CP 638:
FIRESTOP MORTAR

Product pack

Classification report 23003B

TECHNICAL DATA

APPLICATIONS

CHANGE LOG

Revision 02 – 31/01/2025

HIGH-STRENGTH STRUCTURAL FIRESTOP COMPOUND CP 638

A fire resistant gypsum based mortar, with thermal insulating and acoustic properties for sealing medium to large sized openings where further penetrations may be required. Providing integrity of up to 4 hours.

APPLICATIONS

- Cables and cable trays
- Combustible pipes
- Non combustible pipes
- Ductwork dampers
- Suitable for unreinforced spans up to 1800mm

ADVANTAGES

- Quick setting
- Expands when set to provide smoke seal
- Good adhesion to steel, concrete and masonry
- Can comply with BS6399 for loading

Technical data

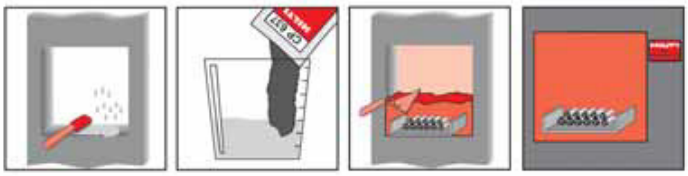
Fire rating	Up to 4 hours
Base materials	Concrete (porous), Concrete, Masonry, Aerated concrete
Application temperature range	5°C – 40°C
Colour	Light grey
Acoustics performance	Up to 50dB
Load bearing (without reinforcement)	100mm thick seal, with 50mm board, 2000 x 1800mm, or up-to 10m length with a reduced length, can support light foot traffic
Consumption guide	140-160kg per square metre for 100mm thick seal

Order description	Package contents	Package quantity	Item number
Firestop mortar CP 638 HS FS	CP 638 firestop compound (20kg sack)	1 pc	00340646

INSTALLATION INSTRUCTIONS

NOTICE

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.



APPLICATION

1. Clean penetration. Pre-moisten sides of penetration.
2. Important! First add clean water to separate container. Then slowly add CP 638 to water while stirring by hand or power mixer to ensure smooth, lump-free mix.
3. Work prepared mortar into opening by troweling, pouring, or pumping with suitable pump. Use forms for large openings.
4. Fasten identification plate (if required).

SETTING BEHAVIOUR

CP638 forms a smoke-tight seal by expanding during the exothermic setting process. When restrained by a rigid surface, such as a concrete floor slab, the restrained expansion creates significant membrane action. This, combined with the material's high crushing strength, allows the seal to bear substantial loads without steel reinforcement, provided the span is bounded by two parallel structural sides.

MIXING

Follow health and safety procedures, wear appropriate PPE (gloves, overalls, eye protection, dust mask), and avoid eating, smoking, or drinking during mixing.

Use a drilling machine with a mixing paddle, or a larger mixer for bigger batches. Always mix mortar with water by weight, adding the dry mortar to water. Use 6–7 liters of water per 20kg bag for CP 638. Adjust the powder-to-water ratio for desired workability (e.g., thinner for pours, thicker for walls). Coverage for a 100mm thick seal is 7–8 bags/m^2 for CP 638.

The pot life of the mixture is about 45 minutes. **Do not try to add more water or to remix after the mortar starts to set as this will result in decreased strength.**

FORMWORK & SUPPORT

Conduct a risk assessment before installation, using plastic sheeting if needed to catch debris. Formwork can be rigid shuttering (e.g., plywood) or mineral wool batts, with Hilti CFS-CT B coated board preferred for floor seals due to its water-resistant coating. Ensure formwork is properly supported to prevent deflection and is cut/sealed around services to prevent mortar leakage.

A 20-25 mm compound layer can reinforce mineral wool batts but is not included in the structural thickness. For large or interrupted spans, use Hilti channel support systems as per Hilti guidelines, ensuring proper tightening and adherence to recommended torque settings.

CURING

Formwork can be removed after 2-3 hours. Loads should not be applied to a seal for at least 48 hours. It is recommended that notices to that effect be placed near the seals.

PROTECTION OF SEAL FROM WATER

CP638 compounds are water-resistant but are not waterproof. The seal must be protected from water (e.g. rainwater) whilst it cures.

Workability	Water: Solids ratio by weight	Wet density (kg/m^3)	Wet strength (N/mm^2)	Dry density (kg/m^3)	Dry strength (N/mm^2)
Pourable	0.35	1750	8.0	1450	17.0
Plastic	0.32	1820	11.0	1530	21.0
Stiff	0.30	1900	12.5	1600	25.0

APPLICATION INFORMATION

FOR PIPES/CABLE DIAMETERS

S = Single pipe/cable*

B = pipe/cable Bundle

*For pipes, if no S or B, assume single pipe.

FOR INSULATION

N-C = Non-Combustible (e.g., stone wool etc.)

C = Combustible (e.g., Armaflex, phenolic etc.)

None = No insulation

LS = Local Sustained

LI = Local Interrupted

CS = Continuous Sustained

CI = Continuous Interrupted

Please note, in many cases details have numerous pages. Please check all pages for the necessary information as differing insulation layouts might be on differing pages (e.g., LS one page 1 and LI on page 2 etc.).

PENETRATION TYPE

Single = penetration seal intended for penetrations with only one service passing through

Multi = penetration seal intended for penetrations where more than one service of the same type (e.g. cables) or pipe material group pass through

Mixed = penetration seal intended for penetrations where more than one type of services (e.g. cables and pipes or pipes of different pipe material groups) pass through

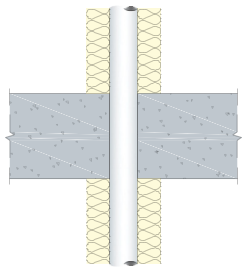
CLASSIFICATION

Classification will give the best-case EI value possible. As such, check each specific detail as there may be instances where a higher I value is possible or another sized service within the application may attain a lower value (e.g., 110mm pipe achieves EI 120 but a 160mm pipe achieves EI 90).

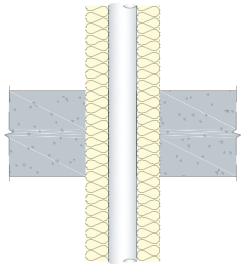
PRODUCT/DETAIL

Full product name first/Detail ID (See specific detail for the full ID).

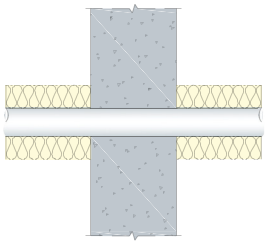
Please note, in many cases details have numerous pages. Please check all pages for the necessary information.



