter/4.1-14.2 mm wall* | | | | |
| 273 mm diameter/5.0-14.2 mm wall* | | | | |

* Typical pipe diameters shown, see below graph for intermediate sizes



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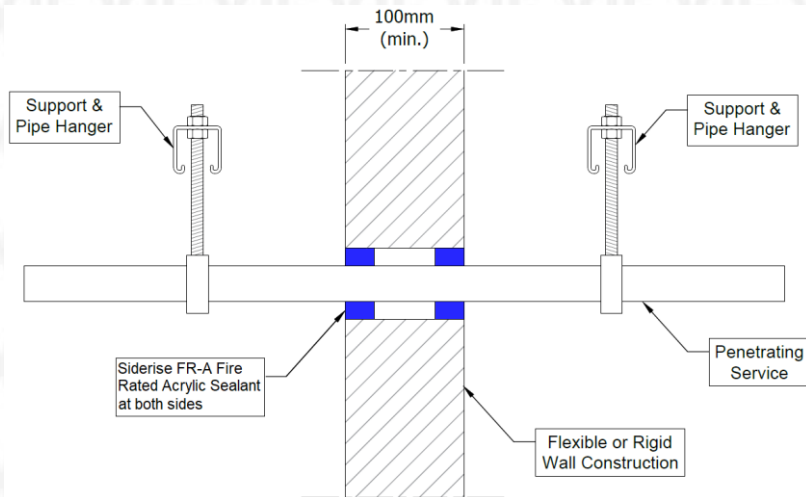
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Double side penetration seal with plastic pipes

Penetration Seal: Combustible pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, Minimum annular space 10 mm and minimum separation between penetration seals 30 mm (a2).

Construction details:



| Pipe material | Sealant depth | Pipe size | Maximum Annular space | Classification |
|--|---------------|---|-----------------------|----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | 25 mm | 6-32 mm Ø/1.0-2.4 mm wall* | 10 mm | EI 120 U/C |
| | | 6-32 mm Ø/1.0-1.6 mm wall | 30 mm | E 120 U/C, EI 90 U/C |
| 20 mm Ø/2.2 mm wall | | EI 120 C/C | | |
| PP pipe according to EN 1451-1 or DIN 8077/8078 | | 20 mm Ø/2.2-4.4 mm wall | 30 mm | EI 120 U/C |
| | | 20-32 mm Ø/1.8-4.4 mm wall | 30 mm | EI 60 C/C |
| 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 | | 20 mm Ø/2.0 mm wall | 30 mm | EI 120 U/C |
| | | 20-32 mm Ø/2.0-3.0 mm wall | 30 mm | EI 90 C/C |
| Uponor Wirsbo PEX pipe in pipe system according to ISO 15875 | | Diameter up to 54 mm/0.4 mm wall thickness (outer pipe), 28 mm diameter/4.0 mm wall thickness (inner pipe) | 30 mm | E 60 C/C, EI 45 C/C |
| Insulated pipe in pipe system according to ISO 15875 | | Diameter up to 34 mm/1.0 mm wall thickness (outer pipe), 22 mm diameter/3.0 mm wall thickness (inner pipe), insulated with 9 mm thick polyethylene foam | 30 mm | EI 45 C/C |

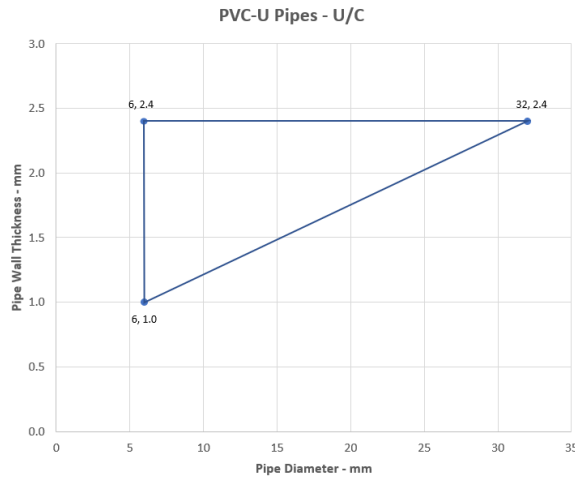
* See below graphs for interpolated pipe sizes

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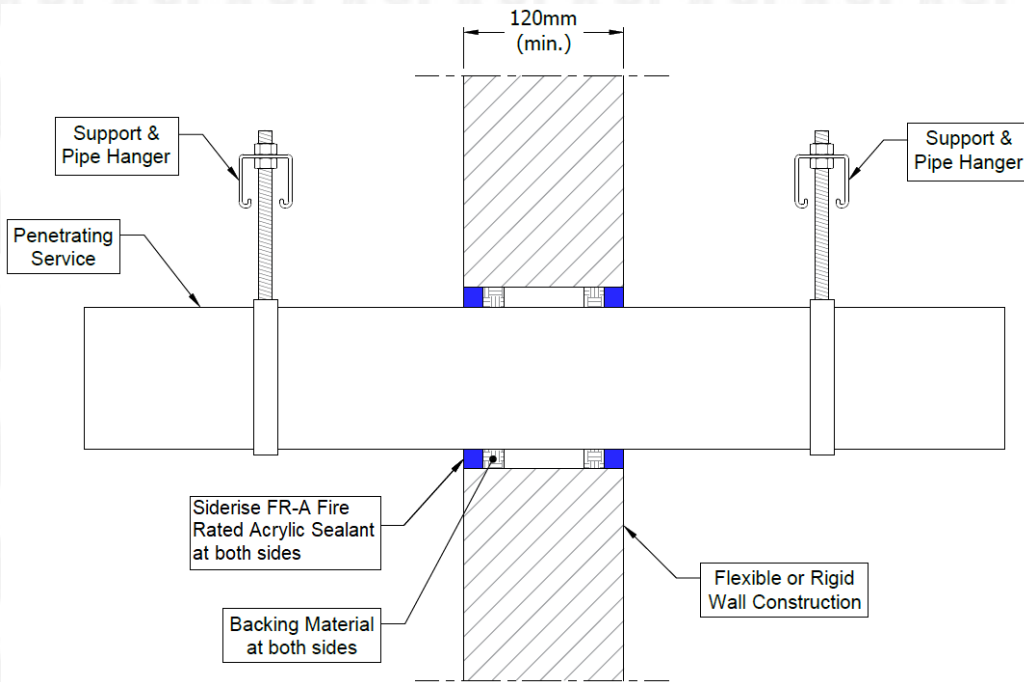
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Flexible and rigid wall constructions according to 2.2) with wall thickness of minimum 120 mm

Double side penetration seal with cables

Penetration Seal: Non-insulated metallic pipes (single) fitted at any position within the aperture, with 15 mm deep Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with stone wool insulation.

Construction details:



| Services | Sealant depth | Backing | Classification |
|---------------------------------------|---------------|------------------|----------------------|
| Mild or stainless steel pipe | | | |
| 30 -324 mm diameter /1.6-14.2 mm wall | 15 mm | 15 mm stone wool | E 120 C/U |
| Copper or steel pipe | | | |
| 12 -54 mm diameter /0.9-14.2 mm wall | 15 mm | 15 mm stone wool | E 120 C/C |
| Alupex Pipe | | | |
| 16-75 mm diameter/2.0-4.6 mm wall | 15 mm | 15 mm stone wool | E 120 C/C, EI 30 C/C |



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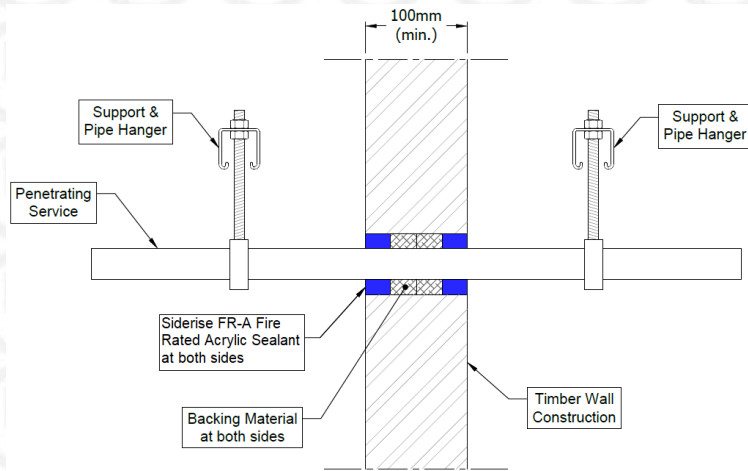
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Timber wall constructions with wall thickness of minimum 100 mm

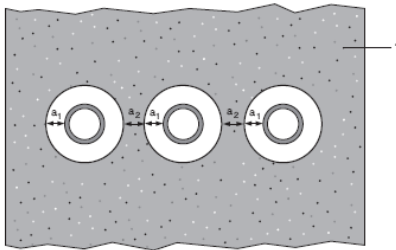
Double side penetration seal with cables

Penetration Seal: Cables fitted at any position within the aperture, sealed with Siderise FR-A Fire Rated Acrylic Sealant, minimum 25 mm deep to both sides of the wall and backed with stone wool insulation (minimum 33kg/m³), minimum 25 mm deep. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

| Services | Sealant depth | Backing | Maximum aperture | Classification |
|---|---------------|--|------------------|----------------|
| None (blank) | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | Ø 180 mm | EI 120 |
| Cables up to 14 mm Ø, single or in bundles up to 100 mm Ø | | | | EI 90 |
| Cables up to 21 mm Ø, single or in bundles up to 100 mm Ø | | | | E 90, EI 30 |
| Cables up to 50 mm Ø, single or in bundles up to 100 mm Ø | | | | E 90, EI 30 |
| Telecom cables up to 14 mm Ø, single or in bundles up to 100 mm Ø | | | | E 90, EI 60 |

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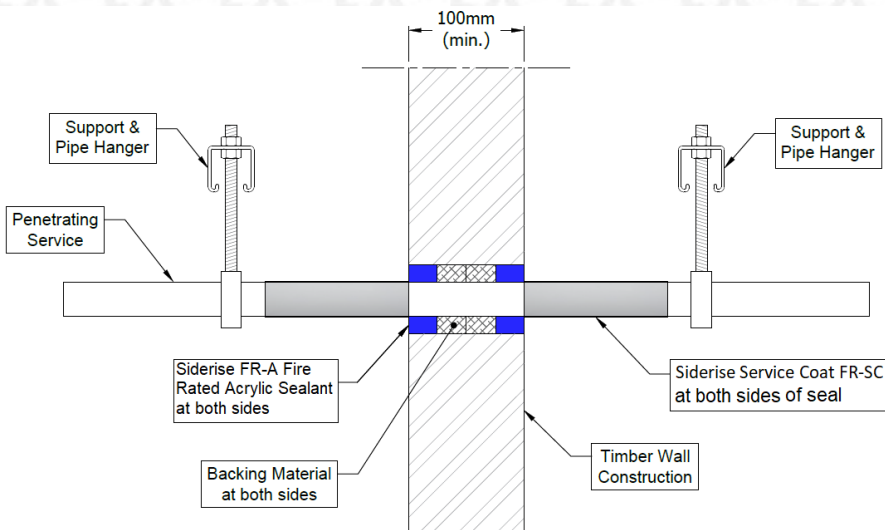
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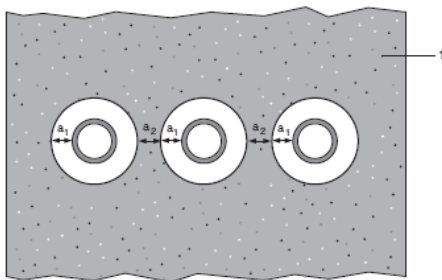
Double side penetration seal with cables and Siderise Service Coat FR-SC

Penetration Seal: Cables fitted at any position within the aperture with Siderise Service Coat FR-SC, sealed with Siderise FR-A Fire Rated Acrylic Sealant, minimum 25 mm deep to both sides of the wall and backed with stone wool insulation (minimum 33kg/m³), minimum 25 mm deep. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

| Services | Sealant depth | Backing | Maximum aperture | Insulation, minimum | Classification |
|---|---------------|--|------------------|--|----------------|
| None (blank) | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | Ø 180 mm | Siderise Service Coat FR-SC, 260-micron DFT extending 150 mm from both sides of the seal | EI 120 |
| Cables up to 21 mm Ø, single | | | | | EI 90 |
| Cables up to 50 mm Ø, single or in bundles up to 100 mm Ø | | | | | E 90, EI 60 |

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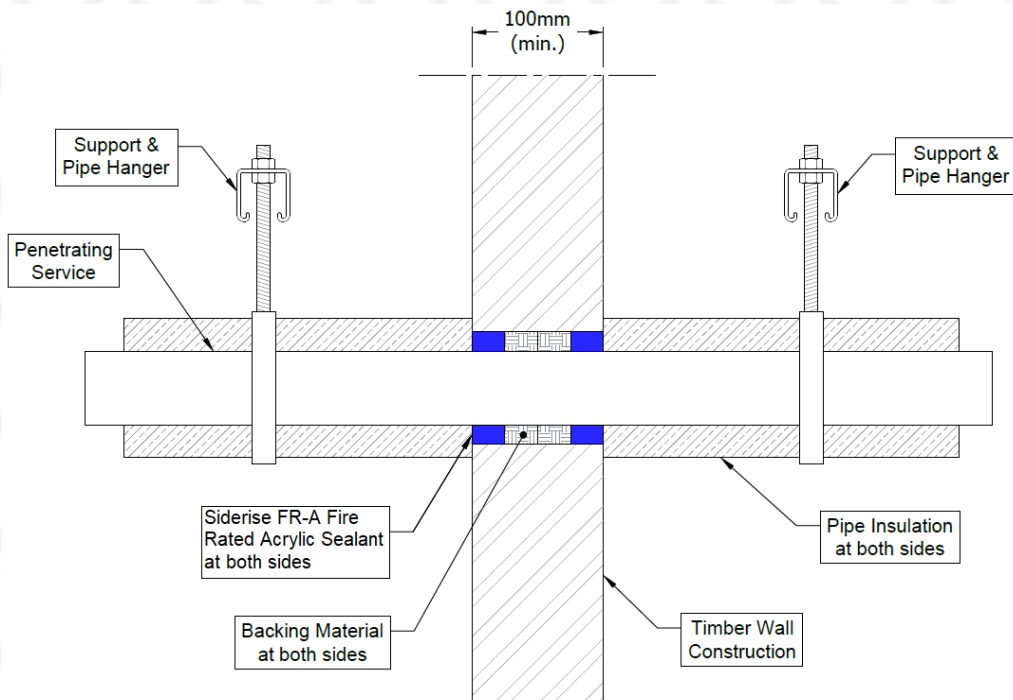
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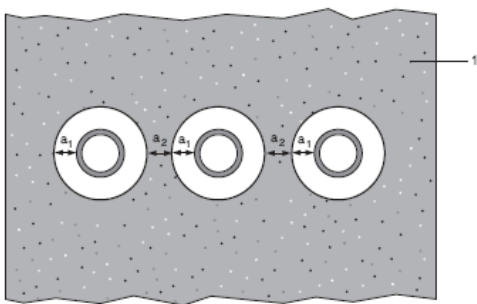
Double side penetration seal with metallic pipes

Penetration Seal: 500 mm (min.) LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes and composite pipes (single) with glass wool or stone, mineral wool min. 75 kg/m³, fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with stone wool insulation (minimum 33kg/m³), minimum 25 mm deep. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

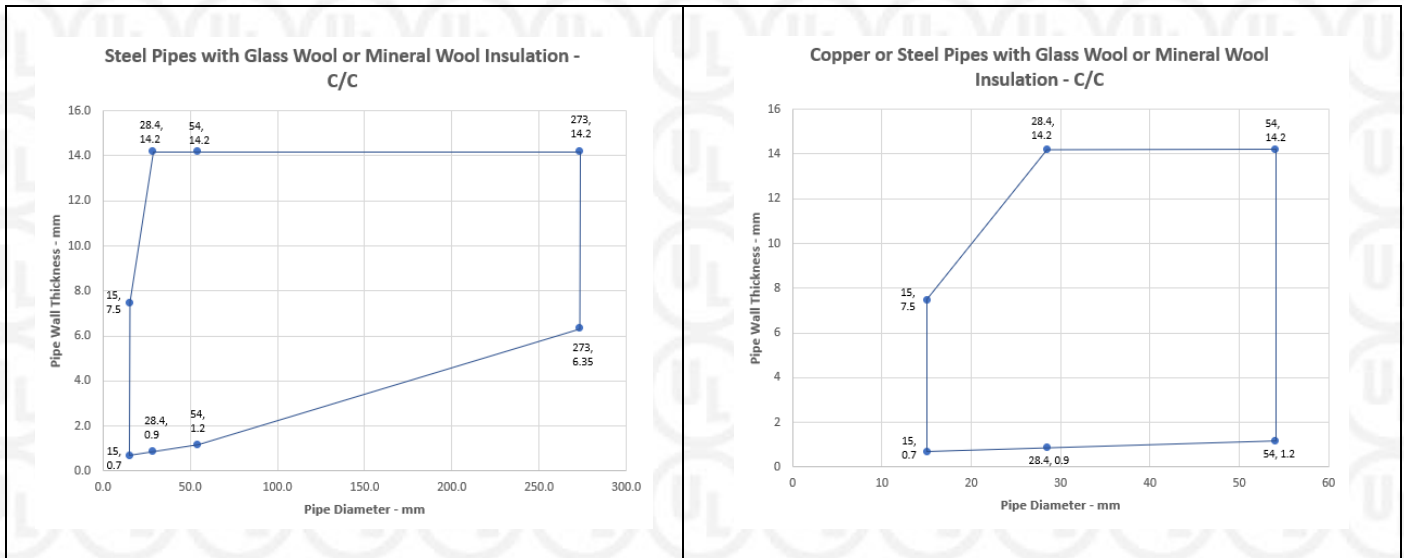


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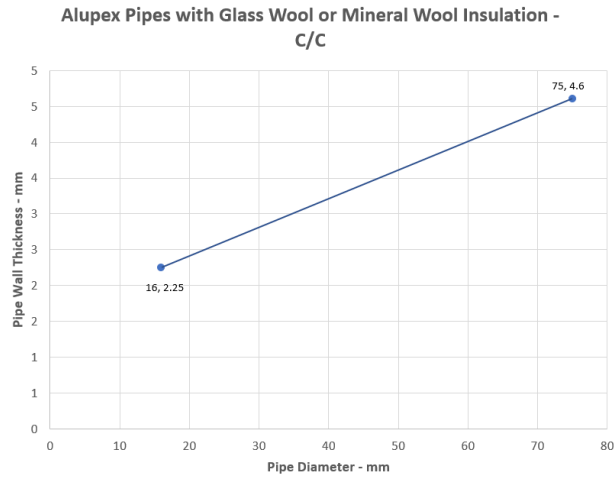
| Services | Maximum aperture | Sealant depth | Backing | Insulation, minimum | Classification |
|---|------------------|---------------|--|---|---------------------|
| Mild or stainless steel pipe | | | | | |
| Maximum 273 mm diameter / 6.35-14.2 mm wall* | Ø 293 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 25 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | E 90 C/C, EI 60 C/C |
| Copper or steel pipe | | | | | |
| Maximum 54 mm diameter / 1.2-14.2 mm wall* | Ø 180 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 20 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | E 90 C/C, EI 60 C/C |
| Alupex Pipe | | | | | |
| Maximum 75 mm diameter / wall 2.25-4.6 mm wall* | Ø 180 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 25 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | EI 90 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



