



PRODUCT PACK

CP-645 Firestop insulated sleeve

CR-181-25-AUPE

[TECHNICAL DATA](#) ➤

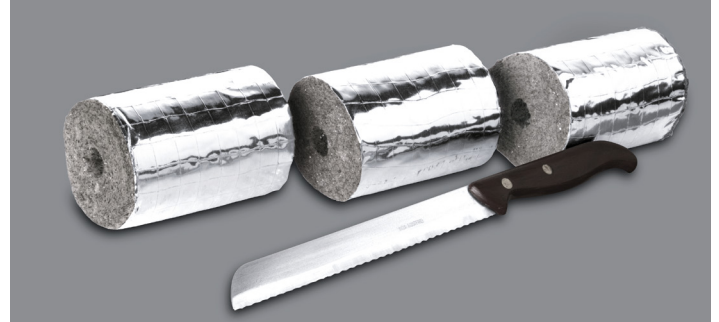
[APPLICATIONS](#) ➤

[CHANGE LOG](#) ➤



CP 645 intumescent fire sleeve

Sealing of insulated metal pipes and combustible pipes up to 2 hours



Applications

- Combustible pipes (PVC, PE, PE-X, ABS, SAN+PVC up to 160mm)
- cPVC pipes Spears FlameGuard, VikingsPlastic Blazemaster
- Copper and steel pipes with combustible insulation

Advantages

- Simple to install, No fixings – no special tools
- Maintains vapour seal of existing insulation
- One sleeve can replace up to 6 collars
- Approved for use in single skin walls

Technical data

Fire rating	Up-to EI 120
Density	250 kg/m ³
Acoustics performance	Up to 63 dB
Thickness mineral wool	27.5 mm
Thermal insulation	0.035 at 10°C
Moisture vapour permeability	<1 g/m ² /24 hrs
Spread of flame	Category I as per BS476, p.7

Order description	Package contents	Package quantity	Item number
Firestop sleeve CP 645-17	Fire sleeve-17 mm bore	6 pc	00284690
Firestop sleeve CP 645-21	Fire sleeve-21 mm bore	6 pc	00284691
Firestop sleeve CP 645-27	Fire sleeve-27 mm bore	6 pc	00284692
Firestop sleeve CP 645-34	Fire sleeve-34 mm bore	6 pc	00284693
Firestop sleeve CP 645-42	Fire sleeve 42-mm bore	6 pc	00284694
Firestop sleeve CP 645-48	Fire sleeve 48-mm bore	6 pc	00284695
Firestop sleeve CP 645-54	Fire sleeve-54 mm bore	6 pc	00284696
Firestop sleeve CP 645-60	Fire sleeve-60 mm bore	6 pc	00284697
Firestop sleeve CP 645-67	Fire sleeve-67 mm bore	6 pc	00284698
Firestop sleeve CP 645- 76	Fire sleeve-76 mm bore	6 pc	00284699
Firestop sleeve CP 645-80	Fire sleeve-BO mm bore	6 pc	00284700
Firestop sleeve CP 645-89	Fire sleeve-89 mm bore	6 pc	00284701
Firestop sleeve CP 645-102	Fire sleeve-102 mm bore	6 pc	00284702
Firestop sleeve CP 645-108	Fire sleeve-108 mm bore	6 pc	00284703
Firestop sleeve CP 645-114	Fire sleeve-114 mm bore	6 pc	00284704
Firestop sleeve CP 645-127	Fire sleeve-127 mm bore	6 pc	00284705
Firestop sleeve CP 645-140	Fire sleeve-140 mm bore	6 pc	00284706
Firestop sleeve CP 645-159	Fire sleeve-159 mm bore	6 pc	00284707
Firestop sleeve CP 645-169	Fire sleeve-169 mm bore	6 pc	00284708

Installation instructions

Notice

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

Application of firestop system

1. Cut CP 645 Fire Sleeve to the required length, based on the wall thickness. 25 mm overhang is required.
2. Make a single cut along Sleeve length to allow fitting around pipe.
3. Fit Sleeve around pipe and seal the cut with repair tape supplied with the product.
4. Slide CP 645 Fire Sleeve along pipe and into cavity. Ensure the section of the sleeve that has been cut and taped is positioned at the bottom of the opening. Tape Sleeve to existing insulation if required. Mark with identification plate supplied – if required.