Continued Interrupted (CI)



Continued Sustained (CS)



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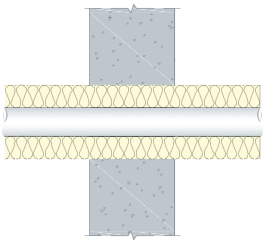

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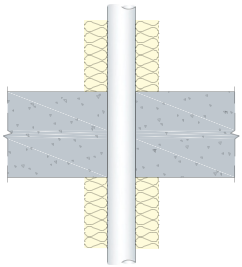
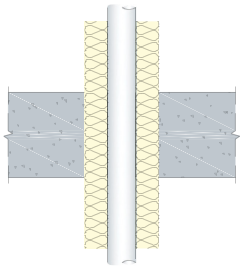
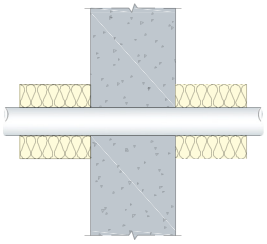


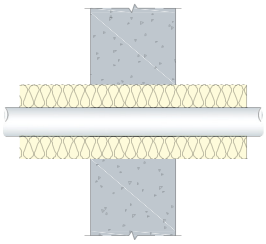
Local Interrupted (LI)



Local Sustained (LS)



Local Interrupted (LI)



Local Sustained (LS)

Min. base material thickness	Pipes		Insulation			Penetration type			Classification	Product/Detail
	Material	Size	N/C	C	None	Single	Multi	Mixed		
≥ 150	PE	Ø ≥ 75 to ≤ 160			✓	✓	✓	✓	EI 120	CP638:RF-M-01
≥ 150	PE-X	Ø ≥ 75 to ≤ 160			✓	✓	✓	✓	EI 120	CP638:RF-M-01
≥ 150	ABS	Ø ≥ 75 to ≤ 160			✓	✓	✓	✓	EI 120	CP638:RF-M-01
≥ 150	SAN	Ø ≥ 75 to ≤ 160			✓	✓	✓	✓	EI 120	CP638:RF-M-01
≥ 150	PVC	Ø ≥ 40 to ≤ 160			✓	✓	✓	✓	EI 120	CP638:RF-M-01
≥ 150	PE	B = Ø ≤ 110			✓		✓		EI 240	CP638:RF-M-02
≥ 150	PE-X	B = Ø ≤ 110			✓		✓		EI 240	CP638:RF-M-02
≥ 150	ABS	B = Ø ≤ 110			✓		✓		EI 240	CP638:RF-M-02
≥ 150	SAN	B = Ø ≤ 110			✓		✓		EI 240	CP638:RF-M-02
≥ 150	PVC	B = Ø ≤ 110			✓		✓		EI 240	CP638:RF-M-02
≥ 150	PE	B = Ø ≤ 110			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	PE-X	B = Ø ≤ 110			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	ABS	B = Ø ≤ 110			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	SAN	B = Ø ≤ 110			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	PVC	B = Ø ≤ 110			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	PE	B = Ø ≤ 160			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	PE-X	B = Ø ≤ 160			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	ABS	B = Ø ≤ 160			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	SAN	B = Ø ≤ 160			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	PVC	B = Ø ≤ 160			✓		✓	✓	EI 120	CP638:RF-M-02
≥ 150	Copper	Ø ≤ 108	LS, LI, CS			✓	✓	✓	EI 120	CP638:RF-M-04
≥ 150	Cast Iron	Ø ≤ 168	LS, LI, CS			✓	✓	✓	EI 120	CP638:RF-M-04
≥ 150	Steel	Ø ≤ 168	LS, LI, CS			✓	✓	✓	EI 120	CP638:RF-M-04
≥ 150	Stainless Steel	Ø ≤ 168	LS, LI, CS			✓	✓	✓	EI 120	CP638:RF-M-04
≥ 150	Copper	Ø ≤ 108		CS		✓	✓	✓	EI 120	CP638:RF-M-06
≥ 150	Cast Iron	Ø ≤ 108		CS		✓	✓	✓	EI 120	CP638:RF-M-06
≥ 150	Steel	Ø ≤ 108		CS		✓	✓	✓	EI 120	CP638:RF-M-06
≥ 150	Stainless Steel	Ø ≤ 108		CS		✓	✓	✓	EI 120	CP638:RF-M-06
≥ 150	MLC	Ø ≤ 50 to ≥ 110		CS		✓	✓	✓	EI 120	CP638:RF-M-06

Min. base material thickness	Electrical service					Penetration type			Classification	Product/Detail
	Cables	Tray	Conduit	NC or C conduit	Trunking	Single	Multi	Mixed		
≥ 150	S = Ø ≤ 80 B = Ø ≤ 100	✓					✓	✓	EI 180	CP638:RF-E-01
≥ 150			S = Ø ≤ 50 B = Ø ≤ 10	C			✓	✓	EI 120	CP638:RF-E-02

CP638: MP-RF-E-01

CABLES THROUGH SLAB

Fire Rating up to EI 180

Information
- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification Report 23003B

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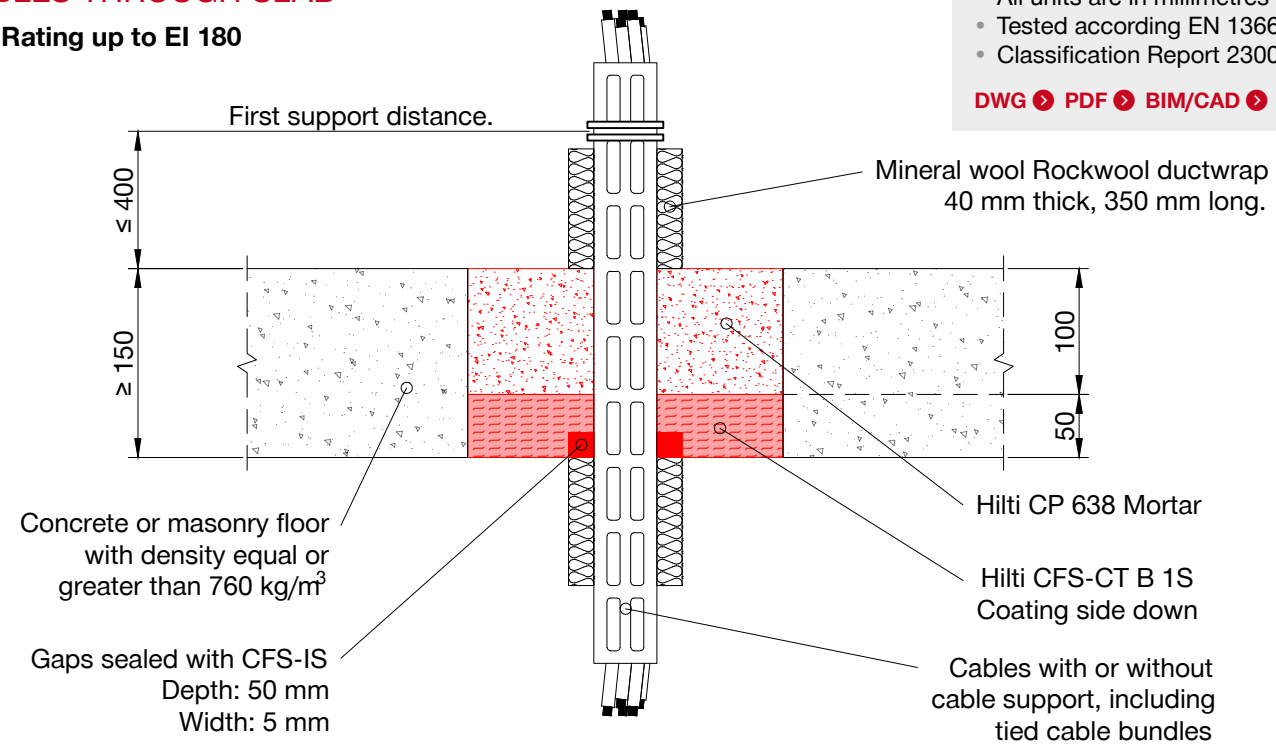