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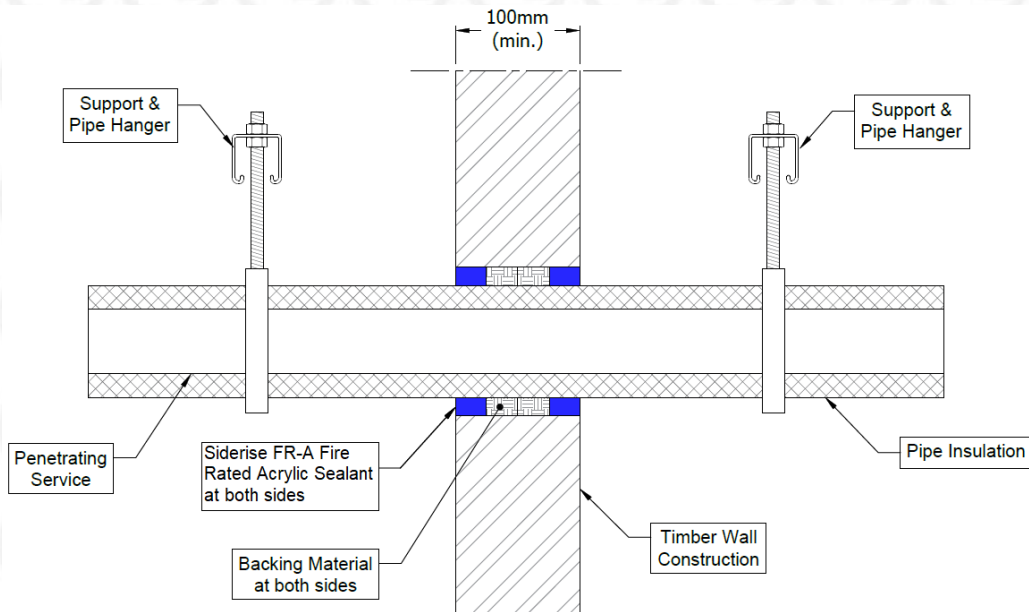
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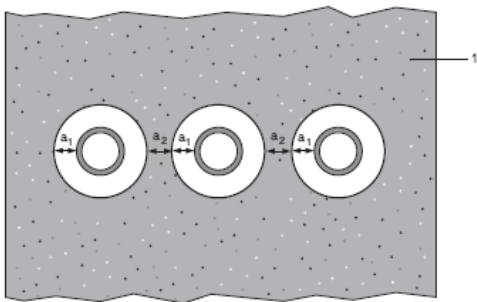
Double side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, min. 10 mm seal width around service, backed with stone, mineral wool min. 33 kg/m³. Minimum annular space 10 mm and maximum 30 mm (a1), and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

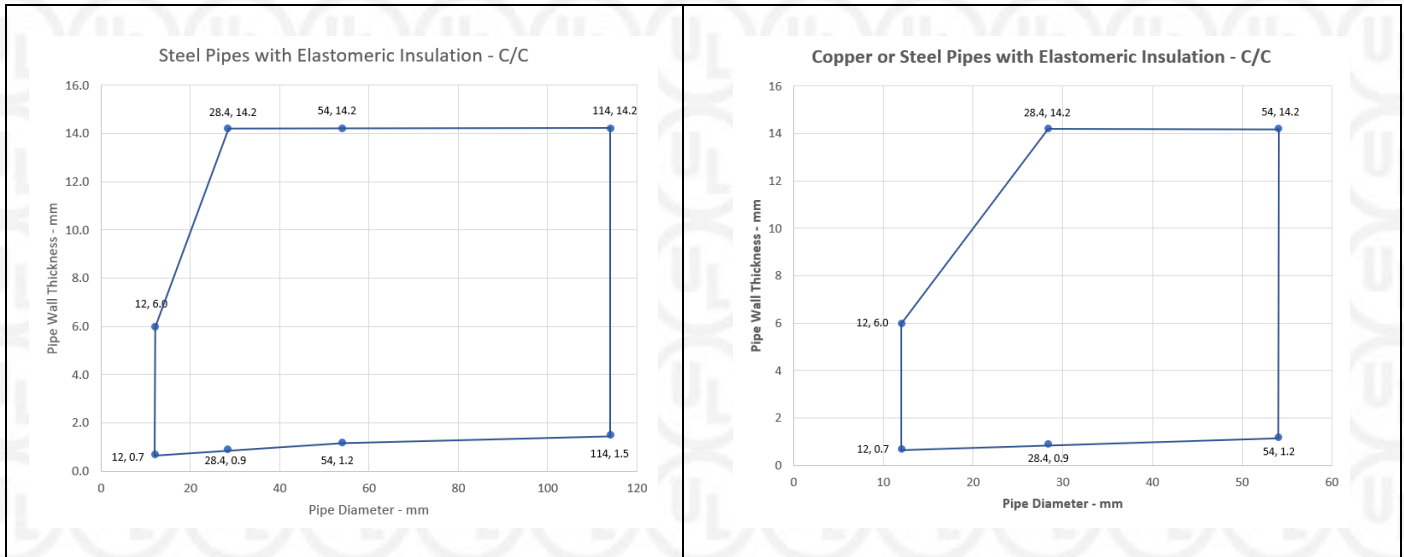


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| Services | Sealant depth | Backing | Insulation, minimum | Classification |
|--|---------------|--|--|---------------------|
| Mild or stainless steel pipe | | | | |
| Maximum 114 mm diameter /1.5-14.2 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 9-25 mm Elastomeric insulation minimum class D-s3, d0 | EI 30 C/U |
| Copper or steel pipe | | | | |
| Maximum 12 mm diameter /0.7-6 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 9 mm Elastomeric insulation minimum class D-s3, d0 | E 90 C/C, EI 60 C/C |
| Maximum 54 mm diameter /1.2-14.2 mm wall* | | | 10-25 mm Elastomeric insulation minimum class D-s3, d0 | E 60 C/C, EI 30 C/C |
| Maximum 54 mm diameter /1.2-14.2 mm wall* | | | | E 30 C/C, EI 20 C/C |
| Alupex Pipe | | | | |
| Maximum 16 mm diameter/wall 2.25 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 9 mm Elastomeric insulation minimum class D-s3, d0 | EI 90 C/C |
| Maximum 75 mm diameter/wall 4.6 mm wall* | | | 10-25 mm Elastomeric insulation minimum class D-s3, d0 | E 60 C/C, EI 45 C/C |
| Maximum 75 mm diameter/wall 4.6 mm wall* | | | | EI 45 C/C |

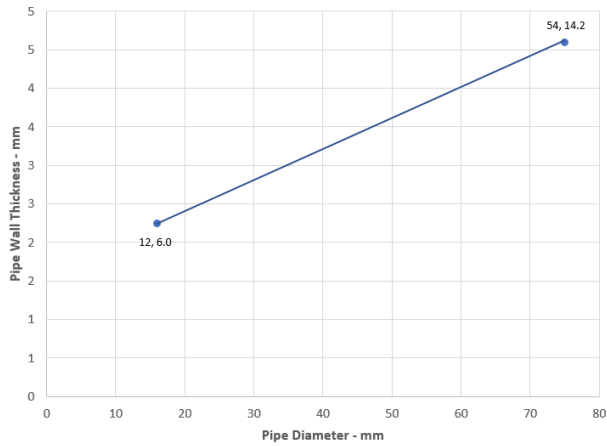
* Typical pipe diameters shown, see below graph for intermediate sizes



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Alupex Pipes with Elastomeric Insulation - C/C



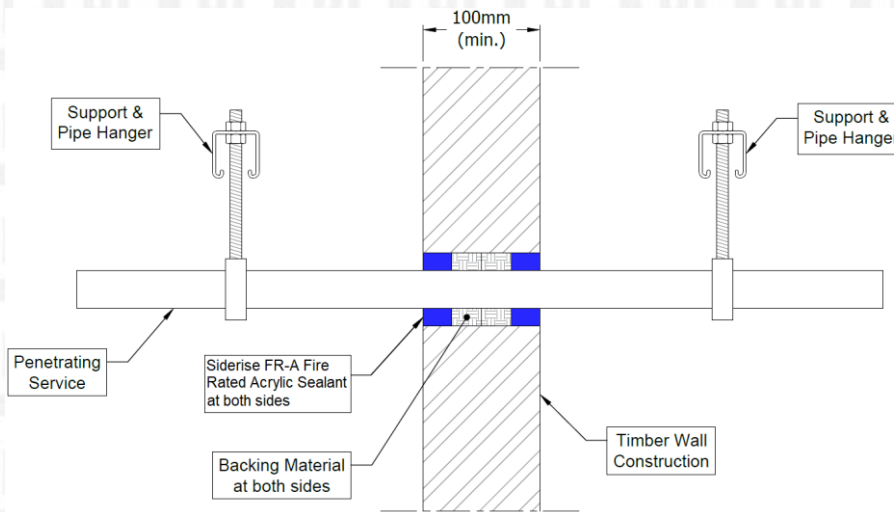
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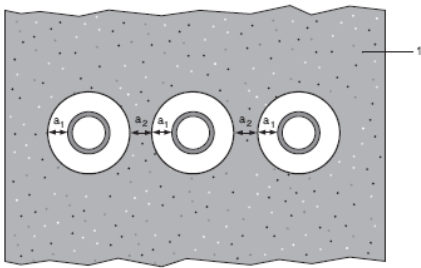
Double side penetration seal with plastic pipes and composite pipes

Penetration Seal: Plastic and composite pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, backed with stone, mineral wool min. 33 kg/m³. Minimum annular space 10 mm and maximum 30 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

| Services | Sealant depth | Backing | Classification |
|---|---------------|--|------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | | | |
| Maximum 32 mm diameter/1.0-2.4 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 90 U/C |
| 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 | | | |
| Maximum 32 mm diameter/2.0-3.0 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 90 U/C |

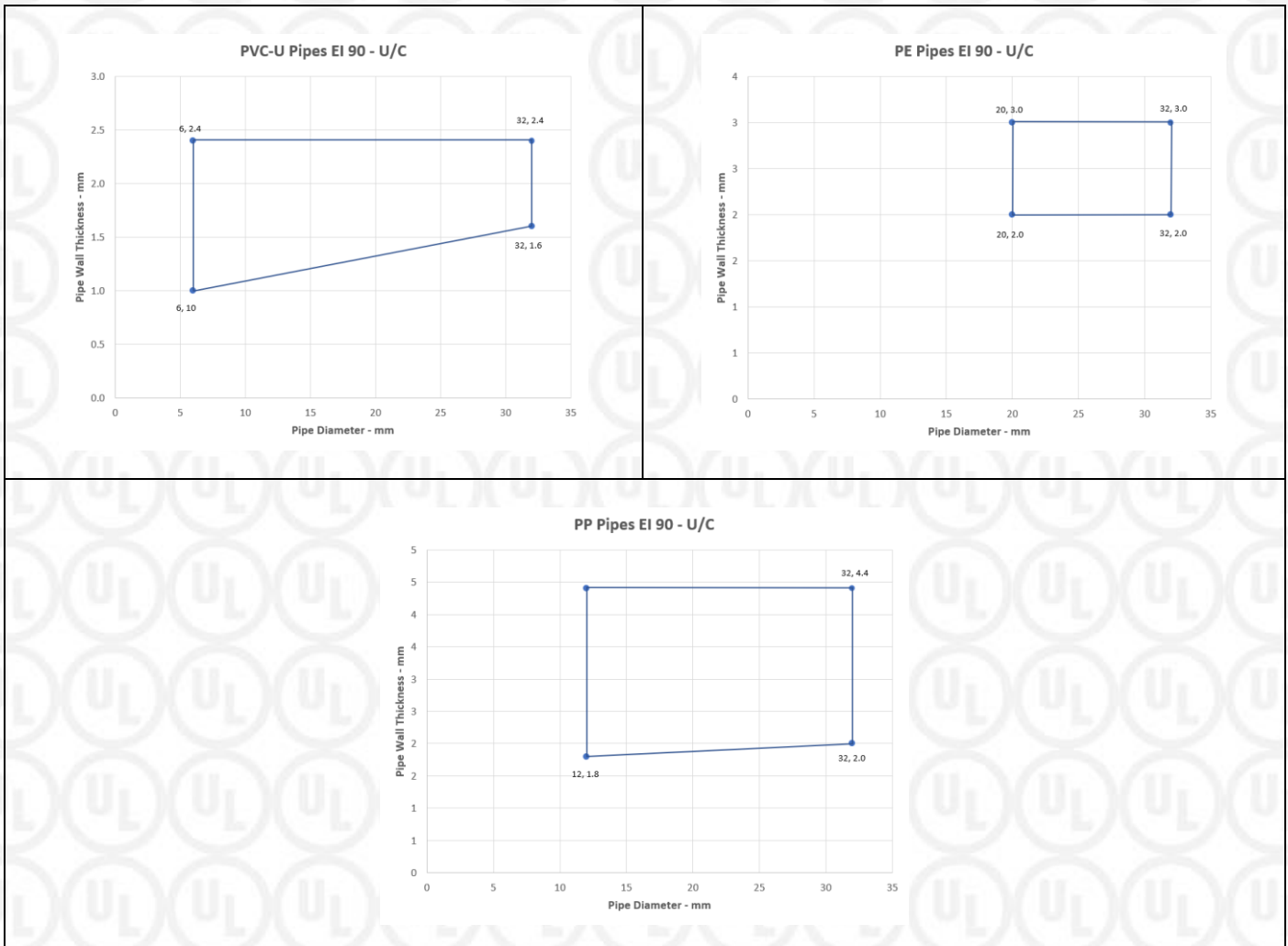


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| Services | Sealant depth | Backing | Classification |
|--|---------------|--|------------------|
| PP pipe according to EN 1451-1 or DIN 8077/8078 | | | |
| Maximum 32 mm diameter/1.8-4.4 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 90 U/C |
| PEX pipe in pipe system | | | |
| 25 mm diameter outer /15 mm diameter x 2.5 mm wall inner | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 90 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



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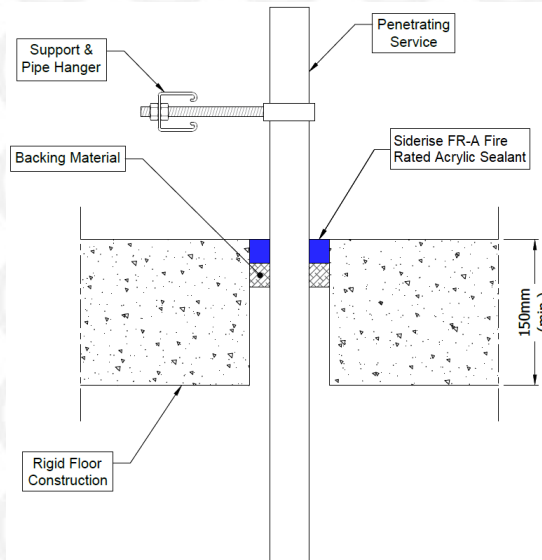
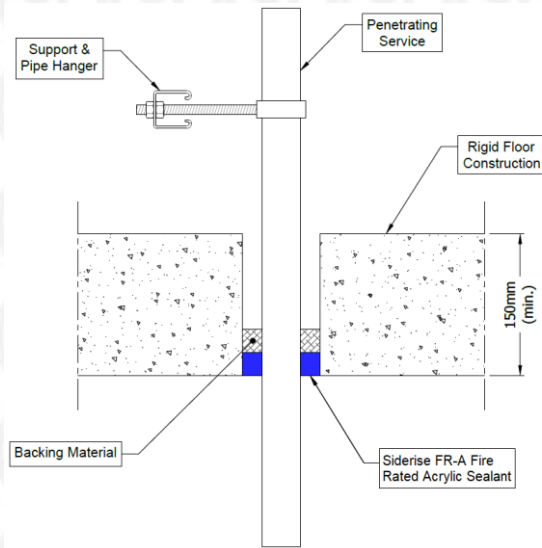
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Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

Single side penetration seal with cables

Penetration Seal: Cables (single) fitted at any position within the aperture, min. 10 mm from the edges, with Siderise FR-A Fire Rated Acrylic Sealant to either side of the floor (or at any position in between), backed with 'AES Fibre $\geq 128\text{kg/m}^3$ '.