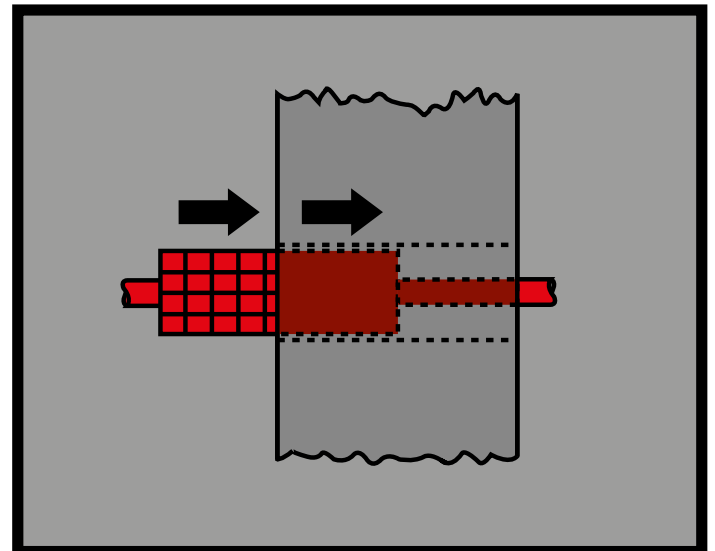
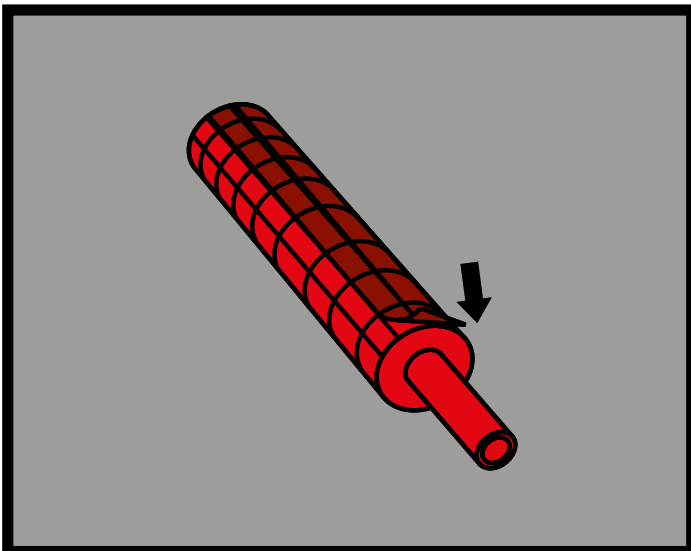
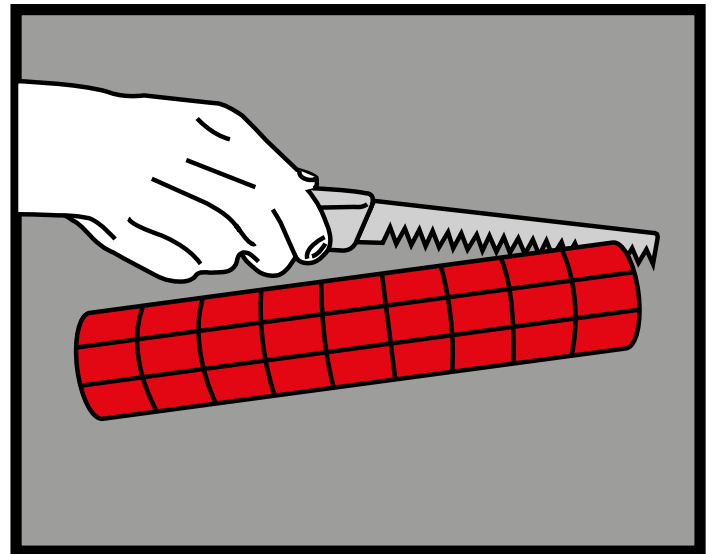
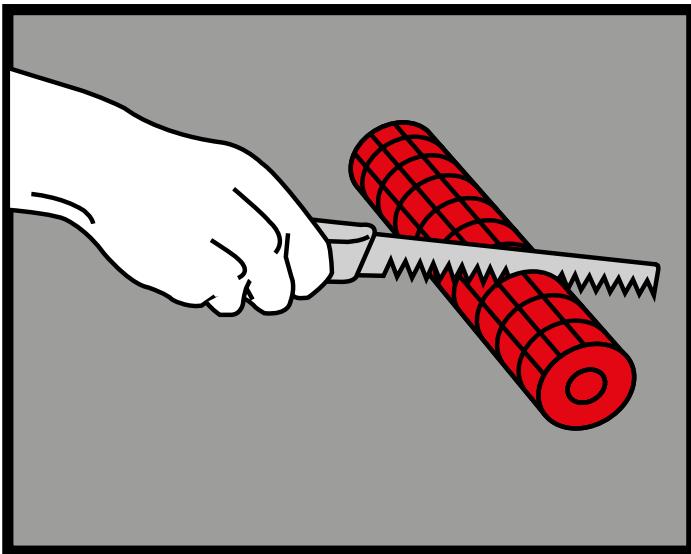
Application of firestop system

N.B.: For irregular holes or gaps around the CP 645 Fire Sleeve fill with:

- CFS-S ACR Acrylic Firestop Sealant.

Storage

- Store only in the original packaging in a location protected from moisture



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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

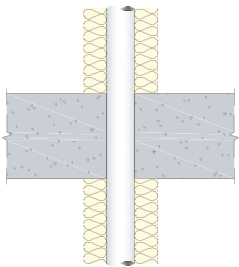
CLASSIFICATION

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).