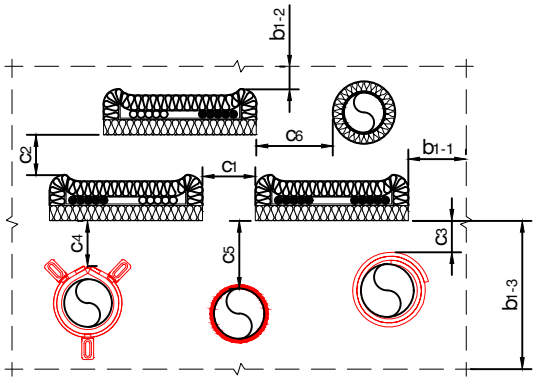

Maximum opening size without additional support: 2000 x 1800 mm or reduced width, with up-to 10m length. See classification report for further details.

Cable description	Classification
Single cables max Ø 21 mm	**EI 180**
Cables bundles ≤ Ø 100 mm, max. cable ≤ Ø 21 mm	**EI 180**
Non-sheathed cables ≤ Ø 24 mm	**EI 180**
Coaxial cables ≤ Ø 28 mm	**EI 120**
Cables with 22 ≤ Ø ≤ 80 mm	**EI 120**

Description	Shortcut	Distance
Cable/cable carrier and aperture edge aside	b_{1-1}	0 mm
Cable/cable carrier and aperture edge above	b_{1-2}	0 mm
Cable/cable carrier and aperture edge below	b_{1-3}	0 mm
Cable/cable carrier and other cables/ cable carriers in linear arrangement	c_1	0 mm
Cable/cable carrier and other cables/ cable carriers below	c_2	50 mm
To other pipes sealed with CFS-B	c_3	38 mm
To other pipes sealed with CFS-C EL	c_4	38 mm
To other pipes sealed with CFS-S ACR	c_5	38 mm
To any other services	c_6	100 mm

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2. The product and application has been assessed as a minimum to the BS 476 standard. It may have additional European and worldwide testing. Please contact Hilti for further information.
3. All installations should be carried out in accordance with Hilti's installation instructions and by competent & experienced installers using Hilti branded products.
4. All services are to be correctly and adequately supported to prevent collapse and distortion.

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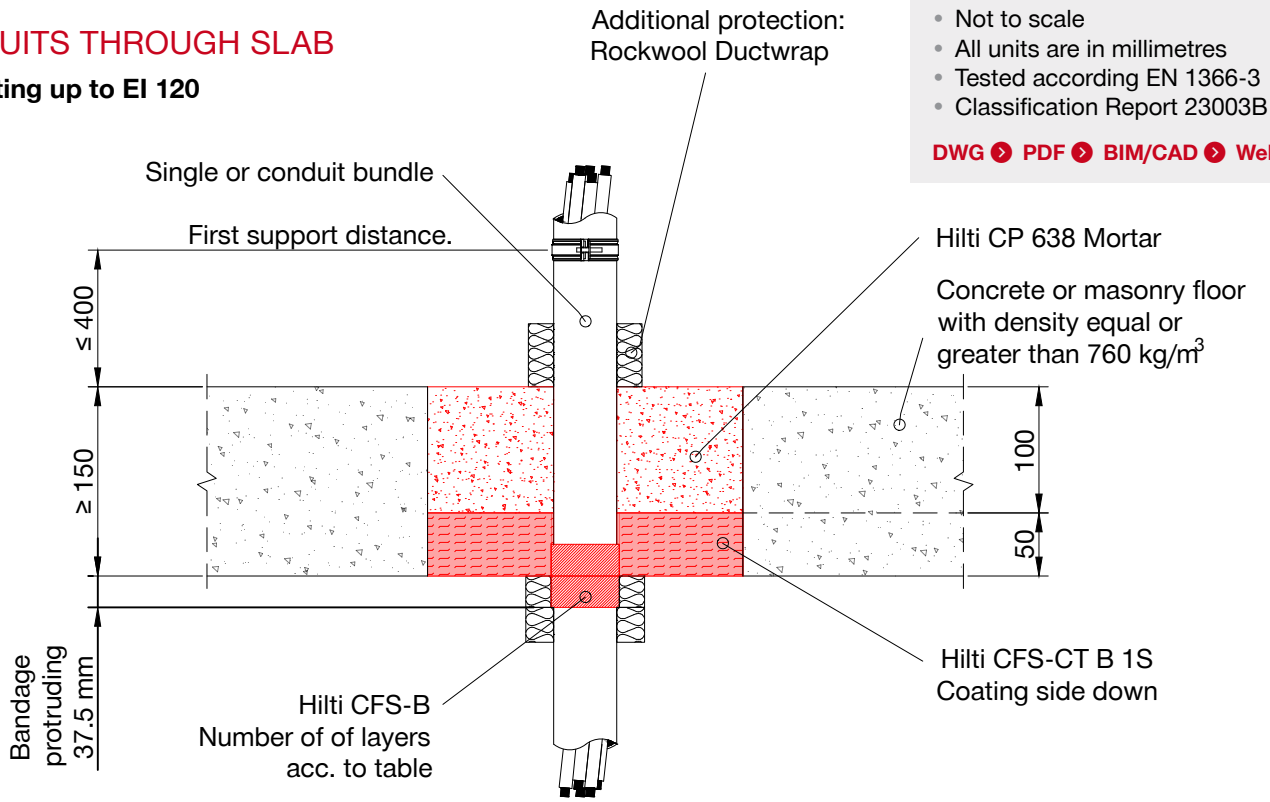
CP638: MP-RF-E-02

CONDUITS THROUGH SLAB

Fire Rating up to EI 120



Information

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- Classification Report 23003B

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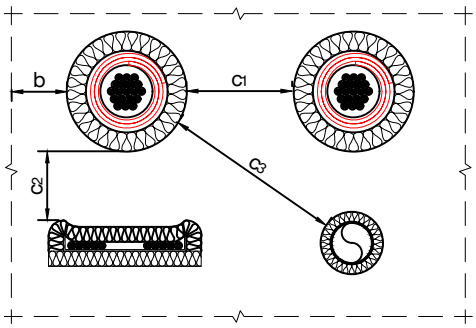
Notes:

1. All gaps around services and coated board edges filled with Hilti Firestop Acrylic Sealant CFS-S ACR

All single flexible and pliable plastic conduits with or without cable, wave height up-to 7.1 mm. Conduits type continued where both ends are open or closed in practice are covered. All sizes of cables currently and commonly used which fits the conduits are covered. Non sheathed cables are not covered. Cable carriers cannot penetrate the seal.