Construction details:



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| Services | Sealant depth | Backing (minimum) | Aperture (maximum) | Classification |
|--|---------------|--|--------------------------|----------------|
| Single electrical cables up to 21 mm Ø | 25 mm | AES Fibre \geq 128kg/m ³ 25 mm deep | 82 mm Ø or 100 x 1000 mm | E 120, EI 60 |



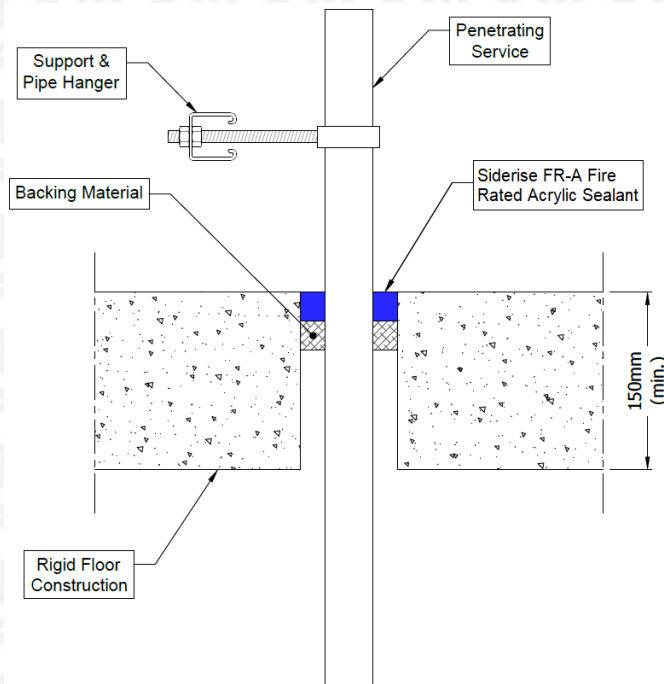
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Single side penetration seal with cables

Penetration Seal: Cables fitted with Siderise FR-A Fire Rated Acrylic Sealant to the top side of the floor, backed with stone wool insulation minimum 35kg/m³ or AES Fibre ≥ 128kg/m³. Maximum seal size of 300 x 300 mm and minimum separation between cables and the edge of the seal of 10 mm.

Construction details:



| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|---|---------------|--|------------|----------------|
| Blank seals | 15 mm | 20 mm Stone wool 35 kg/m ³ | None | E 90, EI 60 |
| | 25 mm | 25 mm Stone wool 35 kg/m ³ | | EI 120 |
| 48 mm AES Fibre ≥ 128kg/m ³ | | EI 240 | | |
| | | E 120, EI 90 | | |
| Electric cables up to 21 mm diameter, single. 23-27 mm diameter, 1 mm × 185 mm ² core, PVC sheath and insulation electrical cable, single | | | | EI 240 |



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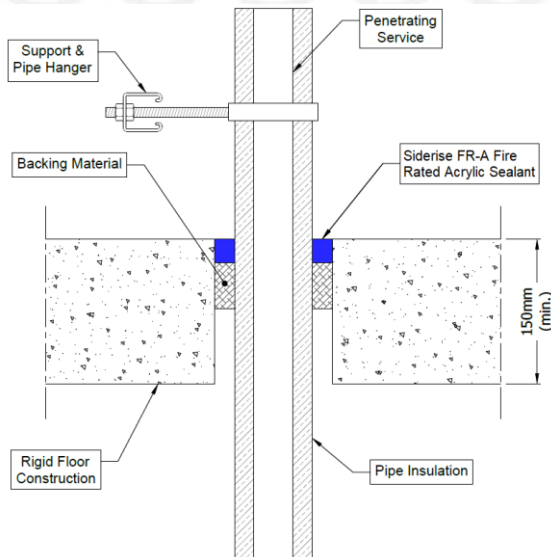
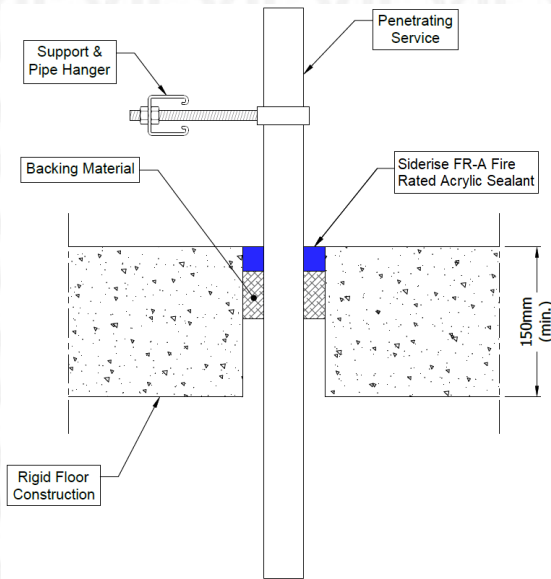
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Single side penetration seal with pipes

Penetration Seal: Pipes fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to the top face of the floor, backed with 48 mm stone wool minimum 33kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2), maximum seal size 300 x 300 mm / 300 mm diameter.

Construction details:



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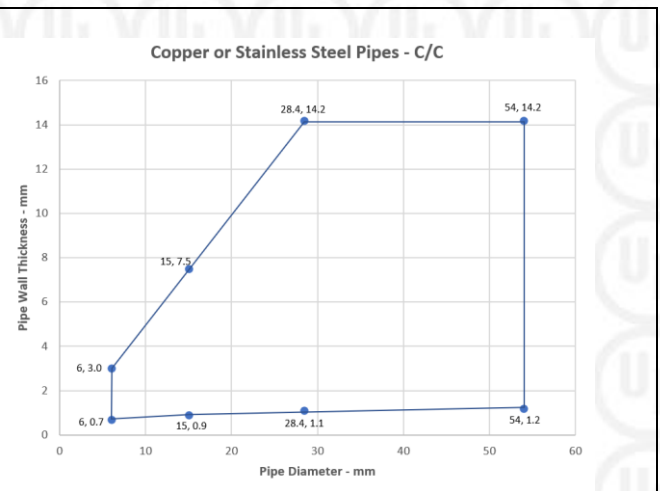
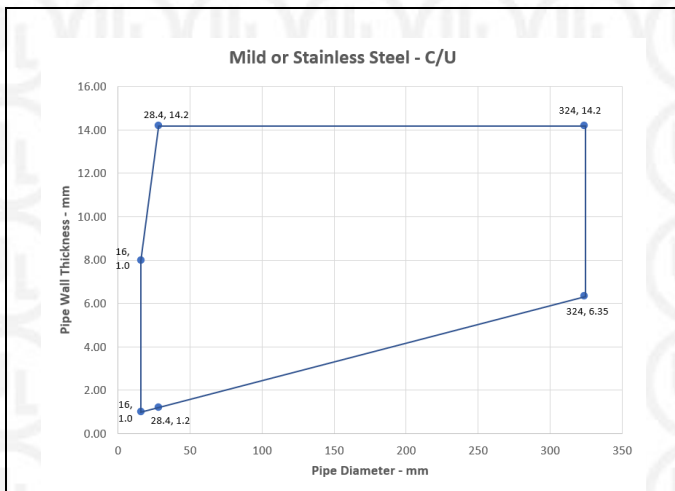


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| Services | Sealant depth | Backing | Classification |
|---|---------------|------------------|-----------------------|
| Mild or stainless steel pipe | | | |
| 4 -16 mm diameter /1.0-8.0 mm wall | 25 mm | 48 mm stone wool | EI 120 C/U |
| 17 -324 mm diameter /1.0-14.2 mm wall* | | | E 120 C/U |
| Mild or stainless steel pipe with minimum 75 kg/m³ density stone or glass wool insulation Continuous Sustained (CS) | | | |
| 12-273 mm diameter/0.7-14.2 mm wall, 30 mm insulation* | 25 mm | 48 mm stone wool | E 120 C/C, EI 90 C/C |
| Copper or steel pipe | | | |
| 6 mm diameter /0.7-3.0 mm wall | 25 mm | 48 mm stone wool | EI 120 C/C |
| 6 -15 mm diameter /0.7-7.5 mm wall* | | | E 120 C/C, EI 60 C/C |
| 16 - 54 mm diameter /0.7-14.2mm wall* | | | E 120 C/C |
| Copper or steel pipe with minimum 80 kg/m³ density stone wool insulation Continuous Sustained (CS) | | | |
| 12 mm diameter/0.9-6 mm wall, 20-80 mm insulation | 25 mm | 48 mm stone wool | EI 240 C/C |
| 13-54 mm diameter/0.9-14.2 mm wall, 20-80 mm insulation* | | | E 240 C/C, EI 180 C/C |
| Copper or steel pipe with minimum 75 kg/m³ density glass wool insulation Continuous Sustained (CS) | | | |
| 12 mm diameter/0.7-6.0 mm wall, 20 mm insulation | 25 mm | 48 mm stone wool | EI 120 C/C |
| Alupex Pipe | | | |
| 16 -20 mm diameter/2.0 mm wall | 25 mm | 48 mm stone wool | EI 120 C/C |
| 21-75 mm diameter/2.0-4.6 mm wall | | | E 120 C/C, EI 90 C/C |
| 16-75 mm diameter/2.25-4.6 mm wall with 20-50 mm thick glass wool or stone, mineral wool min. 75 kg/m ³ insulation Continuous Sustained (CS) | | | E 180 C/C, EI 120 C/C |
| 16-75 mm diameter/2.25-4.7 mm wall with 60 mm thick glass wool or stone, mineral wool min. 75 kg/m ³ insulation Continuous Sustained (CS)* | | | E 120 C/C, EI 90 C/C |

*See below graphs for interpolated pipe sizes



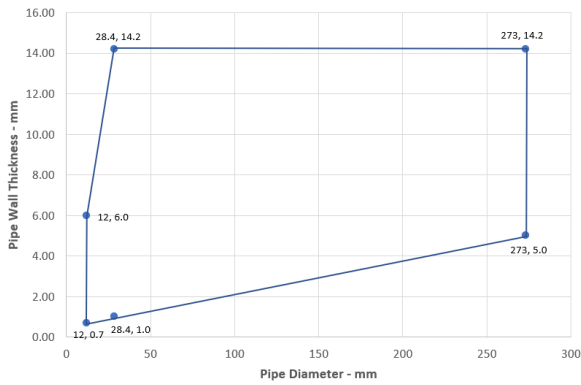
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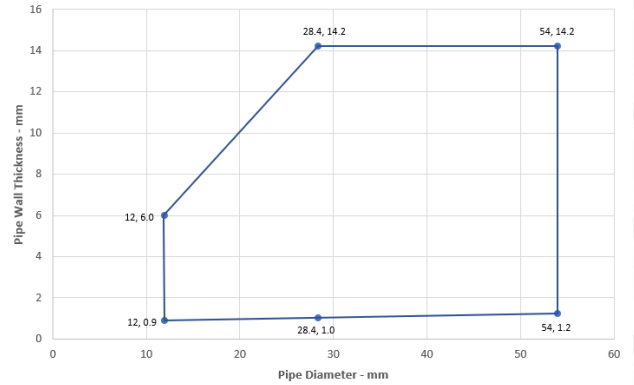
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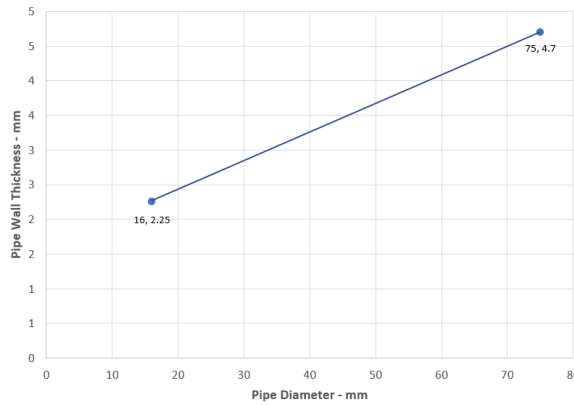
Mild or Stainless Steel Pipes with Stone or Glass Wool Insulation - C/C



Copper or Steel Pipes with 20-80 mm stone wool Insulation CS E 240 C/C, EI 180 C



Alupex Pipes with Stone or Glass Wool Insulation - C/C



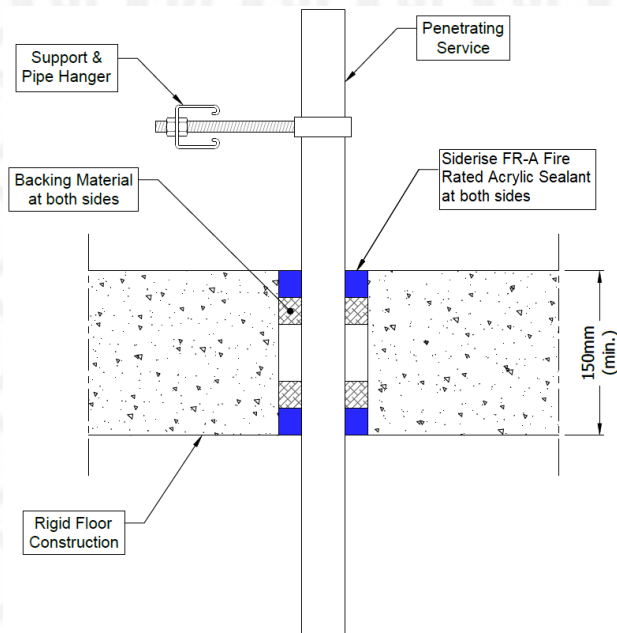
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Double side penetration seal with pipes

Penetration Seal: Pipes fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to the both faces of the floor, backed with 25 mm stone wool minimum 33kg/m³. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2), maximum seal size 300 x 300 mm / 300 mm diameter.

Construction details:



| Services | Sealant depth | Backing | Classification |
|---|---------------|------------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | | | |
| Up to 50 mm Ø/1.6-3.7 mm wall | 25 mm | 25 mm Stone wool | EI 240 U/C |
| Up to 40 mm Ø/1.6-3.7 mm wall, with bundle of cables up to 21 mm diameter | | | |
| PP pipe according to EN 1451-1 or DIN 8077/8078 | | | |
| 12 mm Ø/1.2 mm wall | 25 mm | 25 mm Stone wool | EI 240 U/C |
| 13-40 mm Ø/1.2-3.7 mm wall | | | EI 180 U/C |
| 41-75 mm Ø/1.2-6.8 mm wall* | | | EI 90 U/C |
| Up to 40 mm Ø/1.2-3.7 mm wall, with bundle of cables up to 21 mm diameter | | | EI 180 U/C |
| 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 | | | |
| 20-40 mm Ø/2.0-3.7 mm wall* | 25 mm | 25 mm Stone wool | EI 240 U/C |
| Up to 40 mm Ø/2.0-3.7 mm wall, with bundle of cables up to 21 mm diameter | | | EI 180 U/C |

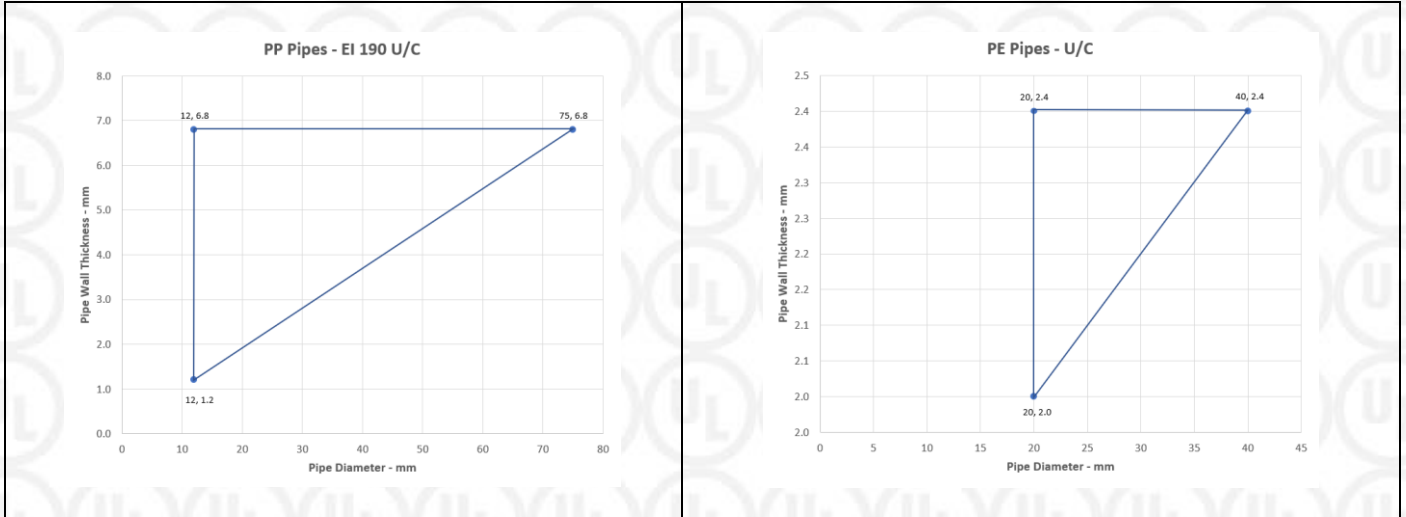
*See below graphs for interpolated pipe sizes

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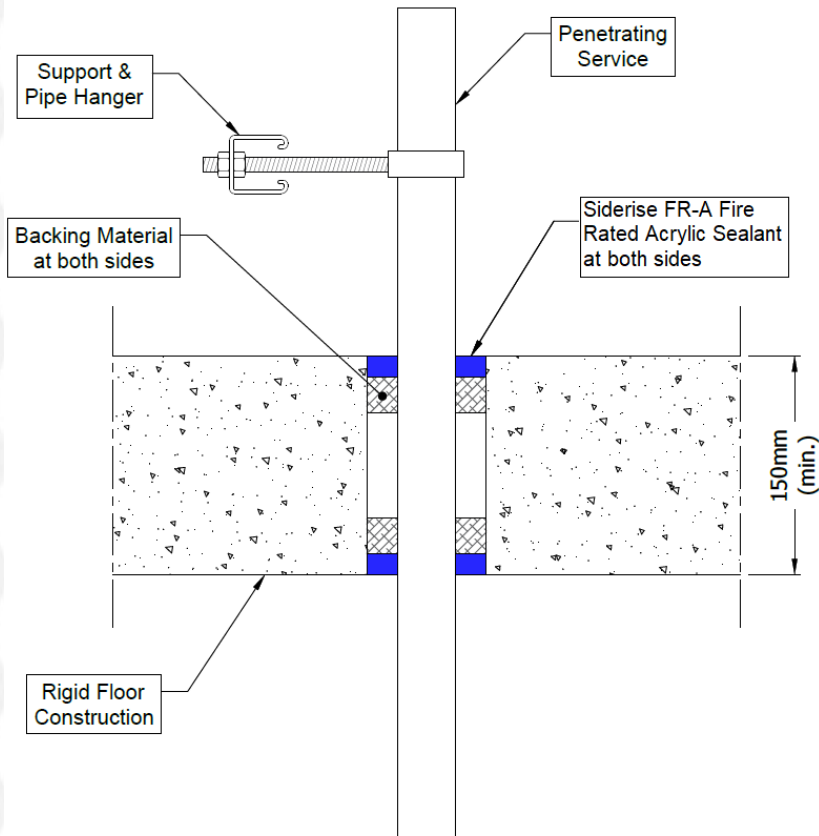
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Double side penetration seal with cables

Penetration Seal: Cables fitted circular apertures or min. 7 mm from the edges of rectilinear apertures, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor, backed with stone wool insulation minimum 35kg/m³.