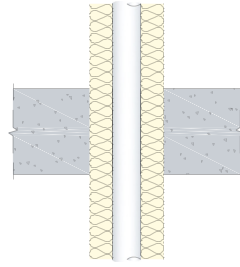
PRODUCT/DETAIL

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

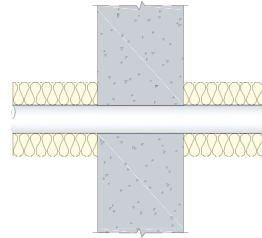
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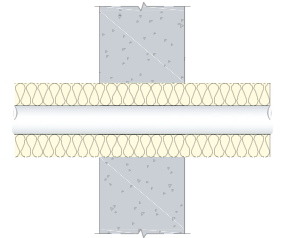
Continued Interrupted (CI)



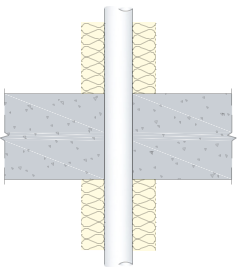
Continued Sustained (CS)



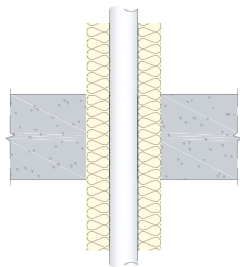
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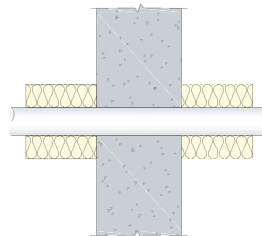
Continued Sustained (CS)



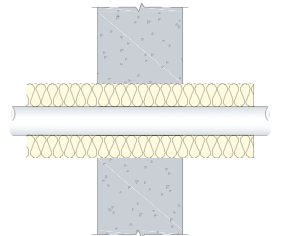
Local Interrupted (LI)



Local Sustained (LS)



Local Interrupted (LI)



Local Sustained (LS)

Single board drywall	Double board drywall	Rigid wall	Timber wall	Sandwich panel	Rigid floor	Timber floor	Metal deck	Linear joints		
Mechanical			Electrical			HVAC				
Min. base material thickness	Material	Pipes ¹ Size	N/C	Insulation ¹		Penetration type ¹			Classification ¹	Product/Detail ¹
				C	None	Single	Multi	Mixed		
≥ 75	PVC-U, PE, PE-X, ABS, SAN+PVC	Ø ≤ 40 to 160			✓	✓			≤ EI 45	CP645:FW-75-M-01 ¹
≥ 75	C-PVC (Blazemaster, Spears FlameGuard)	Ø ≤ 26.7 to 48.3			✓	✓			EI 45	CP645:FW-75-M-01 ¹
≥ 75	Copper + Armaflex AF CS, Kooltherm CS	Ø ≤ 12 to 54			✓		✓		EI 45	CP645:FW-75-M-02 ¹



Single board drywall	Double board drywall	Rigid wall	Timber wall	Sandwich panel	Rigid floor	Timber floor	Metal deck	Linear joints		
Mechanical			Electrical			HVAC				
Min. base material thickness	Material	Pipes ¹ Size	N/C	Insulation ¹		Penetration type ¹			Classification ¹	Product/Detail ¹
				C	None	Single	Multi	Mixed		
≥ 100	PVC-U, PE, PE-X, ABS, SAN+PVC	Ø ≤ 40 to 160			✓	✓			≤ EI 120	CP645:FW-100-M-01
≥ 100	C-PVC (Blazemaster, Spears FlameGuard)	Ø ≤ 26.7 to 60.3			✓	✓			EI 120	CP645:FW-100-M-01
≥ 100	Copper + Kooltherm CS	Ø ≤ 12 to 54			✓		✓		EI 60	CP645:FW-100-M-02



Single board drywall	Double board drywall	Rigid wall	Timber wall	Sandwich panel	Rigid floor	Timber floor	Metal deck	Linear joints		
Mechanical			Electrical			HVAC				
Min. base material thickness	Material	Pipes ¹	N/C	Insulation ¹		Penetration type ¹			Classification ¹	Product/Detail ¹
		Size		C	None	Single	Multi	Mixed		
≥ 75	PVC-U	Ø ≤ 40 to 160			✓	✓			EI 45	CP645:FW-75-M-01
≥ 75	PE, PE-X, ABS, SAN+PVC	Ø ≤ 40 to 160			✓	✓			EI 45	CP645:FW-75-M-01
≥ 75	C-PVC (Blazemaster, Spears FlameGuard)	Ø ≤ 26.7 to 48.3			✓	✓			EI 45	CP645:FW-75-M-01
≥ 75	Copper + Armaflex AF CS	Ø ≤ 12 to 54		✓		✓			EI 45	CP645:FW-75-M-02
≥ 75	Copper + Kooltherm CS	Ø ≤ 12 to 54		✓		✓			EI 45	CP645:FW-75-M-02
≥ 100	PVC-U	Ø ≤ 40 to 160			✓	✓			≤ EI 120	CP645:FW-100-M-01
≥ 100	PE, PE-X, ABS, SAN+PVC	Ø ≤ 40 to 160			✓	✓			≤ EI 120	CP645:FW-100-M-01
≥ 100	C-PVC (Blazemaster, Spears FlameGuard)	Ø ≤ 26.7 to 48.3			✓	✓			EI 120	CP645:FW-100-M-01
≥ 100	Copper + Kooltherm CS	Ø ≤ 12 to 54		✓		✓			EI 60	CP645:FW-100-M-02