Number of layers	Max. single conduit diameter	Max. bundle diameter	Min. conduit protrusion on both side of floor	Additional protection: thickness x length	Fire rating in mixed opening
2	≤ 25	10	400	25 x 250	EI 120-U/U
2	≤ 50	10	400	25 x 250	EI 60-U/U



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-B	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

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CP638: MP-RF-M-01

PLASTIC PIPES THROUGH SLAB

Fire Rating up to EI 120

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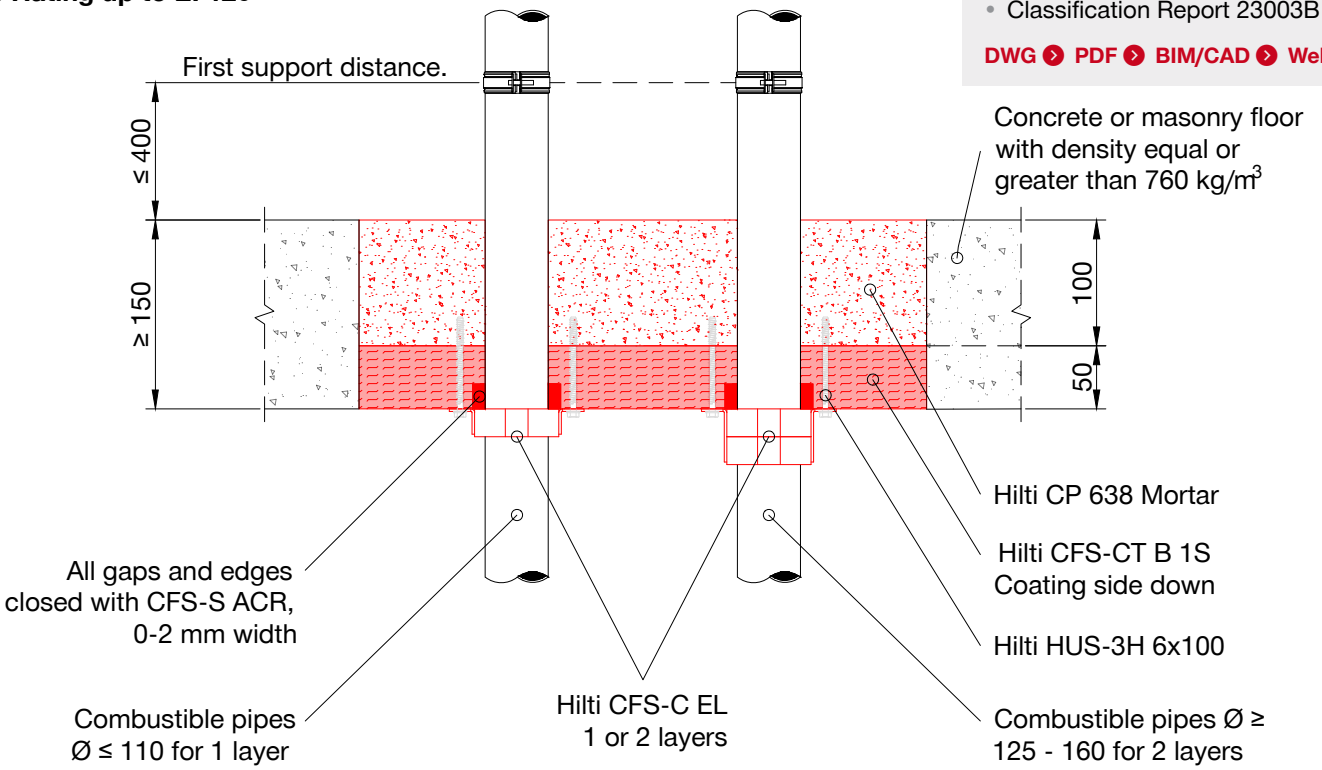

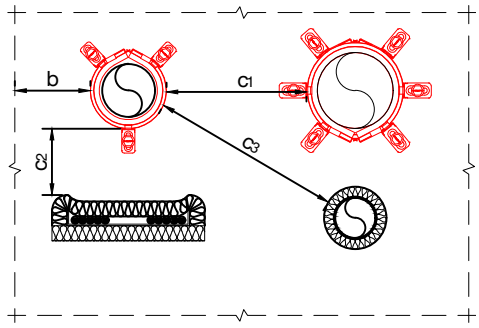

Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-C EL	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

PE pipes in acc. EN 1519-1, EN 12201-1, EN 15494, EN 12666-1, PE-X pipes in acc. EN 15875-2, ABS pipes in acc. EN 1455-1 and EN 15493, as well as SAN+PVC in acc. ISO 19220.

Number of layers	Hooks	Diameter	Wall thickness	Fire rating in mixed opening
1	3	≤ 75 to 90 to 110 mm	3 to 3.7 to 4.2	EI 120-U/U
2	4	≥ 125 to 160 mm	4.9 to 6.2 to 9.5	EI 120-U/U

PVC pipes in acc. EN 1329-1, EN 1453-1, EN 15493, EN 1452-2.

Number of layers	Hooks	Diameter	Wall thickness	Fire rating in mixed opening
1	3	≤ 40 to 110 mm	1.9 to 2.7 to 6.6	EI 120-U/U
2	4	≤ 160 mm	6.2 to 9.5	EI 120-U/U

Maximum opening size without additional support:
2000 x 1800 mm or reduced width, with up-to 10m length.
See classification report for further details.