Construction details:



| Services | Sealant depth | Backing | Maximum Aperture | Classification |
|--|---------------|---|------------------|----------------|
| Blank seals | 15 mm | 25 mm Stone wool 35 kg/m ³ | 300 x 300 mm | EI 240 |
| Electric cables up to 21 mm diameter, single or in a bundle. | | | | EI 120 |
| Electric cables 22-50 mm diameter, single or in a bundle. | | | | E 120, EI 90 |
| Electric cables 51-80 mm diameter, single or in a bundle. | | | | E 120, EI 60 |



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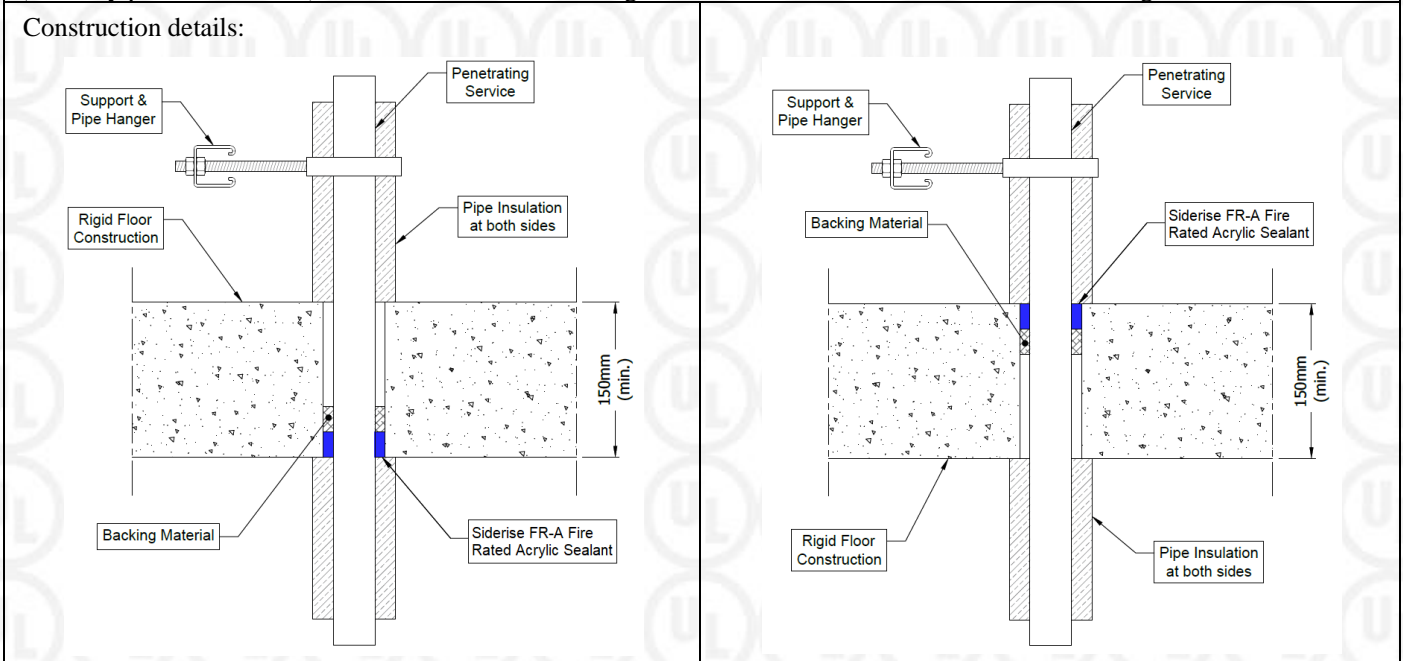
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Single side penetration seal with metallic pipes

Penetration Seal: 1000 mm (min.) LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes (single) fitted at any position within the aperture, with 15 or 25 mm deep Siderise FR-A Fire Rated Acrylic Sealant to either side of the floor (or at any position between), backed with minimum 40 kg/m³ stone wool insulation or AES Fibre ≥ 128kg/m³.

Construction details:



| Services | Max. seal size | Insulation (min) | Sealant depth | Classification |
|--|-------------------------|--|---------------|-----------------------|
| Copper or steel pipe up to 54 mm diameter/0.9-14.2 mm wall | 10 mm width around pipe | 20 mm Stone wool insulation 80 kg/m ³ | 15 mm | E 240 C/U, EI 180 C/U |
| Copper or steel pipe up to 12 mm diameter/0.9-5 mm wall | | | | EI 240 C/U |
| Copper or steel pipe up to 54 mm diameter/0.9-14.2 mm wall | Up to 100 x 1000 mm | | 25 mm | EI 120 C/U |
| Copper or steel pipe up to 54 mm diameter/0.9-14.2 mm wall | 300 x 300 mm | 20 mm Stone wool insulation 80 kg/m ³ | 15 mm | E 90 C/U, EI 60 C/U |
| Copper or steel pipe up to 12 mm diameter/0.9-5 mm wall | | | | |
| Copper or steel pipe up to 54 mm diameter/0.9-14.2 mm wall | | | 25 mm | EI 120 C/U |



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| Services | Max. Seal Size | Insulation (min) | Sealant Depth | Classification |
|-------------------------------------|-------------------------|---|---------------|---------------------|
| Mild or stainless steel pipe | | | | |
| 40 mm diameter/1-14.2 mm wall | 10 mm width around pipe | 20 mm Stone wool insulation 80 kg/m ³ | 15 mm | EI 240 C/U |
| 40 mm diameter/1-14.2 mm wall* | | 30 mm Stone wool insulation 80 kg/m ³ | | |
| 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* | | | | |
| 40 mm diameter/1-14.2 mm wall* | Up to 100 x 1000 mm | 20 mm Stone wool insulation 80 kg/m ³ | 25 mm | E120 C/U, EI 90 C/U |
| 50 mm diameter/1.2-14.2 mm wall* | | 30 mm Stone wool insulation 80 kg/m ³ | | |
| 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, see below graph for intermediate sizes



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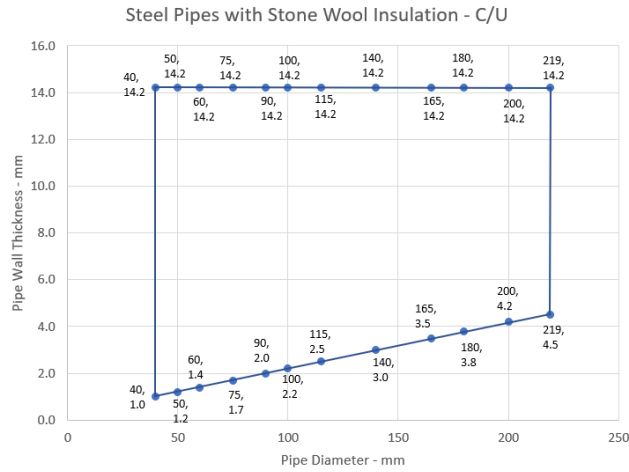
| Services | Max. Seal Size | Insulation (minimum) | Sealant Depth | Classification |
|-------------------------------------|---|---|---|---------------------|
| Mild or stainless steel pipe | | | | |
| 40 mm diameter/1-14.2 mm wall | 300 x 300 mm | 20 mm Stone wool insulation 80 kg/m ³ | 15 mm | E 90 C/U, EI 60 C/U |
| 40 mm diameter/1-14.2 mm wall* | | 30 mm Stone wool insulation 80 kg/m ³ | | |
| 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* | | | | |
| 40 mm diameter/1-14.2 mm wall* | 30 mm Stone wool insulation 80 kg/m ³ | | 20 mm Stone wool insulation 80 kg/m ³ | 25 mm |
| 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, see below graph for intermediate sizes



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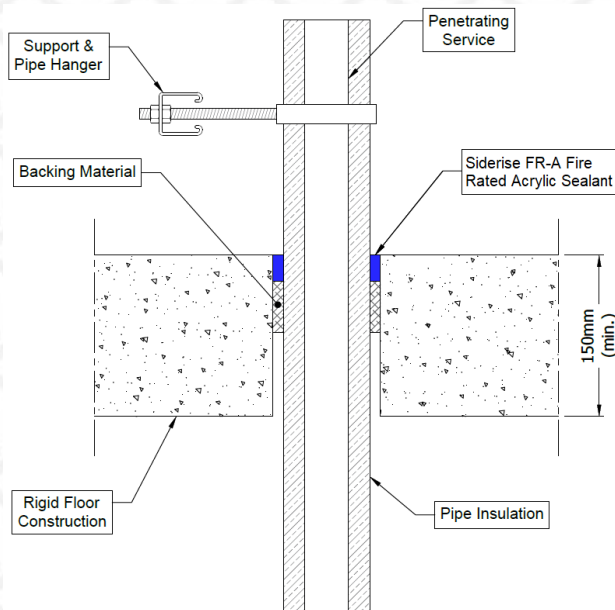
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Single side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with 25 mm Siderise FR-A Fire Rated Acrylic Sealant to the top of the floor, backed with 48 mm deep AES Fibre $\geq 128\text{kg/m}^3$ insulation. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 30 mm (a2). Maximum seal size 300 x 300 mm / 504 mm \varnothing

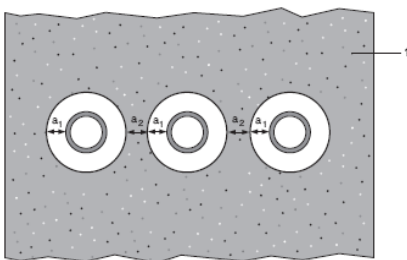
Construction details:



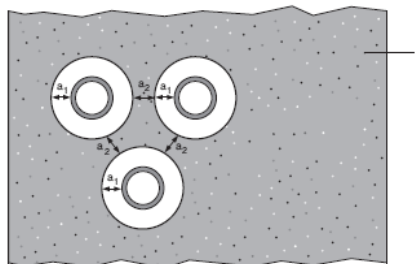
Configuration 1:

Configuration 2:

Option 1



Option 2



Key

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



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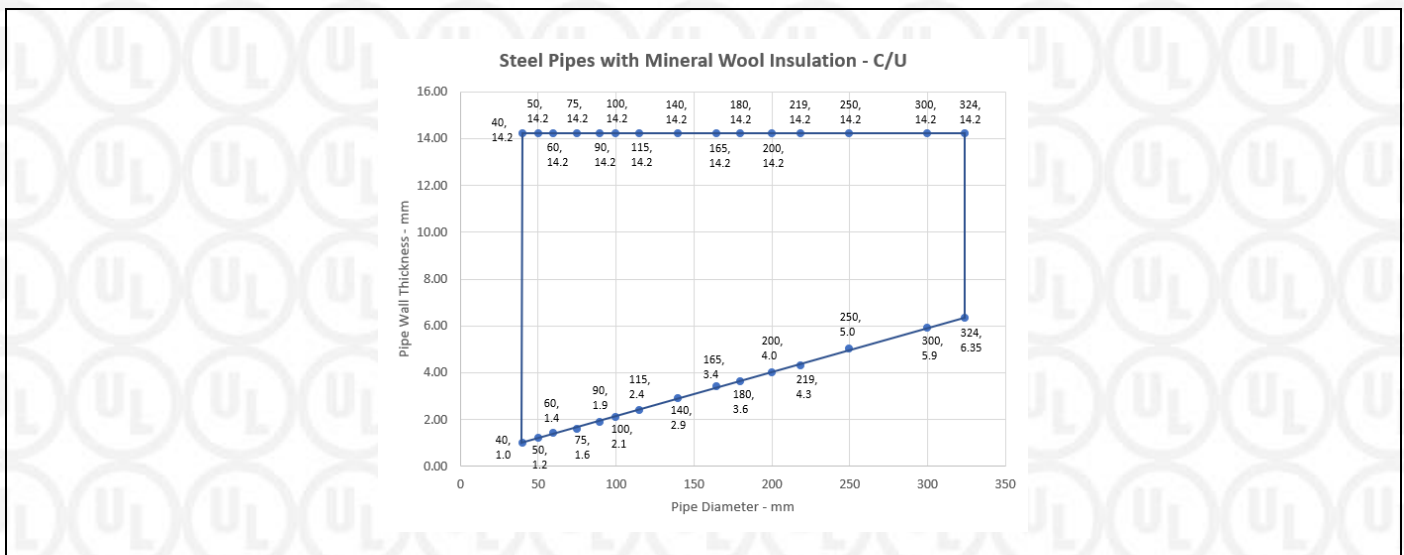
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Single side penetration seal with pipes

| Services | Insulation | Classification |
|--|---|-------------------|
| Mild or stainless steel pipe | | |
| 40 mm diameter/1-14.2 mm wall | 20 mm thick stone, mineral wool min. 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1-14.2 mm wall* | | |
| 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* | 30-80 mm thick stone, mineral wool min. 80 kg/m ³ | |
| 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* | | |
| PEX pipe in pipe system | | |
| 15 mm diameter x 2.5 mm wall inner /25mm diameter outer | None | EI 90 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



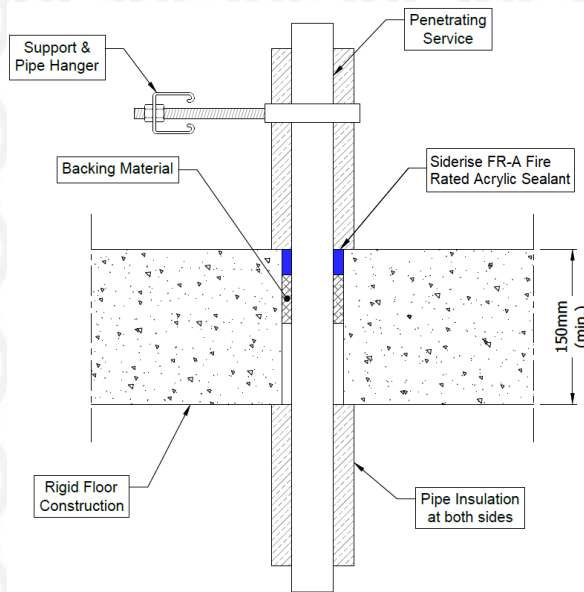
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Single side penetration seal with metallic pipes

Penetration Seal: LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes (single) fitted at any position within the aperture, with 25 mm deep Siderise FR-A Fire Rated Acrylic Sealant to the top side of the floor, backed with 48 mm deep minimum 33 kg/m³ stone wool insulation or AES Fibre \geq 128kg/m³.