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CP645:FW-75-M-01

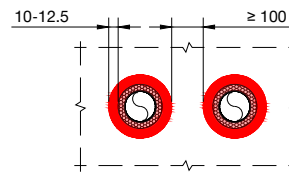
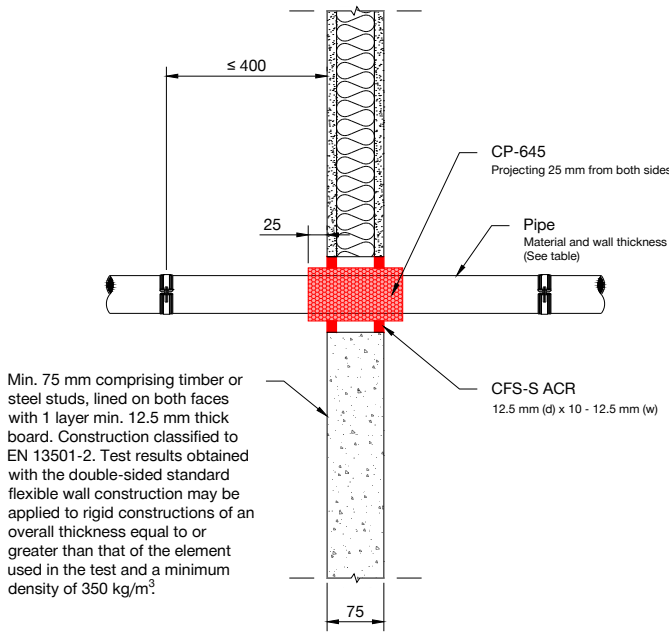
Combustible pipes in flexible wall 75 mm

Fire rating up to EI 60 U/U – E 60 U/U

Information

- Not to scale
- All units are in millimetres
- Tested according to EN 1366-3
- Classification CR-181-25-AUPE

DWG [▶](#) PDF [▶](#) BIM/CAD [▶](#) Web [▶](#)



* ≥ 100 mm to other penetration seals.
** ≥ 200 mm to any other openings.

Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 Ø	Classification	
PVC-U (in accordance with EN 1329-1, EN 1453-1, EN ISO 15493 and EN ISO 1452-2 and for pipes made of PVC-C in accordance with EN 1566-1, EN ISO 15493 and EN ISO 15877-2)	Ø ≤ 40	1.8	42	EI 45 U/C	E 60 U/C
	Ø ≤ 110	4.2 - 6.6	108	EI 45 U/U	E 60 U/U
	Ø ≤ 160	6.2 - 9.5	159	EI 45 U/C	E 60 U/C
PE (in accordance with EN 1519-1, EN 12666-1, EN 12201-2 and EN ISO 15494, PE-X pipes in accordance with EN ISO 15875-2, ABS pipes in accordance with EN 1455-1 and EN ISO 15493 as well as SAN+PVC pipes in accordance with ISO 19220)	Ø 40	3.0	42	EI 45 U/U	E 60 U/U
	Ø 110	4.2	108	EI 60 U/U	E 60 U/U
	Ø 40	3.0	42	EI 60 U/C	E 60 U/C
	Ø 110	4.2	108	EI 45 U/C	E 60 U/C
	Ø 160	6.2 - 9.9	159	EI 45 U/C	E 60 U/C
C-PVC BlazeMaster	Ø 26.7	2.3	27	EI 45 U/C	E 60 U/C
	Ø 33.4	2.7	34	EI 60 U/C	E 60 U/C
	Ø 42.2	3.4	42	EI 45 U/C	E 60 U/C
	Ø 48.3	3.8	48	EI 45 U/C	E 60 U/C
C-PVC Spears FlameGuard	Ø 26.7	2.1	27	EI 45 U/C	E 60 U/C
	Ø 33.4	2.5	34	EI 45 U/C	E 60 U/C
	Ø 42.2	3.1	42	EI 45 U/C	E 60 U/C
	Ø 48.3	3.6	48	EI 45 U/C	E 60 U/C

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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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CP645:FW-75-M-02

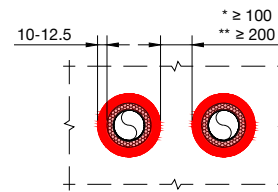
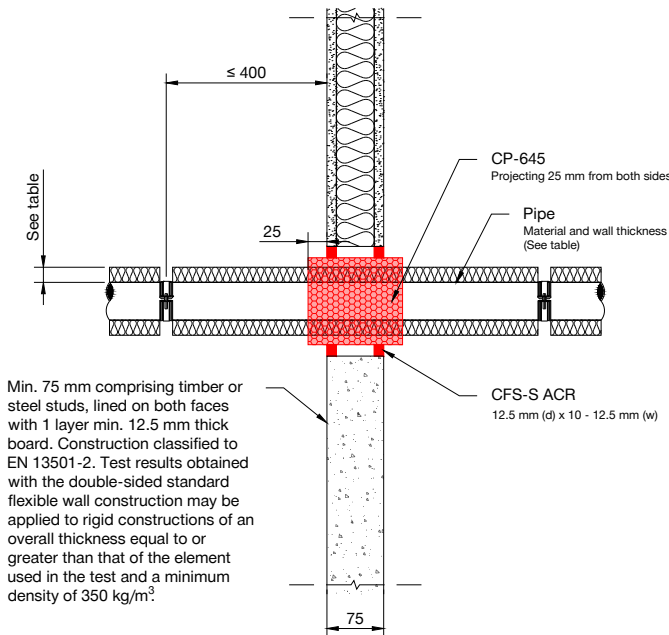
Non-combustible pipes with combustible insulation flexible wall 75 mm