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CP638: MP-RF-M-02

PLASTIC PIPES THROUGH SLAB

Fire Rating up to EI 240 U/U

Information
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- Classification Report 23003B

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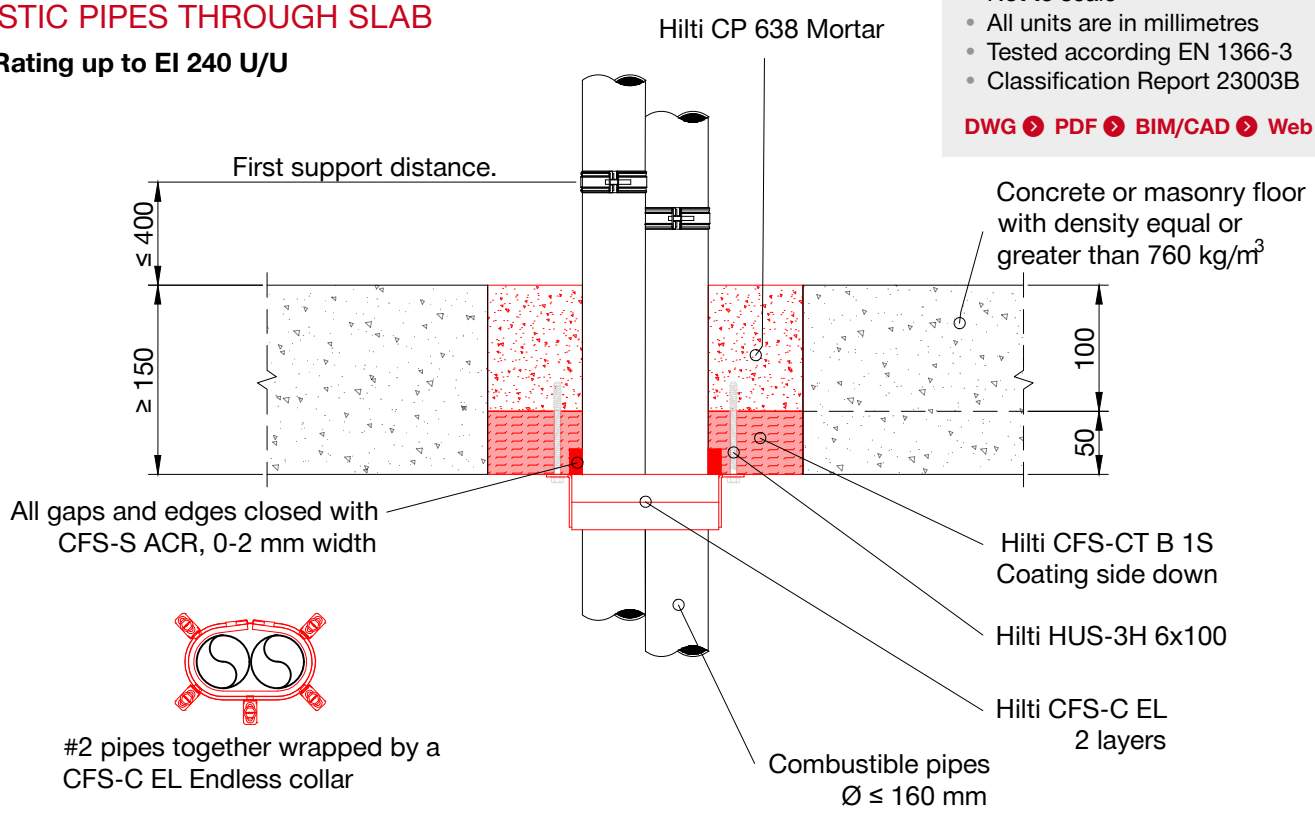
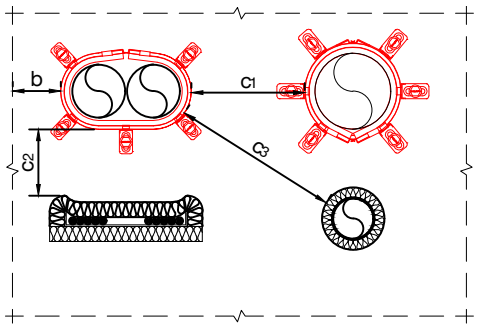


#2 pipes together wrapped by a CFS-C EL Endless collar

PE pipes in acc. EN 1519-1, EN 12201-1, EN 15494, EN 12666-1, PE-X pipes in acc. EN 15875-2, ABS pipes in acc. EN 1455-1 and EN 15493, as well as SAN+PVC in acc. ISO 19220.

Number of layers	Hooks	Number of pipes in 0 distance pipe to pipe in linear arrangement	Diameter	Wall thickness	Fire rating in mixed opening	Fire rating as single and multiple service*
2	6	3	≤ 110 mm	4.2	EI 120-U/U	EI 240-U/U
2	9	2	≤ 160 mm	6.2	EI 120-U/U	EI 120-U/U

*Minimum distance ≥ 50 mm to seal edge and between other pipes sealed with CFS-C EL. Min. 100 mm to any other service.



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-C EL	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

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PLASTIC PIPES THROUGH SLAB

Fire Rating up to EI 240 U/U

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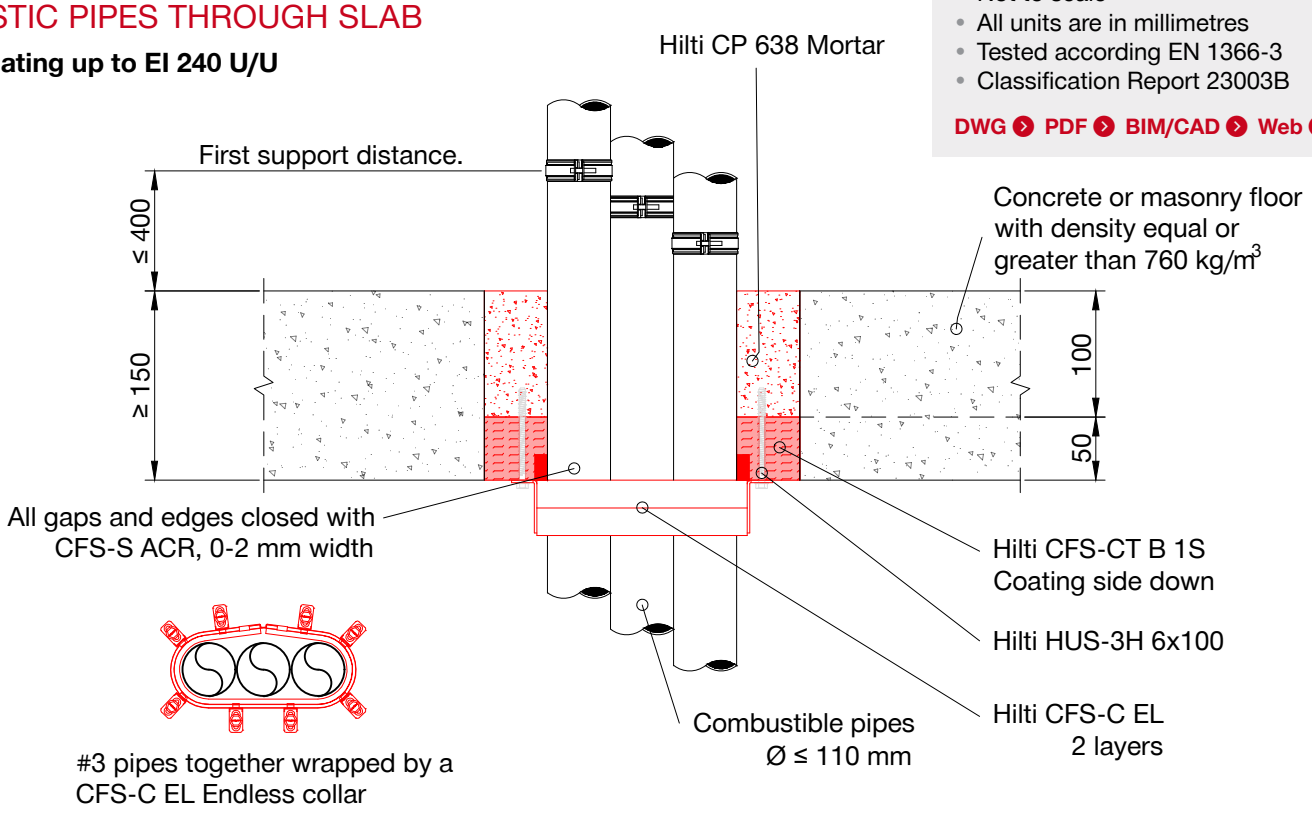