Construction details:



| Services | Max. seal size | Insulation (min) | Sealant depth | Classification |
|---|----------------|--|---------------|--------------------------|
| Copper or steel pipe up to 54 mm diameter / 0.7-14.2 mm wall | 300 x 300 mm | 20 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 25 mm | EI 180 C/C |
| Copper or steel pipe up to 108 mm diameter / 0.7-14.2 mm wall | 300 x 300 mm | 30 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 25 mm | E 180 C/C, EI 30 C/C |
| Copper or steel pipe up to 159 mm diameter / 0.7-14.2 mm wall | 300 x 300 mm | 30 mm Stone wool 80 kg/m ³ , 1000 mm length from both sides of the seal | 25 mm | E 90 C/C, EI 20 C/C |
| Steel pipe up to 273 mm diameter / 0.7-14.2 mm wall | 300 x 300 mm | 30 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 25 mm | E 180 C/C, EI 60 C/C |
| Alupex pipe up to 16 mm diameter/2.25 mm wall | 300 x 300 mm | 20 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 25 mm | EI 180 C/C |
| Alupex pipe up to 75 mm diameter/2.25-4.7 mm wall | 300 x 300 mm | 25 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 25 mm | E 180 C/C, EI 120 C/C |

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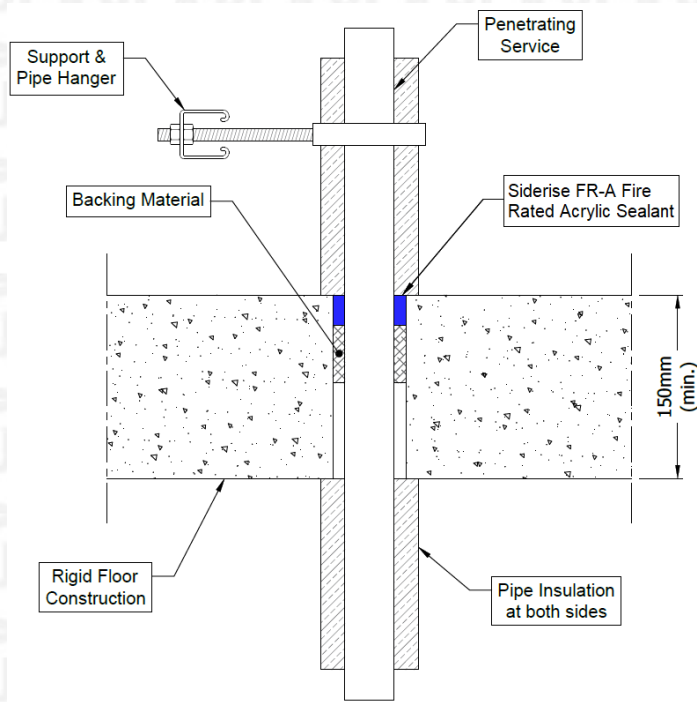
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Single side penetration seal with composite pipes

Penetration Seal: CI (Continuous Interrupted) or LI (Locally Interrupted) insulated composite pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant, minimum 10 mm seal width around service and maximum 300 x 300 mm seal, backed with 'AES Fibre $\geq 128\text{kg/m}^3$ '.

Construction details:



| Services | Sealant depth | Backing | Insulation (minimums) | Classification |
|------------------------------|---------------|--|--|-------------------|
| Alupex Composite Pipe | | | | |
| 16 mm diameter/2.25 mm wall | 25 mm | 48 mm AES Fibre \geq 128kg/m ³ | 20 mm stonewool 80 kg/m ³ , 500 mm length from both sides of the seal | EI 240 C/C |
| 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 | | | | |

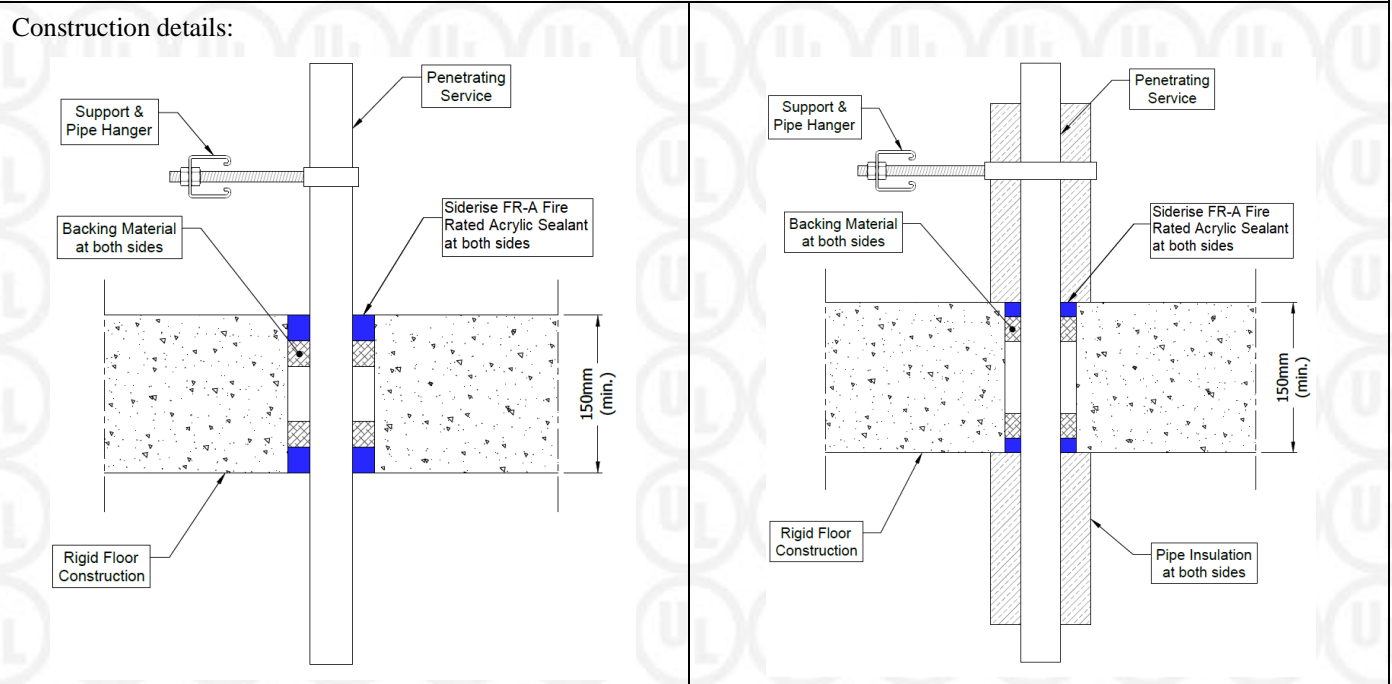


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Double side penetration seal with metallic pipes

Penetration Seal: Non-insulated or insulated metallic pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor, backed with stone wool or mineral fibre insulation.



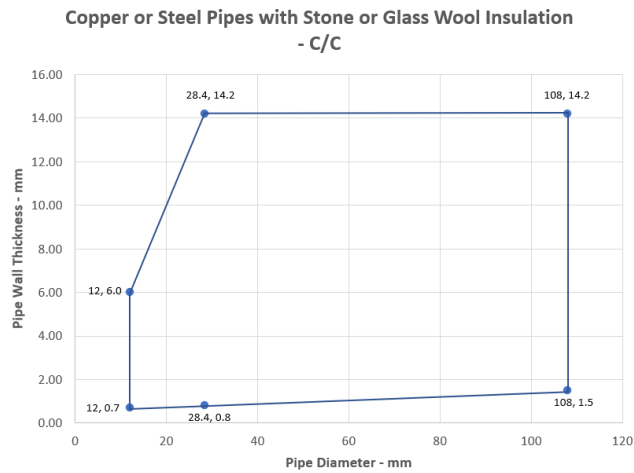
| Services | Max. Seal Size | Insulation | Sealant depth | Backing (minimum) | Classification |
|---|----------------|--|---------------------|---|---|
| Copper or steel pipe 54 mm diameter/2-14.2 mm wall | 300 x 300 mm | None | 25 mm | 25 mm deep 140 kg/m ³ stone wool | E 120 C/U, EI 20 C/U |
| Copper or steel pipe maximum 108 mm diameter /0.7-14.2 mm wall* | | 30 mm Glass or Stone wool 75 kg/m ³ , 500 mm length from both sides of the seal | 15 mm | 25 mm deep 33 kg/m ³ stone wool | E 120 C/C, EI 45 C/C |
| Mild steel pipe 16 mm diameter/1.5-7.5 mm wall | | None | 25 mm | 25 mm deep 140 kg/m ³ stone wool | EI 240 C/U |
| Mild steel pipe maximum 63 mm diameter/1.5-14.2 mm wall | | | 15 mm | 25 mm deep 35 kg/m ³ stone wool | E 240 C/U EI 30 C/U |
| Mild steel pipe 16 mm diameter/1.5-7.5 mm wall | | | Up to 100 x 1000 mm | 25 mm | AES Fibre ≥ 128kg/m ³ 25 mm deep |

* Typical pipe diameters shown, see below graph for intermediate sizes



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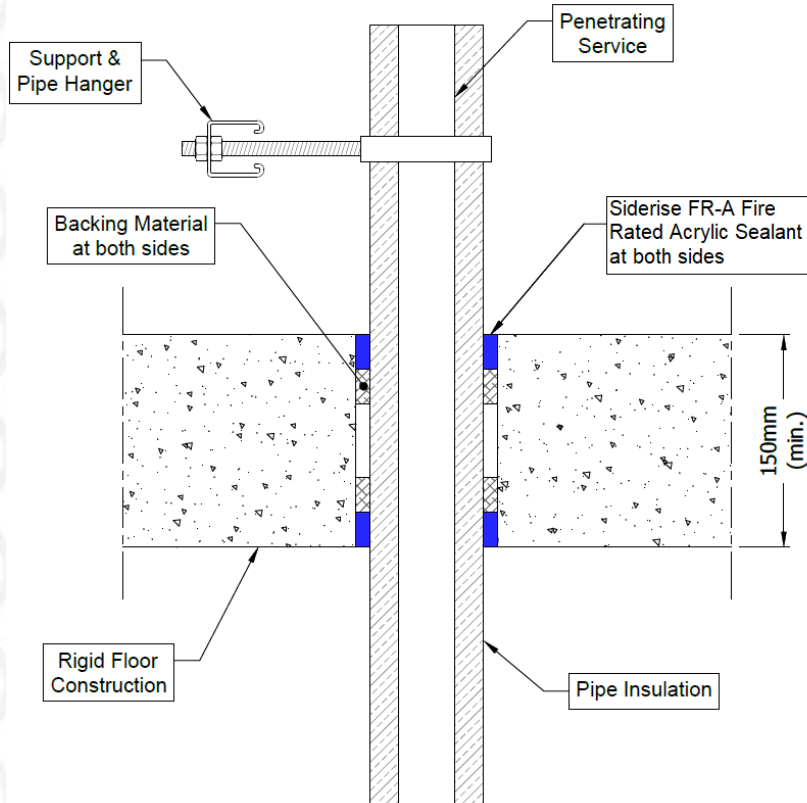
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Double side penetration seal with metallic pipes

Penetration Seal: CS (Continuous Sustained) insulated metallic pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor, maximum 300 x 300 mm seal width around service, backed with stone wool insulation or 'AES Fibre $\geq 128\text{kg/m}^3$ '.

Construction details:

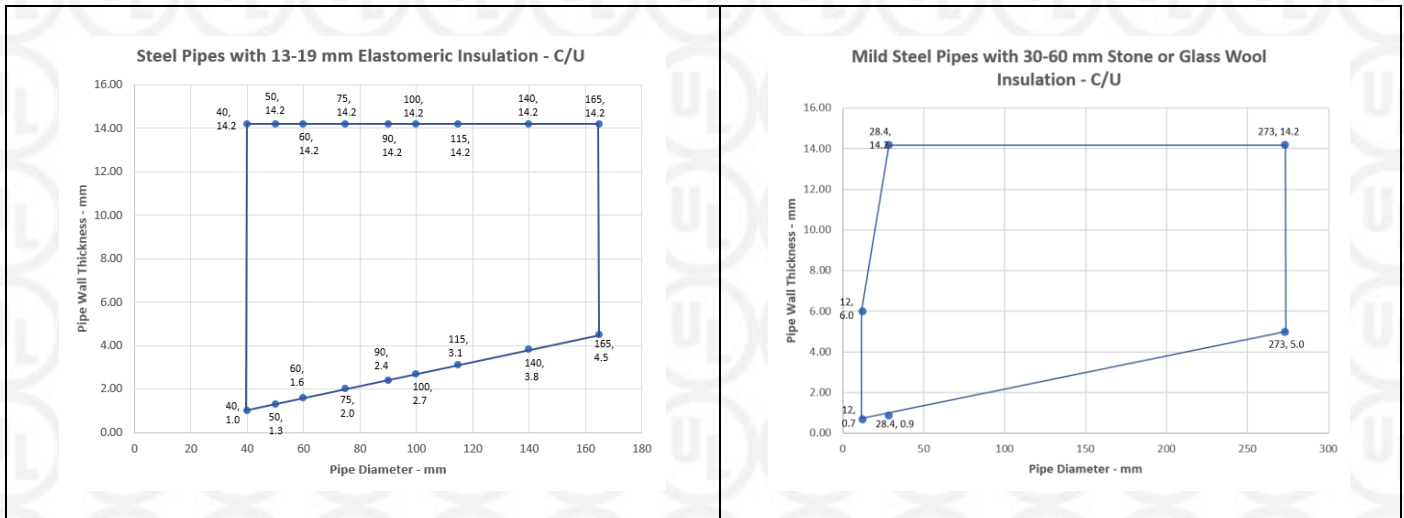


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| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|-------------------------------------|---------------|---|--|-------------------|
| Mild or stainless steel pipe | | | | |
| 40 mm diameter/1-14.2 mm wall | 25 mm | 20 mm Stone wool 40 kg/m ³ | | EI 180 C/U |
| 40 mm diameter/1-14.2 mm wall* | | | 13 -19 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | EI 60 C/U |
| 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* | 25 mm | 25 mm AES Fibre ≥ 128kg/m ³ | | |
| 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* | | | | |
| 12-273 mm diameter/0.7-14.2 mm wall | 15 mm | 25 mm Stone wool 33 kg/m ³ | 30-60 mm thick glass or stone, mineral wool min. 75 kg/m ³ | EI 60 C/U |

* Typical pipe diameters shown, see below graph for intermediate sizes

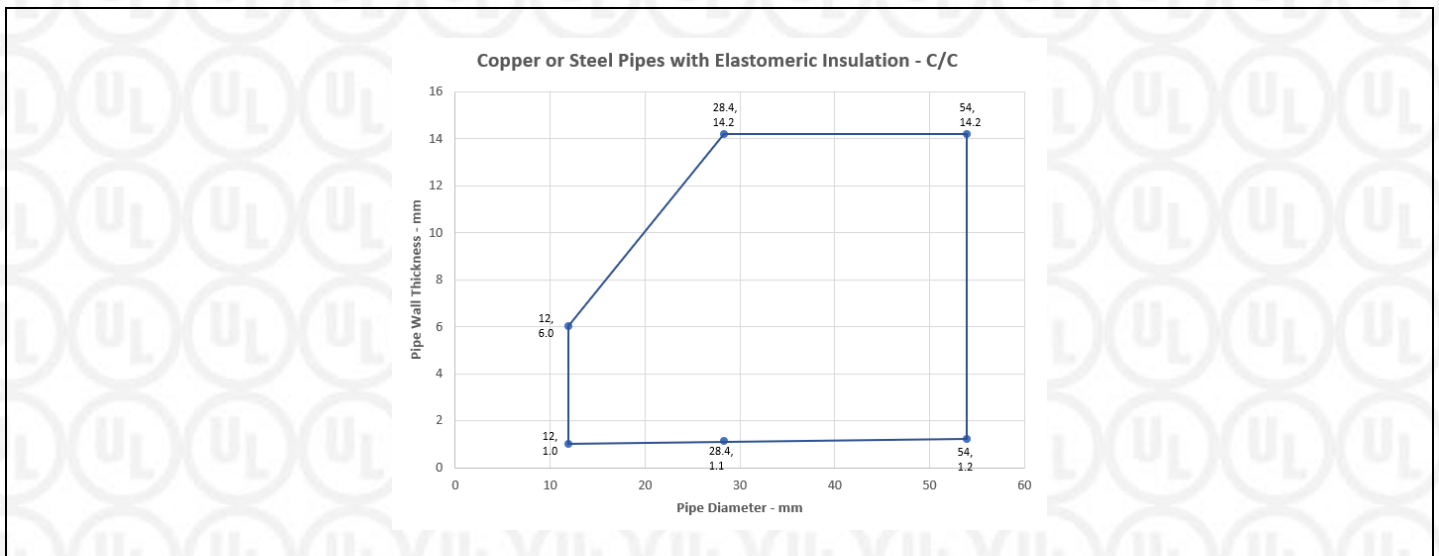


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| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|------------------------------------|---------------|---|---|------------------------------|
| Copper or steel pipe | | | | |
| 12 mm diameter/1-6 mm wall | 25 mm | 25 mm AES Fibre ≥ 128kg/m ³ | 9 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | E 240 C/C, EI 180 C/C |
| 12-54 mm diameter/1-14.2 mm wall* | | | 9-13 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | E 180 C/C, EI 120 C/C |
| 12-54 mm diameter/1-14.2 mm wall* | | | 13-25 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | E 90 C/C, EI 60 C/C |
| 12-54 mm diameter/0.7-14.2 mm wall | 15 mm | 25 mm Stone wool 33 kg/m ³ | 20-60 mm thick glass or stone, mineral wool min. 75 kg/m ³ | EI 120 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



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| Services | Sealant depth | Backing (minimum) | Insulation | Classification |
|------------------------------|---------------|---|---|-------------------|
| Alupex Composite Pipe | | | | |
| 16 mm diameter/2.25 mm wall | 25 mm | 25 mm AES Fibre ≥ 128kg/m ³ | 9 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | EI 180 C/C |
| 16 mm diameter/2.25 mm wall | | | 9-13 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | |
| 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 | | | 13-25 mm Elastomeric insulation minimum class B-s3,d0, phenolic foam insulation or PU foam insulation | EI 60 C/C |
| 75 mm diameter/4.7 mm wall | | | | |
| 16 mm diameter/2.25 mm wall | | | | |
| 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 | | | | |



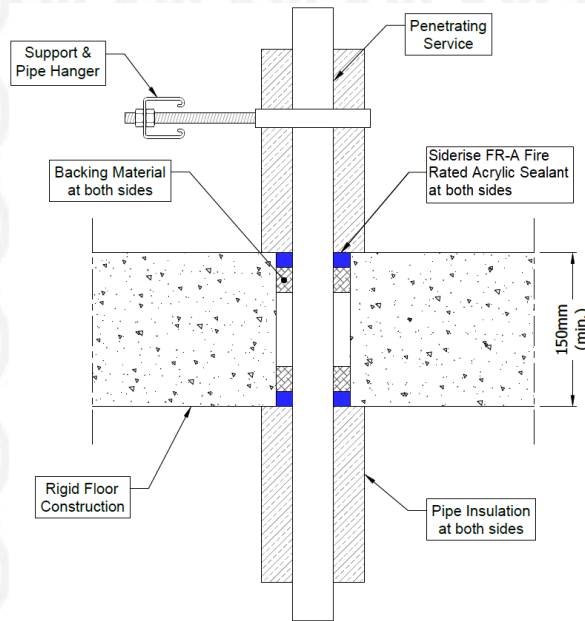
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Double side penetration seal with metallic pipes

Penetration Seal: 1000 mm (min.) LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes (single) fitted at any position within the aperture, with 15 mm deep Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor (or at any position between), backed with 20 mm deep minimum 40 kg/m³ stone wool insulation*.