Fire rating up to EI 45 C/U – E 60 C/U

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Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 \varnothing	Insulation thickness	Classification	
Copper pipe with combustible insulation: Armaflex AF	$\varnothing \leq 12$	≥ 0.6	28 – 76	9 – 32	EI 45 C/U	E 60 C/U
	$\varnothing \leq 54$	≥ 1.2	80 – 127	13 – 32	EI 45 C/U	E 60 C/U
Copper pipe with combustible insulation: Kingspan Kooltherm	$\varnothing \leq 12$	≥ 0.6	54	40	EI 45 C/U	E 60 C/U
	$\varnothing \leq 54$	≥ 1.2	102 – 140	20 – 40	EI 45 C/U	E 60 C/U

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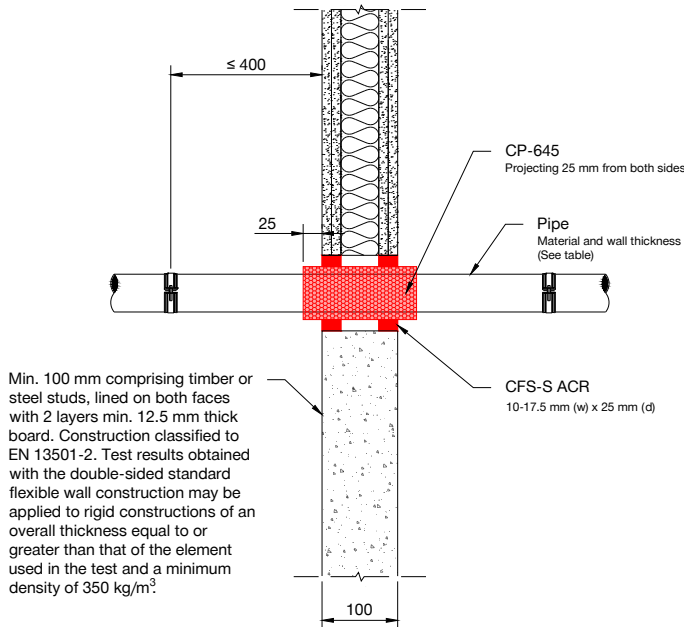
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CP645:FW-100-M-01

Combustible pipes in flexible wall 100 mm

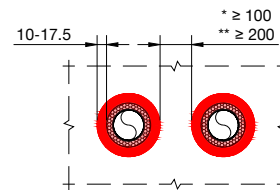
Fire rating up to EI 120 –E 120



Information

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- ** ≥ 200 mm to other openings.

Notes:

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- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 \emptyset	Classification	
PVC-U (in accordance with EN 1329-1, EN 1453-1, EN ISO 15493 and EN ISO 1452-2 and for pipes made of PVC-C in accordance with EN 1566-1, EN ISO 15493 and EN ISO 15877-2)	$\emptyset \leq 40$	1.8	42	EI 120 U/U	E 120 U/U
	$\emptyset \leq 110$	4.2	108	EI 120 U/C	E 120 U/C
	$\emptyset \leq 110$	6.6	108	EI 90 U/U	E 90 U/U
	$\emptyset \leq 110$	4.2 - 6.6	108	EI 60 U/U	E 90 U/U
	$\emptyset \leq 160$	6.2 - 9.5	159	EI 120 U/C	E 120 U/C
PE (in accordance with EN 1519-1, EN 12666-1, EN 12201-2 and EN ISO 15494, PE-X pipes in accordance with EN ISO 15875-2, ABS pipes in accordance with EN 1455-1 and EN ISO 15493 as well as SAN+PVC pipes in accordance with ISO 19220)	$\emptyset 40$	3.0	42	EI 120 U/U	E 120 U/U
	$\emptyset 110$	4.2	108	EI 90 U/U	E 90 U/U
	$\emptyset 110$	4.2 - 10.5	108	EI 60 U/C	E 90 U/C
	$\emptyset 160$	9.9	159	EI 120 U/C	E 120 U/C
	$\emptyset 26.7$	2.3	27	EI 120 U/C	E 120 U/C
C-PVC BlazeMaster	$\emptyset 33.4$	2.7	34	EI 120 U/C	E 120 U/C
	$\emptyset 42.2$	3.4	42	EI 120 U/C	E 120 U/C
	$\emptyset 48.3$	3.8	48	EI 120 U/C	E 120 U/C
	$\emptyset 60.3$	4.7	60	EI 120 U/C	E 120 U/C
	$\emptyset 26.7$	2.1	27	EI 120 U/C	E 120 U/C
C-PVC Spears FlameGuard	$\emptyset 33.4$	2.5	34	EI 120 U/C	E 120 U/C
	$\emptyset 42.2$	3.1	42	EI 120 U/C	E 120 U/C
	$\emptyset 48.3$	3.6	48	EI 120 U/C	E 120 U/C
	$\emptyset 60.3$	4.7	60	EI 120 U/C	E 120 U/C