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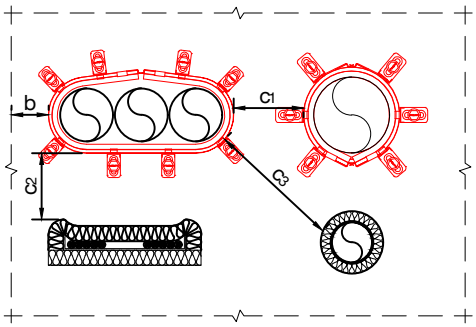
Number of layers	Hooks	Number of pipes in 0 distance pipe to pipe in linear arrangement	Diameter	Wall thickness	Fire rating in mixed opening	Fire rating as single and multiple service*
2	6	3	≤ 110 mm	4.2	EI 120-U/U	EI 240-U/U

*Minimum distance ≥ 50 mm to seal edge and between other pipes sealed with CFS-C EL. Min. 100 mm to any other service.



Spacing overview for mixed seals

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To cables with CFS-IS	c_2	≥ 38 mm
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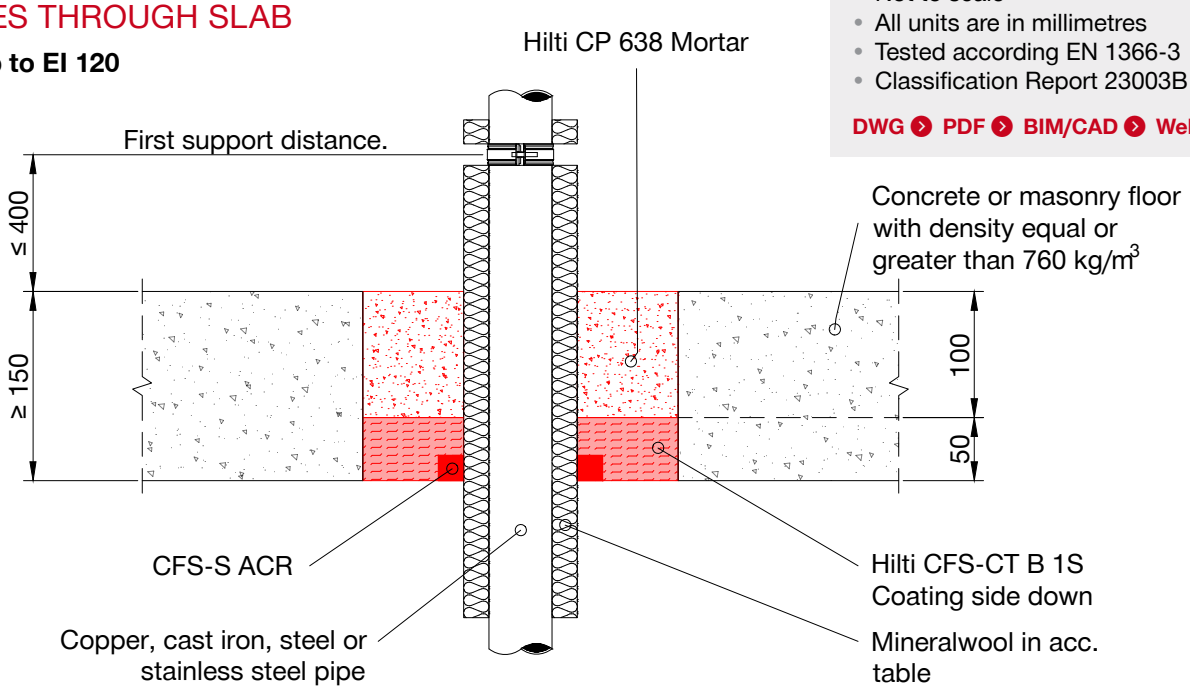
CP638: MP-RF-M-04

METAL PIPES THROUGH SLAB

Fire Rating up to EI 120

Information
- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification Report 23003B

DWG PDF BIM/CAD Web

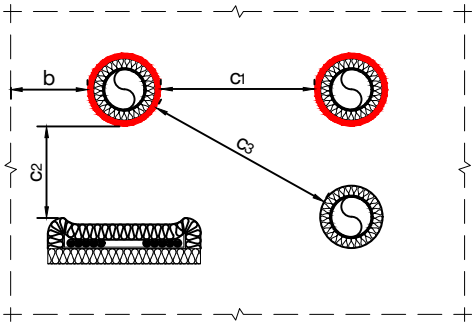


Notes:

1. All gaps around services and coated board edges filled with Hilti Firestop Acrylic Sealant CFS-S ACR

Metal pipes with local sustained insulation Rockwool Roclap H&V Section

Material	Diameter	Min. wall thickness	Localy sustained: Rockwool Roclap Thickness	Length on both sides of the floor	Fire rating in mixed opening
Copper, cast iron, steel, stainless steel.	≤ 28	0.9	40	≥ 800	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 54	1.2	40	≥ 800	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 108	1.5	40	≥ 800	EI 120-C/U
Cast iron, steel, stainless steel.	≤ 168	3.4	40	≥ 800	EI 120-C/U



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-S ACR	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