Construction details:



| Services | Maximum seal size | Insulation (minimum) | Classification |
|-------------------------------------|-------------------------------|--|------------------------------|
| Mild or stainless steel pipe | | | |
| 40 mm diameter/1-14.2 mm wall | | 20 mm Stone wool insulation 80 kg/m ³ | EI 240 C/U |
| 40 mm diameter/1-14.2 mm wall* | | | |
| 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* | | | |
| | 300 x 300 mm or 100 x 1000 mm | 30 mm Stone wool insulation 80 kg/m ³ | E 240 C/U, EI 120 C/U |

* Typical pipe diameters shown, see below graph for intermediate sizes

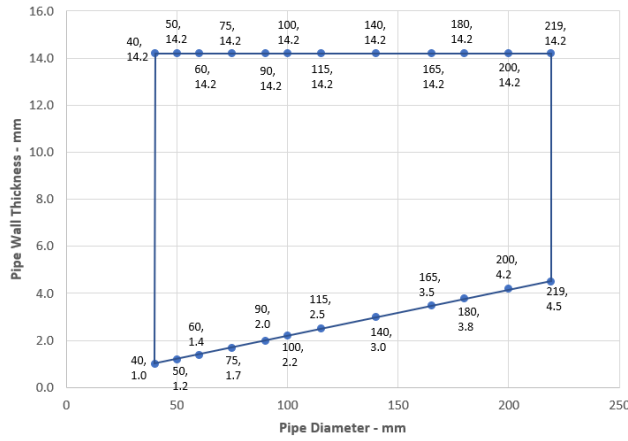
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Steel Pipes with Stone Wool Insulation - C/U



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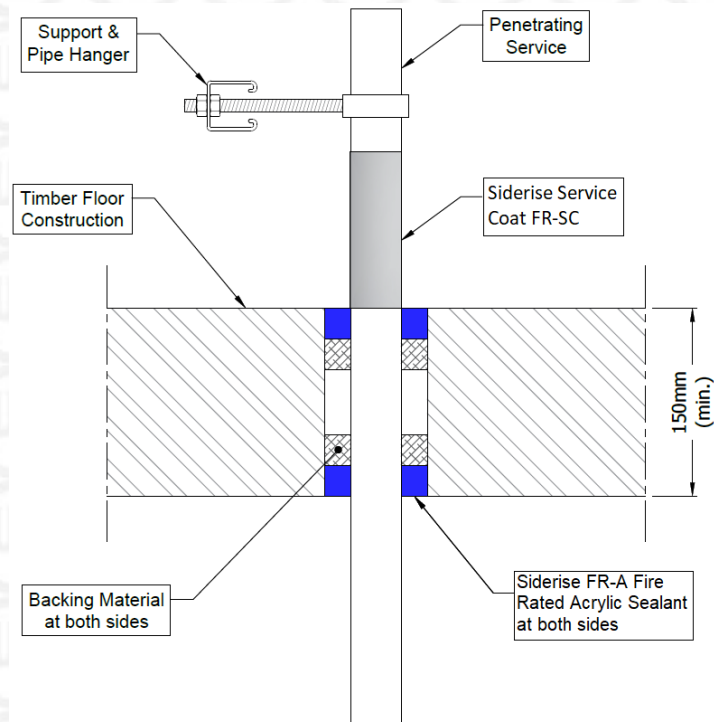
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Timber floor constructions with floor thickness of minimum 150 mm

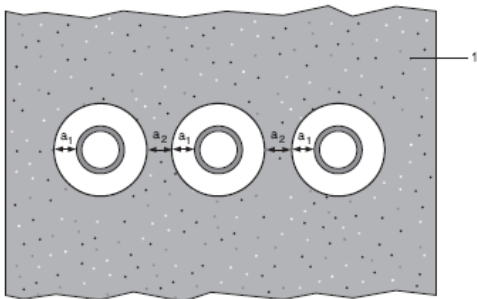
Double sided penetration seal with cables

Penetration Seal: Cables fitted at any position within the aperture, sealed with Siderise FR-A Fire Rated Acrylic Sealant, minimum 25 mm deep to both sides of the floor and backed with stone wool insulation (minimum 33kg/m³), minimum 25 mm deep. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

1 Supporting construction

a1 Pipe / edge of seal separation (annular space)

a2 Separation between penetration seals



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| Services | Sealant depth | Backing | Maximum aperture | Insulation, minimum | Classification |
|---|---------------|--|------------------|--|----------------|
| None (blank) | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | Ø 220 mm | None | EI 120 |
| Cables up to 14 mm Ø, single or in bundles up to 100 mm Ø | | | | | EI 120 |
| Cables up to 21 mm Ø, single or in bundles up to 100 mm Ø | | | | Siderise Service Coat FR-SC, 260-micron DFT extending 150 mm from top side of the seal | E 120, EI 90 |
| Cables up to 50 mm Ø, single or in bundles up to 100 mm Ø | | | | | E 120, EI 90 |
| Telecom cables up to 14 mm Ø, single or in bundles up to 100 mm Ø | | | | | E 120, EI 90 |



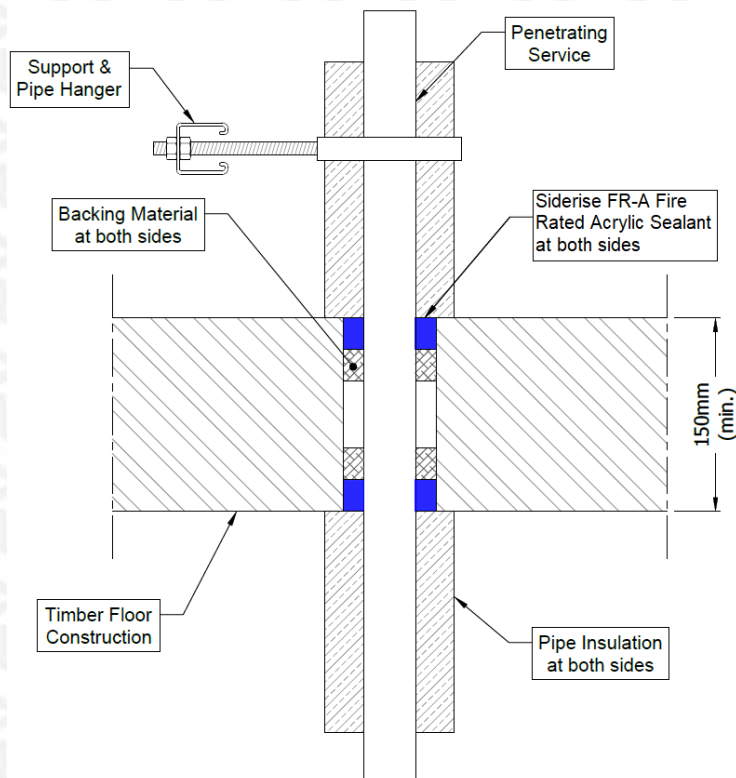
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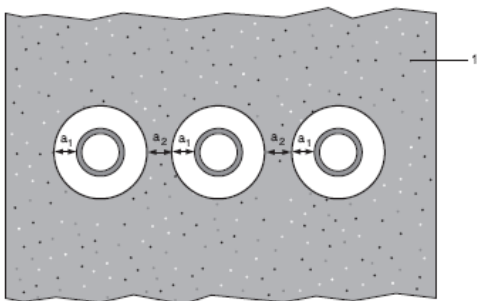
Double side penetration seal with metallic pipes

Penetration Seal: 500 mm (min.) LI (Local Interrupted) or CI (Continuous Interrupted) insulated metallic pipes and composite pipes (single) with glass wool or stone, mineral wool min. 75 kg/m³, fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor, backed with stone wool insulation (minimum 33kg/m³), minimum 25 mm deep. Minimum annular space 10 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

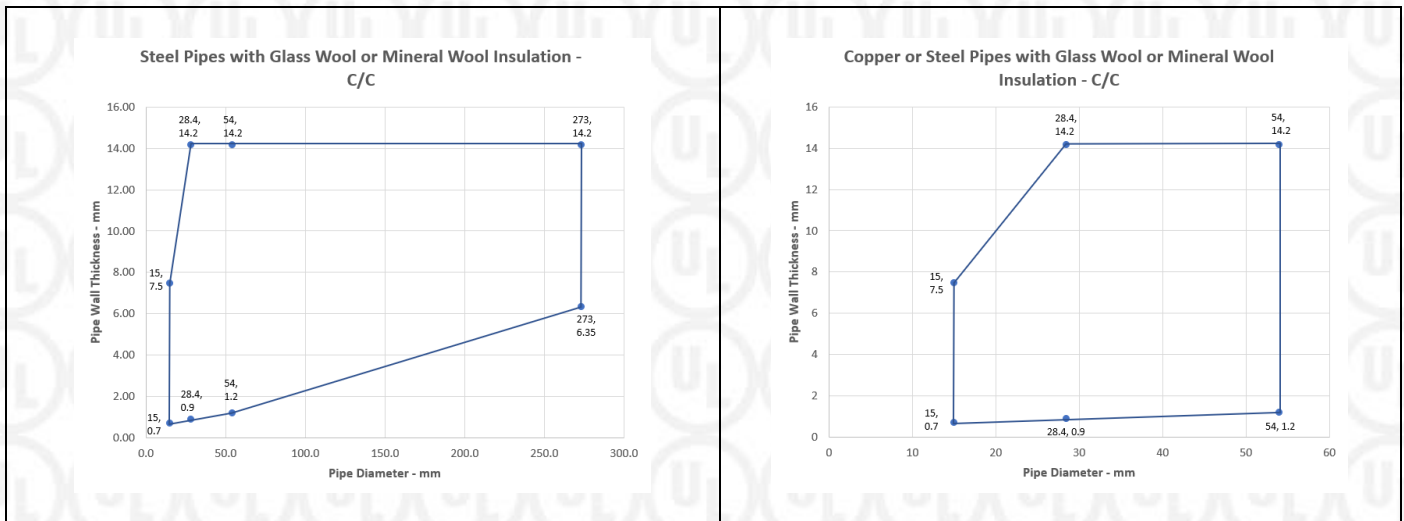


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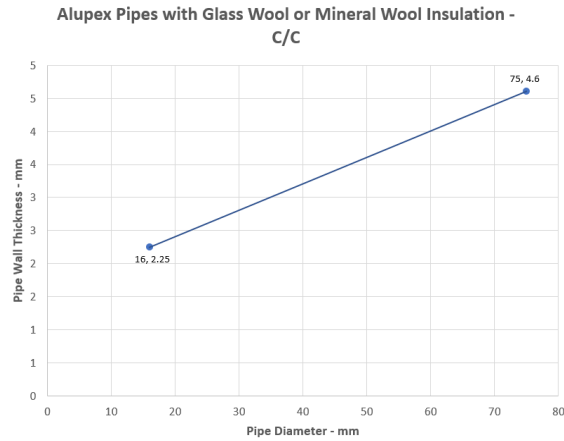
| Services | Maximum aperture | Sealant depth | Backing | Insulation, minimum | Classification |
|---|------------------|---------------|--|---|---------------------------------|
| Mild or stainless steel pipe | | | | | |
| Maximum 273 mm diameter /6.35-14.2 mm wall* | Ø 293 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 25 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | E 120 C/C, EI 60 C/C |
| Copper or steel pipe | | | | | |
| Maximum 15 mm diameter /0.7-7.5 mm wall* | Ø 220 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 20 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | EI 120 C/C |
| Maximum 54 mm diameter /1.2-14.2 mm wall* | | | | | E 120 C/C, EI 90 C/C |
| Alupex Pipe | | | | | |
| Maximum 16 mm diameter / 2.25 mm wall* | Ø 220 mm | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | 20 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | EI 120 C/C |
| Maximum 75 mm diameter / 4.6 mm wall* | | | | 25 mm glass wool or stone, mineral wool min. 75 kg/m ³ , 500 mm length from both sides of the seal | E 120 C/C, EI 90 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



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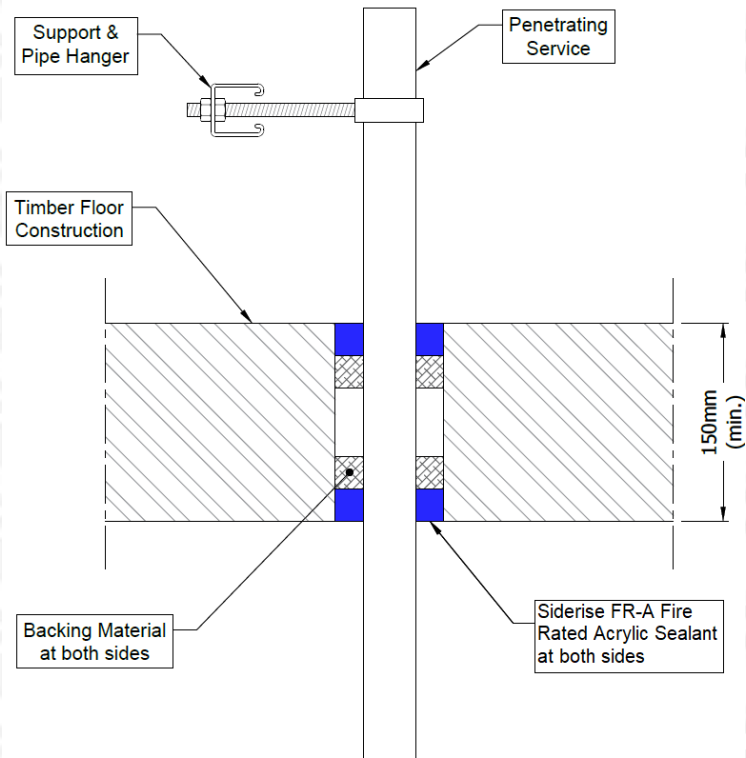
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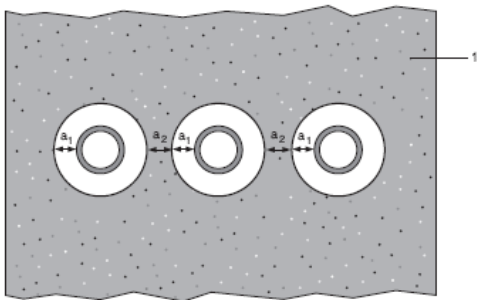
Double side penetration seal with plastic pipes and composite pipes

Penetration Seal: Plastic and composite pipes (single) fitted at any position within the aperture, with Siderise FR-A Fire Rated Acrylic Sealant to both sides of the floor, backed with stone, mineral wool min. 33 kg/m³. Minimum annular space 10 mm and maximum 30 mm (a1) and minimum separation between penetration seals 0 mm (a2).