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CP645:FW-100-M-02

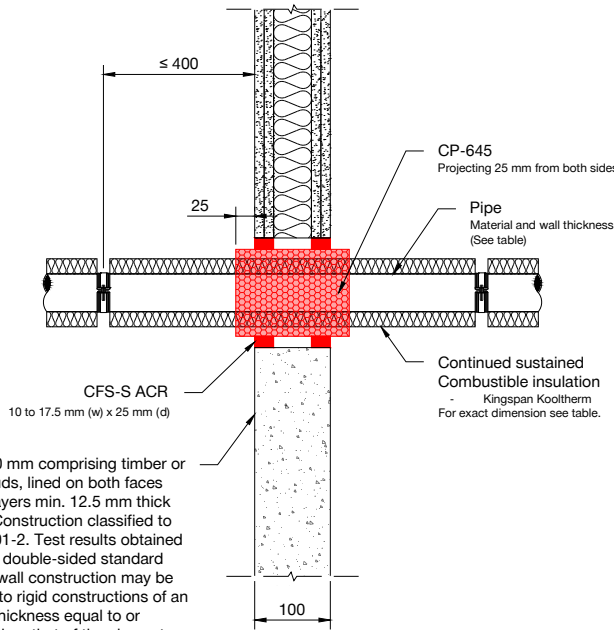
Non-combustible pipes with combustible insulation flexible wall 100 mm

Fire rating up to EI 60 – E 90

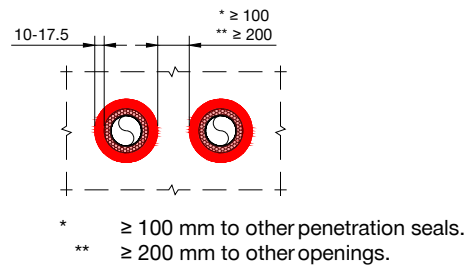
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Min. 100 mm comprising timber or steel studs, lined on both faces with 2 layers min. 12.5 mm thick board. Construction classified to EN 13501-2. Test results obtained with the double-sided standard flexible wall construction may be applied to rigid constructions of an overall thickness equal to or greater than that of the element used in the test and a minimum density of 350 kg/m³.



Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 Ø	Insulation thickness	Classification
Copper pipe	Ø ≤ 12	≥ 0.6	54 – 102	20 – 40	EI 60 C/U E 90 C/U
Metal (hmp) with combustible insulation - Kingspan Kooltherm - CS	Ø ≤ 54	≥ 1.2	102 – 140	20 – 40	EI 60 C/U E 90 C/U

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CP645:FW-75-M-01

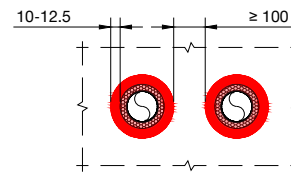
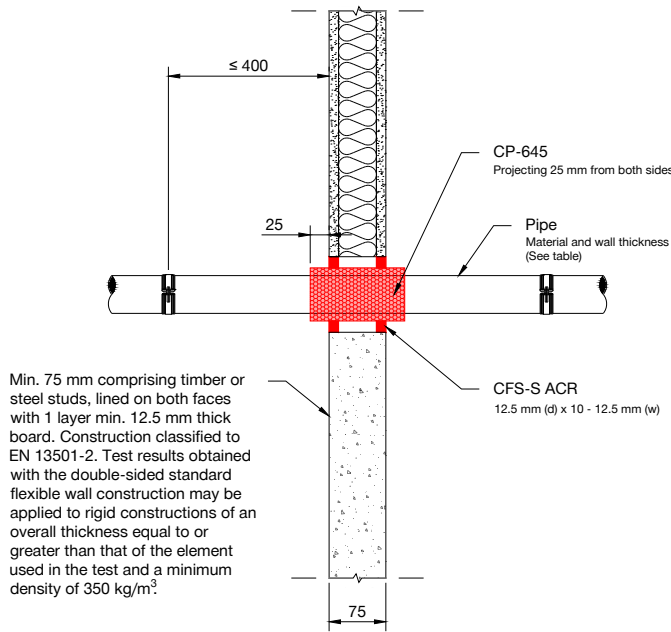
Combustible pipes in flexible wall 75 mm

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Material	Diameter	Wall thickness	CP-645 Ø	Classification	
PVC-U (in accordance with EN 1329-1, EN 1453-1, EN ISO 15493 and EN ISO 1452-2 and for pipes made of PVC-C in accordance with EN 1566-1, EN ISO 15493 and EN ISO 15877-2)	Ø ≤ 40	1.8	42	EI 45 U/C	E 60 U/C
	Ø ≤ 110	4.2	108	EI 45 U/C	E 60 U/C
	Ø ≤ 110	4.2 - 6.6	108	EI 45 U/U	E 60 U/U
	Ø ≤ 160	6.2 - 9.5	159	EI 45 U/C	E 60 U/C
PE (in accordance with EN 1519-1, EN 12666-1, EN 12201-2 and EN ISO 15494, PE-X pipes in accordance with EN ISO 15875-2, ABS pipes in accordance with EN 1455-1 and EN ISO 15493 as well as SAN+PVC pipes in accordance with ISO 19220)	Ø 40	3.0	42	EI 45 U/U	E 60 U/U
	Ø 110	4.2	108	EI 60 U/U	E 60 U/U
	Ø 40	3.0	42	EI 60 U/C	E 60 U/C
	Ø 110	4.2	108	EI 45 U/C	E 60 U/C
	Ø 160	6.2 - 9.9	159	EI 45 U/C	E 60 U/C
C-PVC BlazeMaster	Ø 26.7	2.3	27	EI 45 U/C	E 60 U/C
	Ø 33.4	2.7	34	EI 60 U/C	E 60 U/C
	Ø 42.2	3.4	42	EI 45 U/C	E 60 U/C
	Ø 48.3	3.8	48	EI 45 U/C	E 60 U/C
	Ø 26.7	2.1	27	EI 45 U/C	E 60 U/C
C-PVC Spears FlameGuard	Ø 33.4	2.5	34	EI 45 U/C	E 60 U/C
	Ø 42.2	3.1	42	EI 45 U/C	E 60 U/C
	Ø 48.3	3.6	48	EI 45 U/C	E 60 U/C

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4. All services are to be correctly and adequately supported to prevent collapse and distortion.