1. The application limits on this detail are for guidance purposes only. For more detailed information based on the full range of available test results please contact the Hilti Technical Advisory Service.
2. The product and application has been assessed as a minimum to the BS 476 standard. It may have additional European and worldwide testing. Please contact Hilti for further information.
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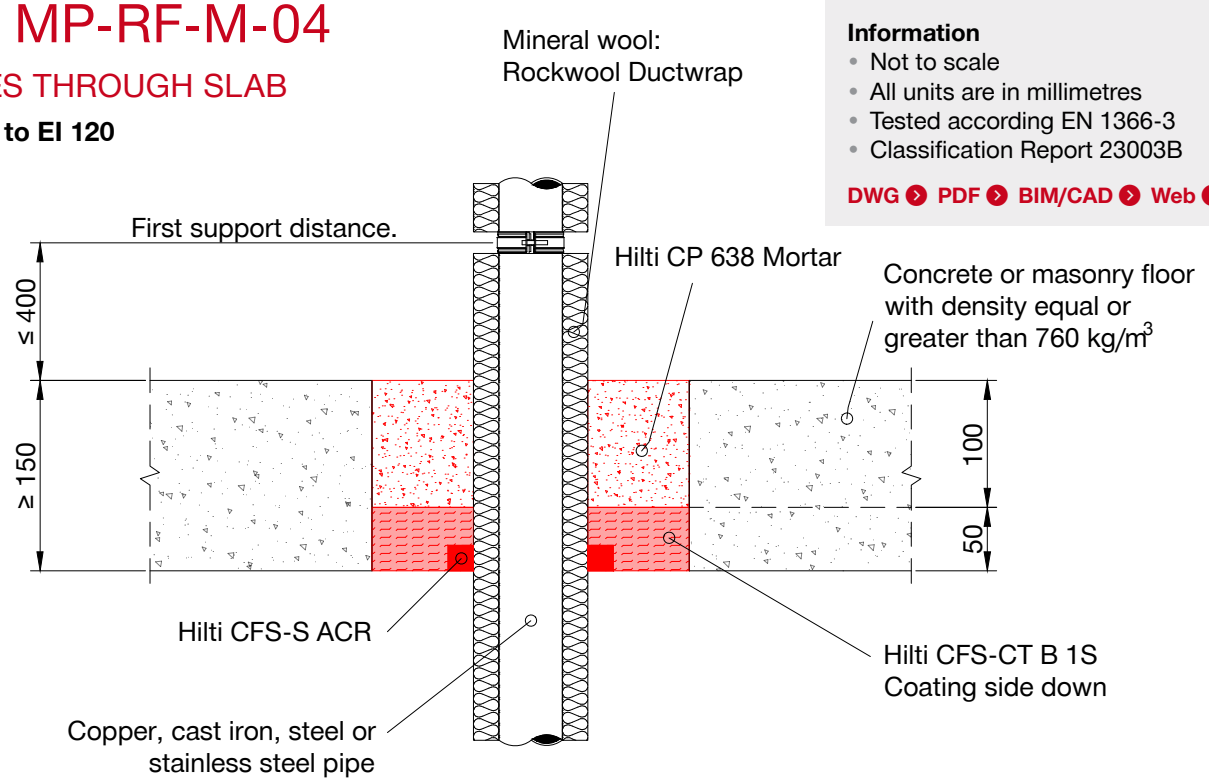
METAL PIPES THROUGH SLAB

Fire Rating up to EI 120



Information

- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification Report 23003B

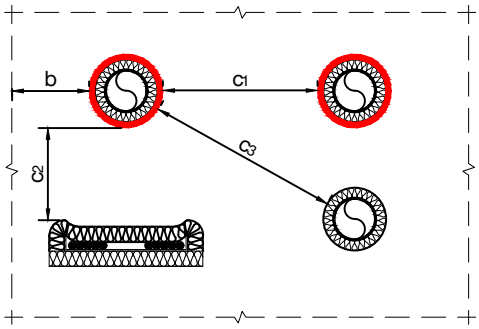
DWG PDF BIM/CAD Web

Notes:

1. All gaps around services and coated board edges filled with Hilti Firestop Acrylic Sealant CFS-S ACR

Metal pipes with continued sustained insulation from Rockwool DuctWrap

Material	Diameter	Min. wall thickness	Localy sustained: Rockwool DuctWrap Thickness	Fire rating in mixed opening
Copper, cast iron, steel, stainless steel.	≤ 28	0.9	40	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 54	1.2	40	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 108	1.5	40	EI 90-C/U
Cast iron, steel, stainless steel.	≤ 165	5	40	EI 120-C/U



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-S ACR	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

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CP638: MP-RF-M-04

METAL PIPES THROUGH SLAB

Fire Rating up to EI 120

Information
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- Tested according EN 1366-3
- Classification Report 23003B

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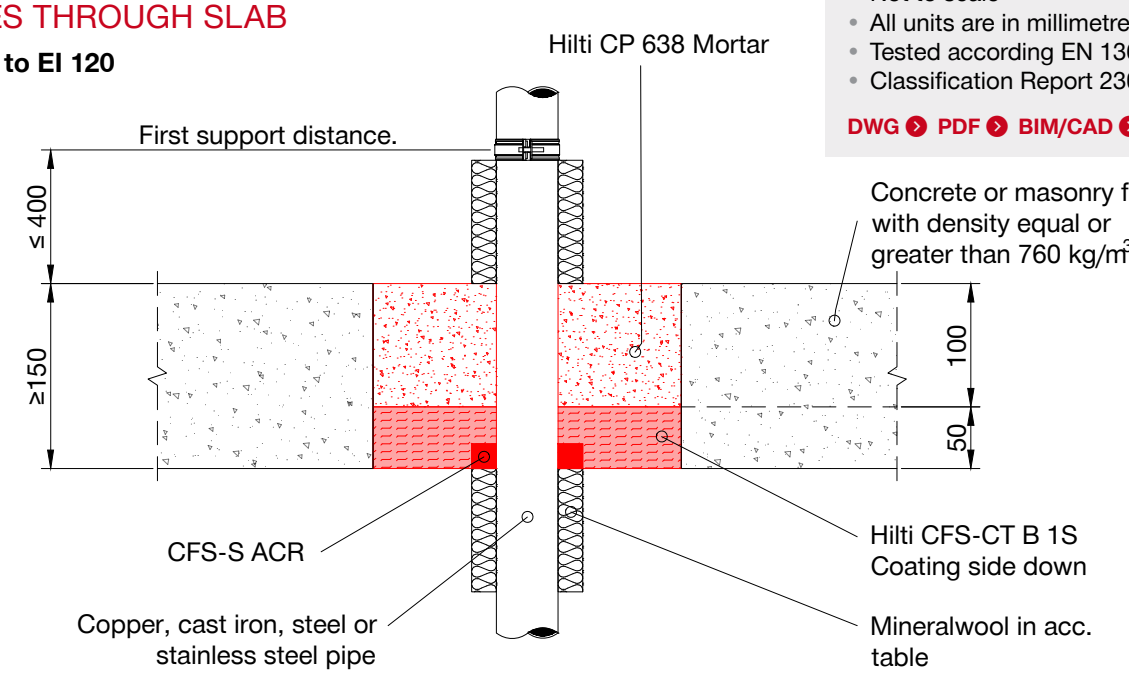
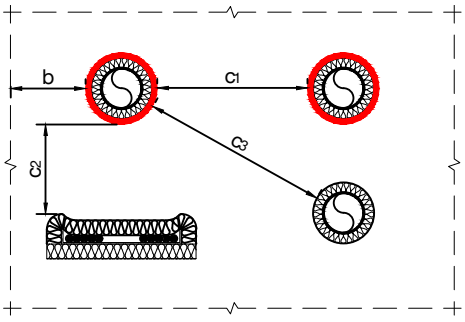