Construction details:



Configuration 1:



Key

- 1 Supporting construction
- a1 Pipe / edge of seal separation (annular space)
- a2 Separation between penetration seals

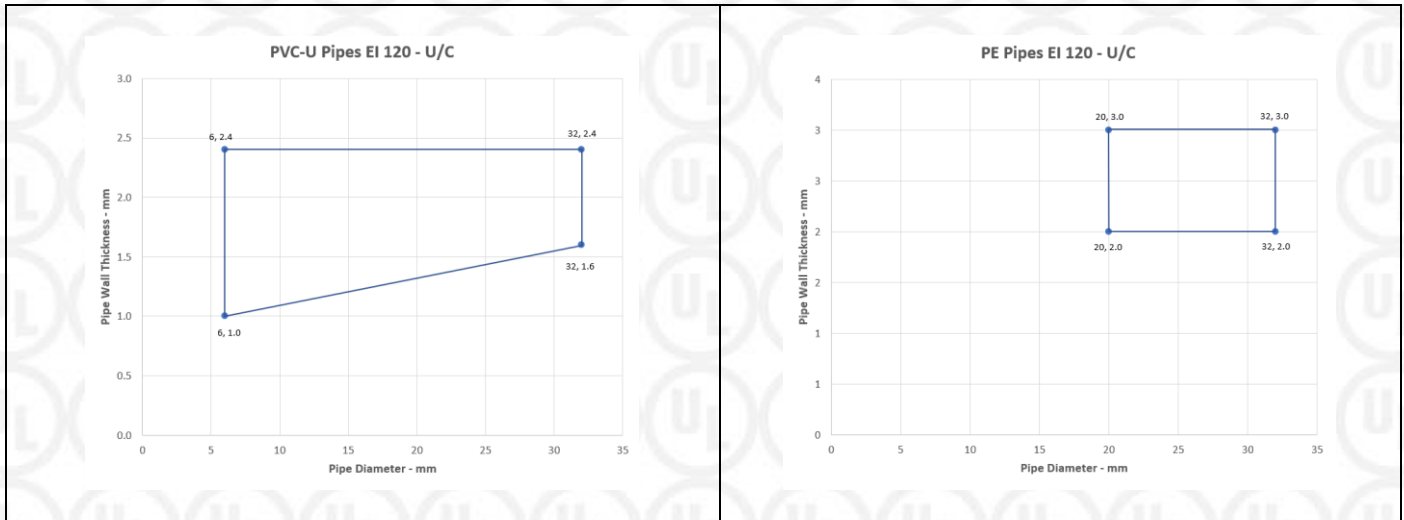


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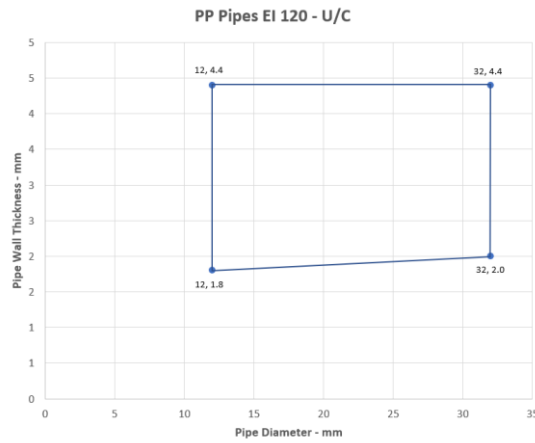
| Services | Sealant depth | Backing | Classification |
|---|---------------|---|-------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1 | | | |
| Maximum 32 mm diameter/1.0-2.4 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 120 U/C |
| 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 | | | |
| Maximum 32 mm diameter/2.0-3.0 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 120 U/C |
| PP pipe according to EN 1451-1 or DIN 8077/8078 | | | |
| Maximum 32 mm diameter/1.8-4.4 mm wall* | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 120 U/C |
| PEX pipe in pipe system | | | |
| 25 mm diameter outer /15 mm diameter x 2.5 mm wall inner | 25 mm | Stone wool 25 mm deep min. 33kg/m ³ | EI 120 C/C |

* Typical pipe diameters shown, see below graph for intermediate sizes



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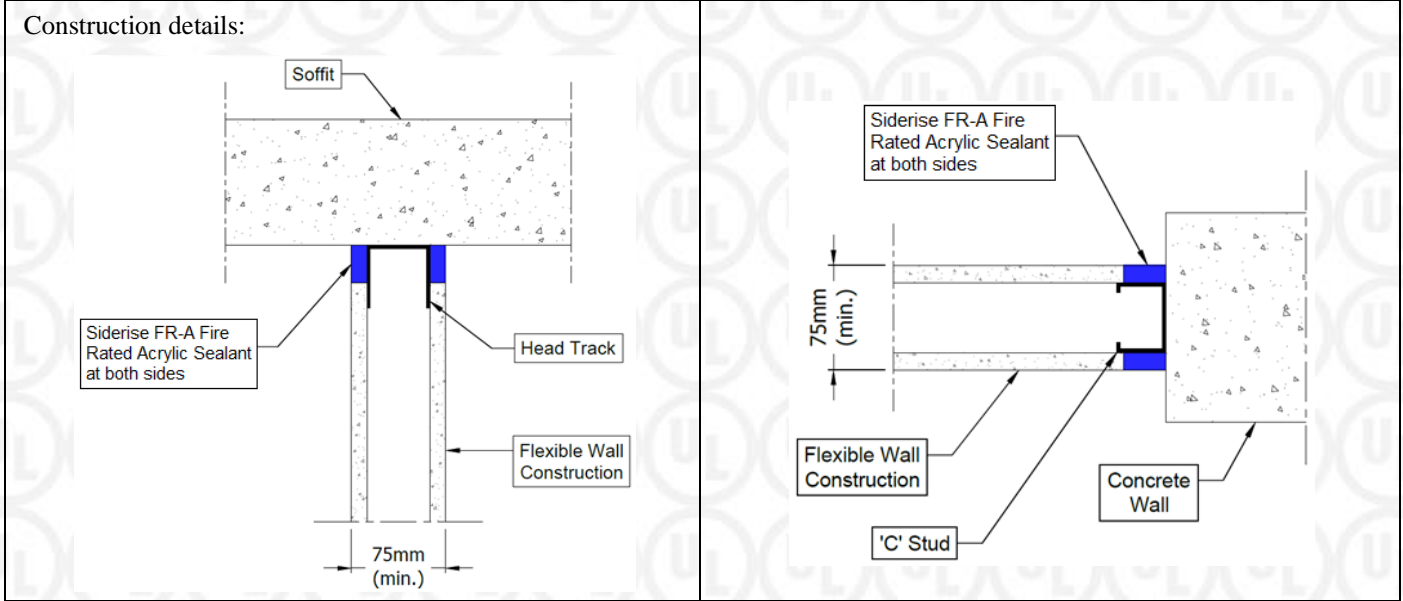
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Flexible wall constructions according to 2 1) with wall thickness of minimum 75 mm and minimum 1 x layer of 12.5 mm board per side

Linear joint seals, between head of flexible wall and soffit of concrete floor and vertical end of flexible wall and concrete wall

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, joint widths up to 30 mm.



| Substrate | Depth (mm) | Backing (minimum) | Classification |
|---------------------------|------------|--|---|
| Plasterboard/ concrete | 12.5 min. | 50 mm steel partition head track/ stud | E 60 – T – X – F – W 25 EI 45 – T – X – F – W 25 |
| | | | E 60 – V – X – F – W 15 EI 45 – V – X – F – W 15 |



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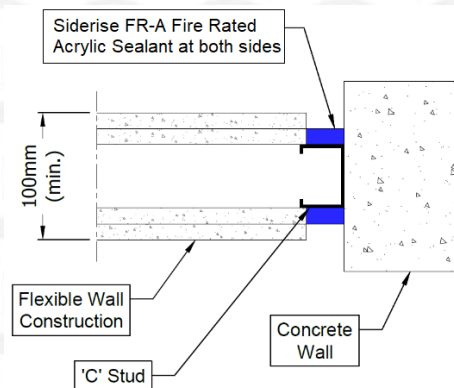
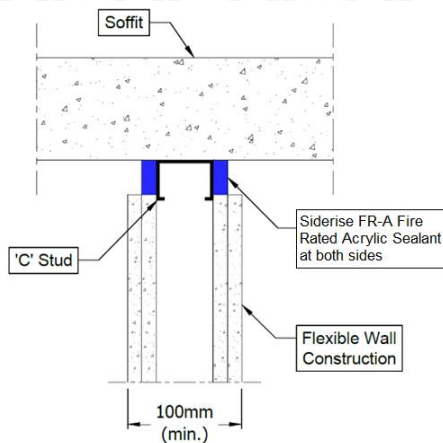
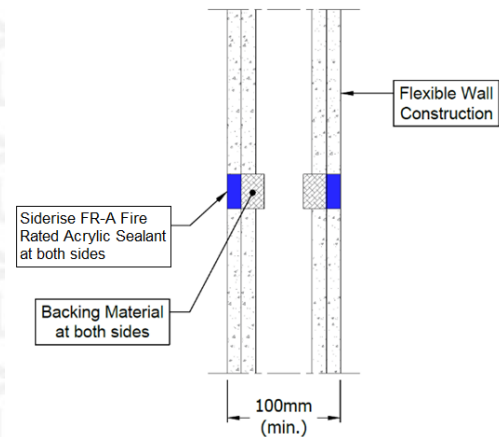
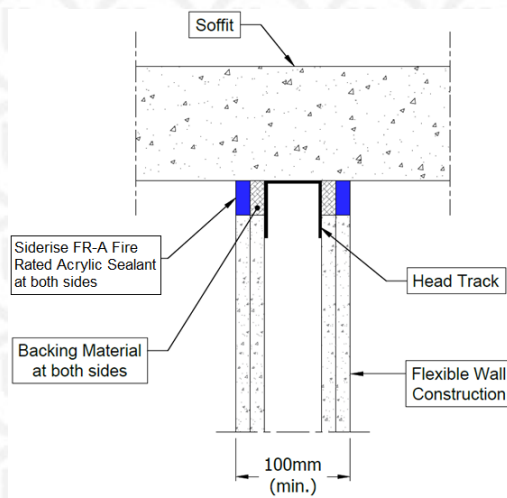
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Flexible wall constructions according to 1.2.1 with wall thickness of minimum 100 mm and minimum 2 x layer of 12.5 mm board per side

Linear joint seals, between head of flexible wall and soffit of concrete floor and vertical end of flexible wall and concrete wall

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, joint widths up to 30 mm.

Construction details:



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| Substrate | Depth (mm) | Backing (minimum) | Classification |
|---------------------------|------------|---|---------------------------|
| Plasterboard/ concrete | 12.5 min. | 12.5 mm Stone wool 35 kg/m ³ plus 50 mm steel partition head track | EI 120 – T – X – F – W 30 |
| | | 20 mm Stone wool 35 kg/m ³ | EI 120 – V – X – F – W 30 |
| | 25 min. | 50 mm steel partition head track /stud | EI 120 – T – X – F – W 30 |
| | 12.5 min. | | EI 90 – T – X – F – W 25 |
| | | | EI 90 – V – X – F – W 15 |



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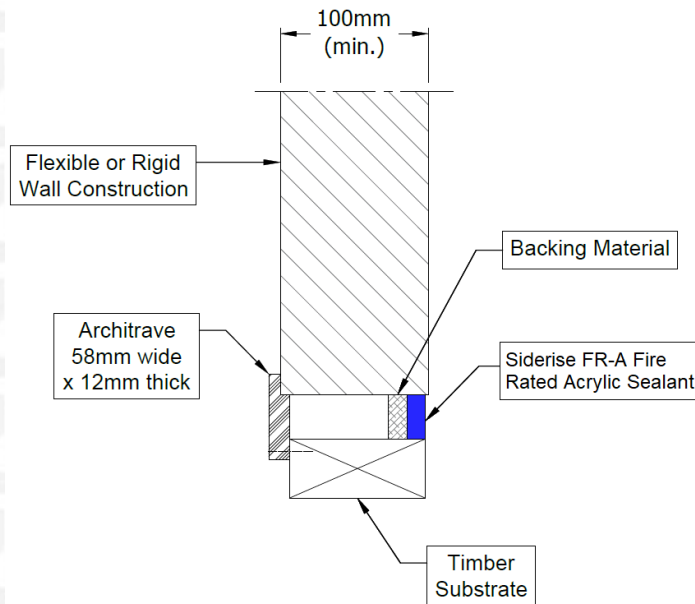
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Flexible or rigid wall construction with wall thickness of minimum 100 mm and timber substrates and architraves

Linear joint or gap seals, vertically or horizontal orientated with backing materials

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to one side of the wall, joint widths up to 30 mm.

Construction details:



| Substrate | Depth (mm) | Facing (minimum) | Backing | Classification |
|---------------------------------|------------|--|---|--------------------------|
| Flexible or rigid wall / Timber | 12.5 min. | Single sided linear seals in flexible or rigid walls against wooden frames covered with architraves on the other side fixed with 25 mm steel pins at nominal 300 mm centres. | Stonewool, 12.5 mm deep min. 35 kg/m ³ | EI 60 – V – X – F – W 30 |
| | | | | EI 60 – T – X – F – W 30 |



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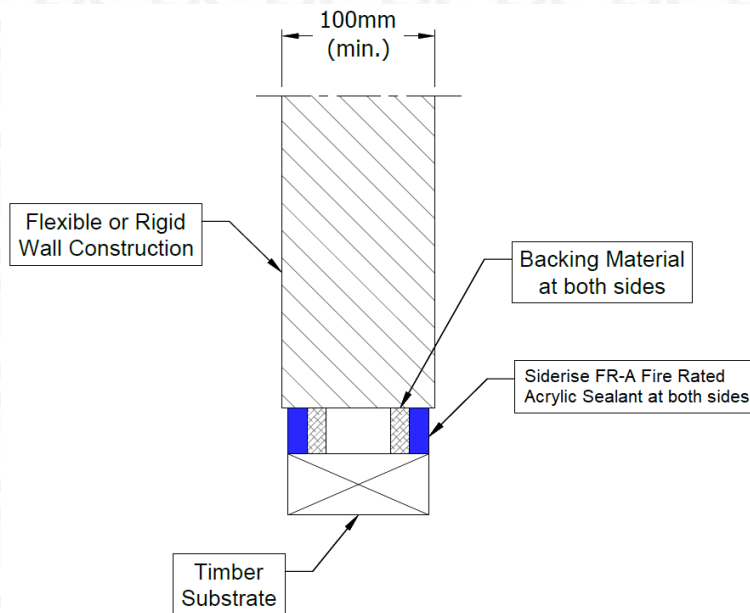
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Flexible or rigid wall construction with wall thickness of minimum 100 mm and timber substrates

Linear joint or gap seals, vertically or horizontal orientated with backing materials

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, joint widths up to 30 mm.

Construction details:



| Substrate | Depth (mm) | Backing | Classification |
|---------------------------------|------------|---|--------------------------|
| Flexible or rigid wall / Timber | 12.5 min. | Stonewool, 12.5 mm deep min. 35 kg/m ³ | E 90 – V – X – F – W 30 |
| | | | EI 60 – V – X – F – W 30 |
| | | | E 90 – T – X – F – W 30 |
| | | | EI 60 – T – X – F – W 30 |



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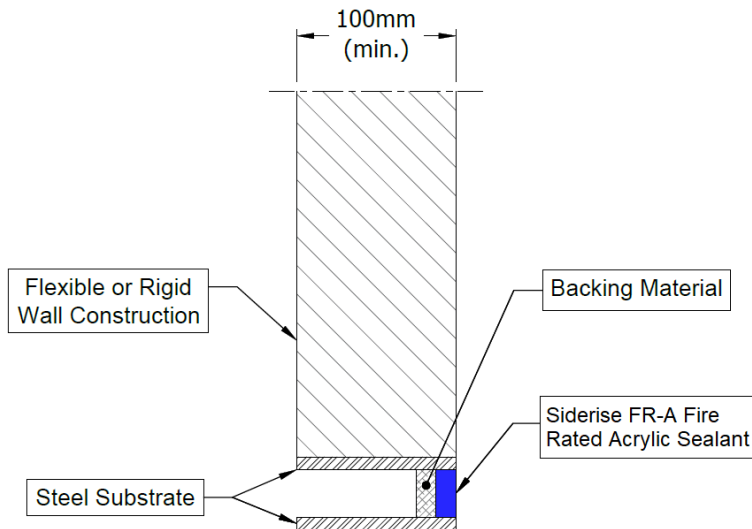
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Flexible or rigid wall construction with wall thickness of minimum 100 mm and steel substrates

Linear joint or gap seals, vertically or horizontal orientated with backing materials

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to one side of the wall, with joint widths up to 30 mm.

Construction details:



| Substrate | Depth (mm) | Backing | Classification |
|---------------|------------|---|--------------------------|
| Steel / steel | 12.5 min. | Stonewool, 12.5 mm deep min. 35 kg/m ³ | E 120 – V – X – F – W 30 |
| | | | EI 30 – V – X – F – W 30 |
| | | | E 120 – T – X – F – W 30 |
| | | | EI 30 – T – X – F – W 30 |



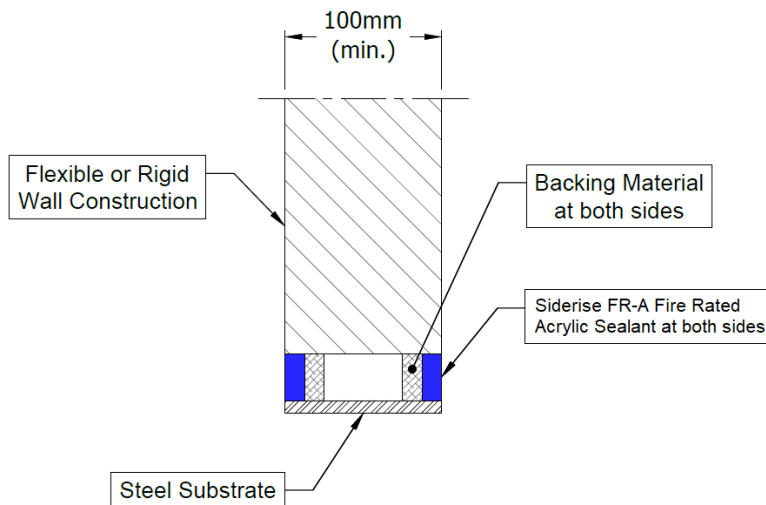
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Linear joint or gap seals, vertically or horizontal orientated with backing materials

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to both sides of the wall, with joint widths up to 30 mm.

Construction details:



| Substrate | Depth (mm) | Backing | Classification |
|--------------------------------|------------|---|--|
| Flexible or rigid wall / Steel | 12.5 min. | Stonewool, 12.5 mm deep min. 35 kg/m ³ | E 120 – V – X – F – W 30 ¹ EI 30 – V – X – F – W 30 ² |
| | | | E 120 – T – X – F – W 30 ³ EI 45 – T – X – F – W 30 ⁴ |

*Additional and for information only.

The classifications provided in Table A.2.5.1 consider the insulation performance of all components within the firestopping system as per the requirements of EN 1366-4. This includes temperature evaluation of the steel substrate.