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CP645:FW-75-M-02

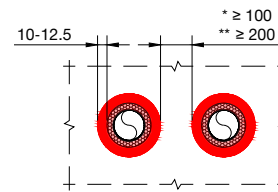
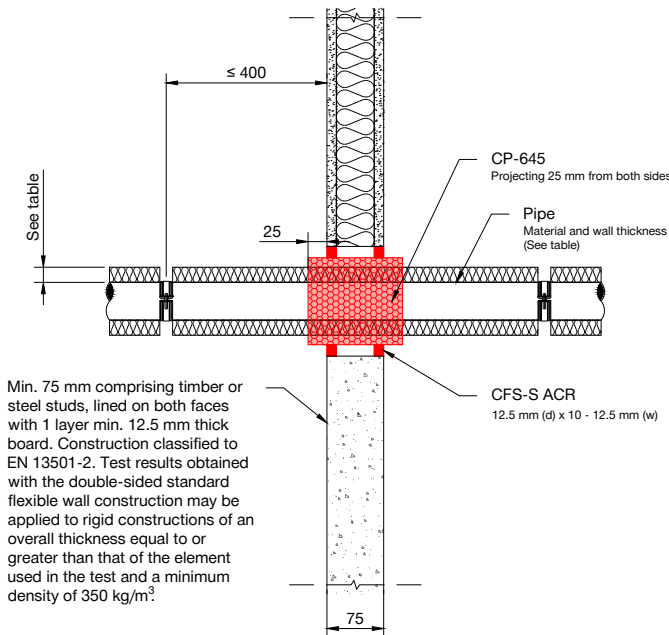
Non-combustible pipes with combustible insulation flexible wall 75 mm

Fire rating up to EI 45 C/U – E 60 C/U

Information

- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification CR-181-25-AUPE

DWG ▶ PDF ▶ BIM/CAD ▶ Web ▶



* ≥ 100 mm to other penetration seals.
 ** ≥ 200 mm to other openings.

Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 Ø	Insulation thickness	Classification	
Copper pipe with combustible insulation: Armaflex AF	Ø ≤ 12	≥ 0.6	28 – 76	9 – 32	EI 45 C/U	E 60 C/U
	Ø ≤ 54	≥ 1.2	80 – 127	13 – 32	EI 45 C/U	E 60 C/U
Copper pipe with combustible insulation: Kingspan Kooltherm	Ø ≤ 12	≥ 0.6	54	40	EI 45 C/U	E 60 C/U
	Ø ≤ 54	≥ 1.2	102 – 140	20 – 40	EI 45 C/U	E 60 C/U

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CP645:FW-100-M-01

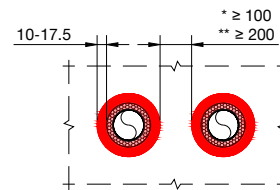
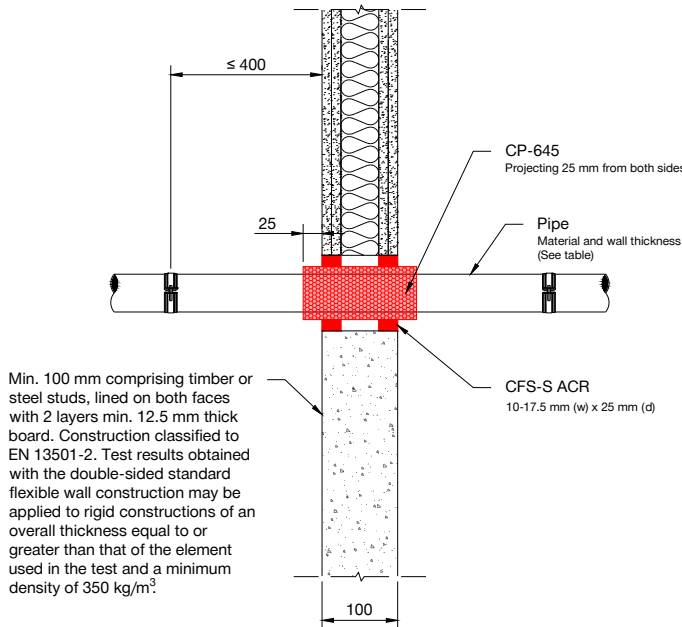
Combustible pipes in flexible wall 100 mm

Fire rating up to EI 120 –E 120

Information

- Not to scale
- All units are in millimetres
- Tested according to EN 1366-3
- Classification CR-181-25-AUPE

DWG ▶ PDF ▶ BIM/CAD ▶ Web ▶



- * ≥ 100 mm to other penetration seals.
- ** ≥ 200 mm to other openings.

Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 Ø	Classification	
PVC-U (in accordance with EN 1329-1, EN 1453-1, EN ISO 15493 and EN ISO 1452-2 and for pipes made of PVC-C in accordance with EN 1566-1, EN ISO 15493 and EN ISO 15877-2)	Ø ≤ 40	1.8	42	EI 120 U/C	E 120 U/C
	Ø ≤ 40	1.8	42	EI 120 U/U	E 120 U/U
	Ø ≤ 110	4.2	159	EI 120 U/C	E 120 U/C
	Ø ≤ 110	4.2	108	EI 60 U/U	E 60 U/U
	Ø ≤ 110	6.6	108	EI 90 U/U	E 90 U/U
	Ø ≤ 110	4.2 - 6.6	108	EI 60 U/U	E 90 U/U
PE (in accordance with EN 1519-1, EN 12666-1, EN 12201-2 and EN ISO 15494, PE-X pipes in accordance with EN ISO 15875-2, ABS pipes in accordance with EN 1455-1 and EN ISO 15493 as well as SAN+PVC pipes in accordance with ISO 19220)	Ø 40	3.0	42	EI 120 U/U	E 120 U/U
	Ø 110	4.2	108	EI 90 U/U	E 90 U/U
	Ø 40	3.0	42	EI 120 U/C	E 120 U/C
	Ø 110	4.2 - 10.5	108	EI 60 U/C	E 90 U/C
	Ø 160	9.9	159	EI 120 U/C	E 120 U/C
C-PVC BlazeMaster	Ø 26.7	2.3	27	EI 120 U/C	E 120 U/C
	Ø 33.4	2.7	34	EI 120 U/C	E 120 U/C
	Ø 42.2	3.4	42	EI 120 U/C	E 120 U/C
	Ø 48.3	3.8	48	EI 120 U/C	E 120 U/C
	Ø 60.3	4.7	60	EI 120 U/C	E 120 U/C
C-PVC Spears FlameGuard	Ø 26.7	2.1	27	EI 120 U/C	E 120 U/C
	Ø 33.4	2.5	34	EI 120 U/C	E 120 U/C
	Ø 42.2	3.1	42	EI 120 U/C	E 120 U/C
	Ø 48.3	3.6	48	EI 120 U/C	E 120 U/C
	Ø 60.3	4.7	60	EI 120 U/C	E 120 U/C

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CP645:FW-100-M-02

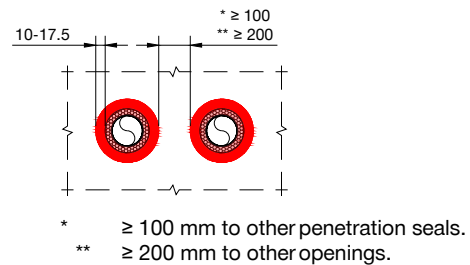
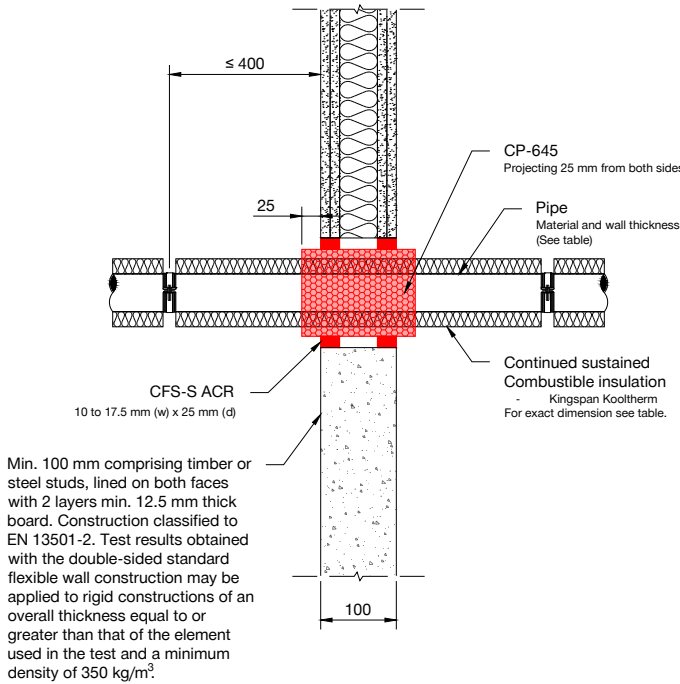
Non-combustible pipes with combustible insulation flexible wall 100 mm

Fire rating up to EI 60 – E 90

Information

- Not to scale
- All units are in millimetres
- Tested according EN 1366-3
- Classification CR-181-25-AUPE

DWG ▶ PDF ▶ BIM/CAD ▶ Web ▶



Notes:

- All services are passing through the penetration seals, perpendicular to the supporting construction.
- **Maximum distance to 1st rigid support: ≤ 400 mm.**
- Intumescent fire sleeve cut crosswise to the correct length and longitudinally as per the diameter of individual service.

Material	Diameter	Wall thickness	CP-645 Ø	Insulation thickness	Classification
Copper pipe	Ø ≤ 12	≥ 0.6	54 – 102	20 – 40	EI 60 C/U E 90 C/U
Metal (hmp) with combustible insulation - Kingspan Kooltherm - CS	Ø ≤ 54	≥ 1.2	102 – 140	20 – 40	EI 60 C/U E 90 C/U

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