Notes:

1. All gaps around services and coated board edges filled with Hilti Firestop Acrylic Sealant CFS-S ACR

Metal pipes with local interrupted insulation Rockwool Roclap H&V Section

Material	Diameter	Min. wall thickness	Localy sustained: Rockwool Roclap Thickness	Length on both sides of the floor	Fire rating in mixed opening
Copper, cast iron, steel, stainless steel.	≤ 28	0.9	40	≥ 800	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 54	1.2	40	≥ 800	EI 120-C/U
Copper, cast iron, steel, stainless steel.	≤ 108	1.5	40	≥ 800	EI 120-C/U
Cast iron, steel, stainless steel.	≤ 165	5	40	≥ 800	EI 120-C/U



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-S ACR	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

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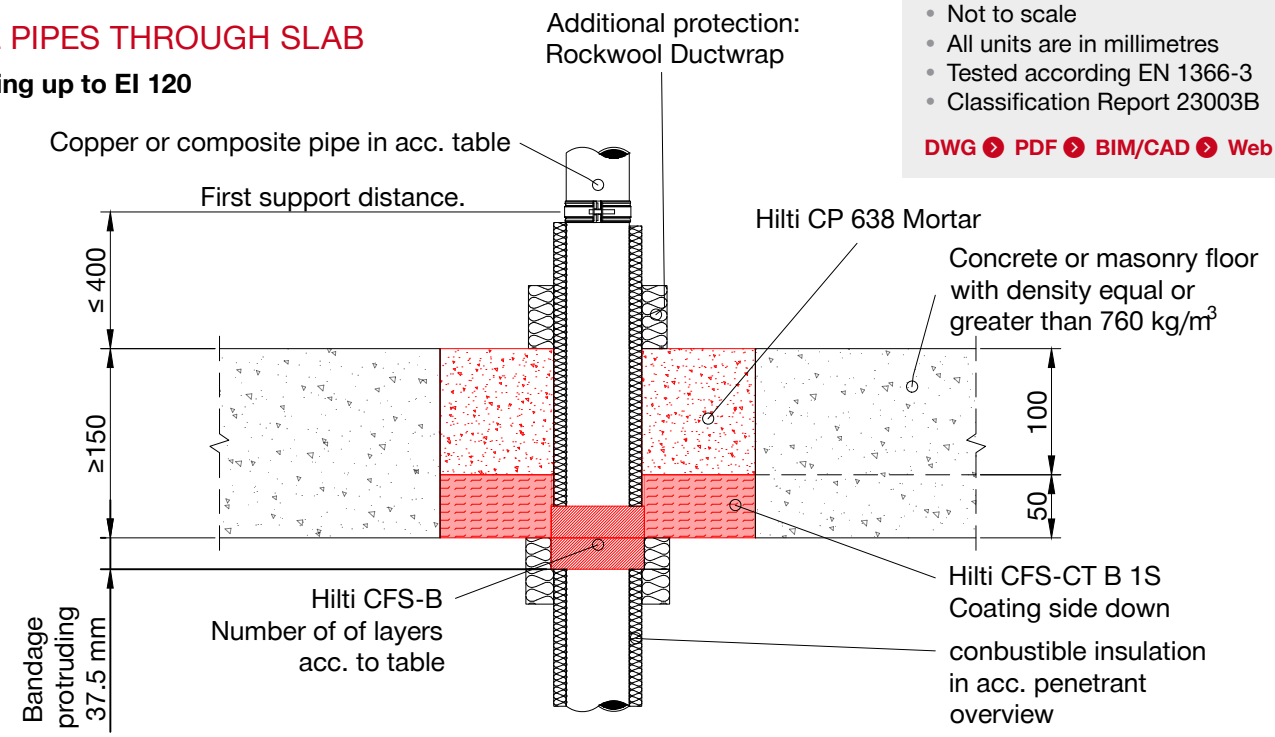
CP638: MP-RF-M-06

METAL PIPES THROUGH SLAB

Fire Rating up to EI 120

Information
- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification Report 23003B

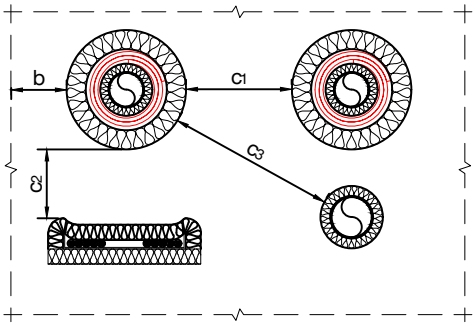
DWG PDF BIM/CAD Web



Notes:

1. All gaps around services and coated board edges filled with Hilti Firestop Acrylic Sealant CFS-S ACR

Number of layers	Diameter	Min. wall thickness	Continued sustained insulation thickness	Additional protection: thickness x length	Fire rating in mixed opening
Copper, steel and stainless steel pipes insulated with combustible insulation Armaflex AF					
1	≤ 28	0.9	9 to 32	40 x 250	EI 120-C/U
1	≤ 54	1.2	19 to 32	40 x 250	EI 120-C/U
1	≤ 108	1.5	19 to 32	40 x 250	EI 90-C/U
1	≤ 108	1.5	19	40 x 250	EI 120-C/U
Copper, steel and stainless steel pipes insulated with combustible insulation Kingspan Kooltherm					
1	≤ 28	0.9	15 to 40	25 x 250	EI 120-C/U
1	≤ 54	1.2	15 to 40	25 x 250	EI 120-C/U
1	≤ 108	1.5	20 to 30	25 x 250	EI 120-C/U
Uponor Uni Pipe MLCP insulated with Armaflex AF					
2	50 to 110	4.5 to 10	9 to 32	25 x 250	EI 120-C/U



Spacing overview for mixed seals

Description	Shortcut	Distance
To seal edge	b	≥ 50 mm
To other pipes with CFS-B	c_1	≥ 38 mm
To cables with CFS-IS	c_2	≥ 38 mm
To any other services	c_3	≥ 100 mm

Maximum opening size without additional support: 2000 x 1800 mm
or reduced width, with up-to 10m length. See classification report for further details.

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CHANGE LOG

Date	Description
30/01/2025	Update of Applications navigation page to include mixed penetration type and classification information
31/01/2025	Amendment of CP638: MP-RF-M-06 insulation description

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