In relation to each of the above classifications, temperatures recorded on the seal (exclusive of the supporting construction) exceeded the maximum allowable after the following times (rounded down):

¹ 120, ² 90, ³ 120, ⁴ 60



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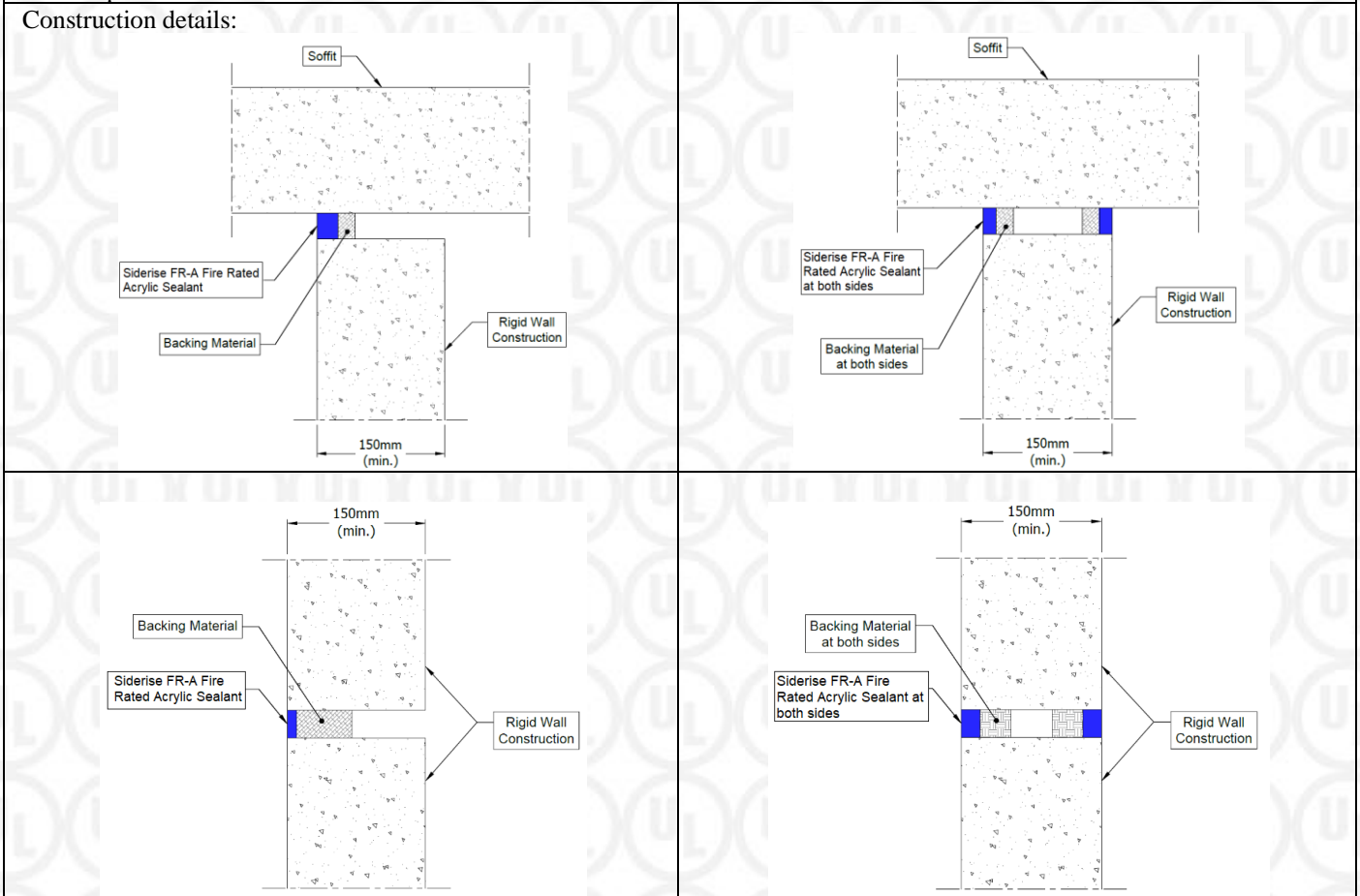
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Rigid wall constructions according to 1.2.1 with wall thickness of minimum 150 mm

Linear joint or gap seal, between head of rigid wall and soffit of concrete floor / between rigid walls

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to either side (or any position between) or both sides of the wall, joint widths up to 30 mm.

Construction details:



| Substrate | Depth (mm) | Backing (minimum) | Classification |
|----------------------|----------------------|--|---|
| masonry/ concrete | 25 min. (one side) | 20 mm Stone wool 40 kg/m ³ | E 240 - T - X - F - W 30 EI 60 - T - X - F - W 30 |
| | 15 min. (both sides) | | EI 240 - V - X - F - W 30 EI 240 - T - X - F - W 30 |
| | 10 min. (one side) | 60 mm Stone wool 33 kg/m ³ | E 240 - T - X - F - W 50 EI 60 - T - X - F - W 50 EI 120 - V - X - F - W 50 |
| | 25 min. (one side) | 48 mm AES Fibre ≥ 128kg/m ³ | E 240 - T - X - F - W 30 EI 120 - T - X - F - W 30 |

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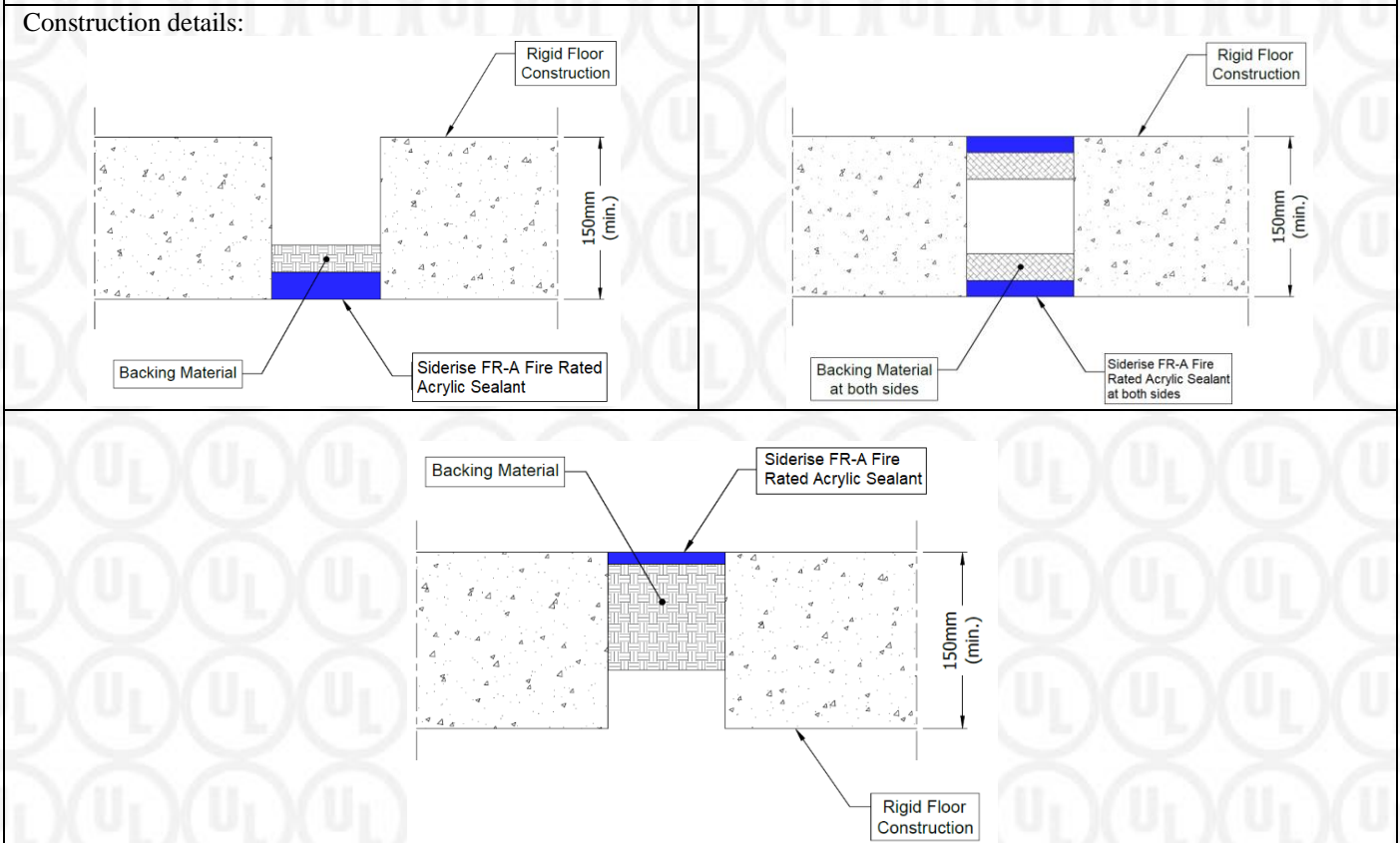
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Rigid floor constructions according to 1.2.1 with floor thickness of minimum 150 mm

Linear joint or gap seal, between floor slabs or between floor slab and wall with sealant to the top face of the floor only

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant to either side (or any position between) or both sides of the floor, joint widths up to 100 mm.



| Substrate | Depth (mm) | Backing (minimum) | Classification |
|-----------------------|-------------------------------------|--|--|
| masonry/ concrete | 25 min. (any position) | 25 mm AES Fibre $\geq 128\text{kg/m}^3$ | E 120 – H – X – F – W 100 EI 60 – H – X – F – W 100 |
| | 25 min (top face) | | EI 180 – H – X – F – W 100 |
| | 15 min. (both sides) | 25 mm Stone wool 40 kg/m^3 | EI 120 – H – X – F – W 100 |
| | | 25 mm Stone wool 140 kg/m^3 | EI 180 – H – X – F – W 100 |
| | 15 min. (both sides) | 25 mm stone wool 35 kg/m^3 insulation | EI 240 – H – X – F – W 30 |
| 10 min. (top face) | 90 mm Stone wool 33 kg/m^3 | EI 240 – H – X – F – W 100 | |



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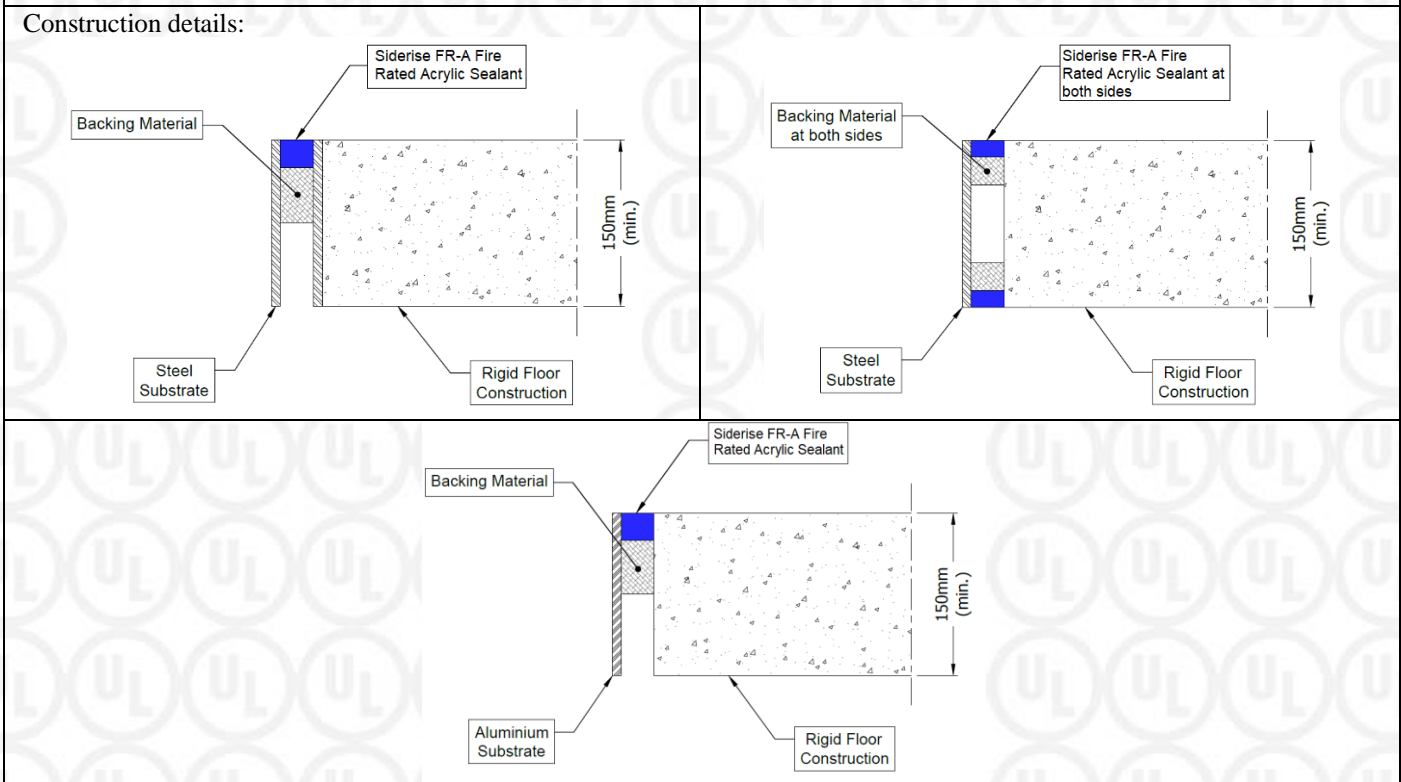
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Linear joint or gap seals, in or between rigid floors

Joint Seal: Siderise FR-A Fire Rated Acrylic Sealant in floor, joint widths up to 30 mm.



| Substrate | Depth (mm) | Backing | Position | Classification |
|---------------------------------------|------------|--|----------|--|
| Steel/ steel or Steel/ concrete | 25 min. | Stonewool, 50 mm deep min. 35 kg/m ³ | Top | E 240 – H – X – F – W 30¹ EI 30 – H – X – F – W 30² |
| | 15 min. | Stonewool, 25 mm deep min. 35 kg/m ³ | Both | E 240 – H – X – F – W 30³ EI 45 – H – X – F – W 30⁴ |
| Aluminium / concrete | 25 min. | Stonewool, 50 mm deep min. 35 kg/m ³ | Top | E 180 – H – X – F – W 30⁵ EI 20 – H – X – F – W 30⁶ |

*Additional and for information only.

The classifications provided in Table A.4.2.1 consider the insulation performance of all components within the firestopping system as per the requirements of EN 1366-4. This includes temperature evaluation of the steel substrate.

In relation to each of the above classifications, temperatures recorded on the seal (exclusive of the supporting construction) exceeded the maximum allowable after the following times (rounded down):

¹ 240, ² 60, ³ 240, ⁴ 120, ⁵ 180, ⁶ 60

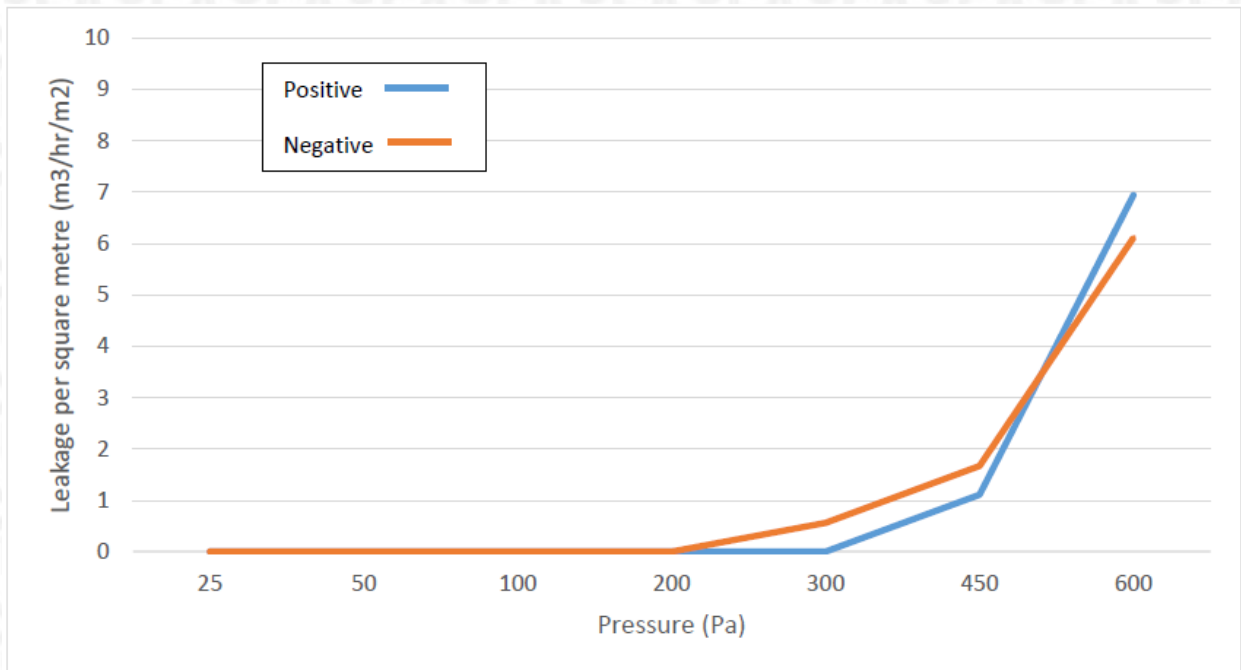
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| Product tested | 10mm deep x 30mm wide Siderise FR-A Fire Rated Acrylic Sealant | | |
|---|--|-----------------------------|---|
| | Summary of testing procedure | | Result |
| | Pressure (Pa) | Leakage (m ³ /h) | Leakage (m ³ /m ² /h) |
| Results under negative chamber pressure | 25 | 0.00 | 0.00 |
| | 50 | 0.00 | 0.00 |
| | 100 | 0.00 | 0.00 |
| | 200 | 0.00 | 0.00 |
| | 300 | 0.02 | 0.56 |
| | 450 | 0.06 | 1.67 |
| | 600 | 0.22 | 6.11 |
| Results under positive chamber pressure | 25 | 0.00 | 0.00 |
| | 50 | 0.00 | 0.00 |
| | 100 | 0.00 | 0.00 |
| | 200 | 0.00 | 0.00 |
| | 300 | 0.00 | 0.00 |
| | 450 | 0.04 | 1.11 |
| | 600 | 0.25 | 6.94 |



Appendix UL-EU Certificate

| | |
|---------------------------|-------------------|
| Certification Mark | UL-EU mark |
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| Date of Issue | 2023-08-16 |

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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