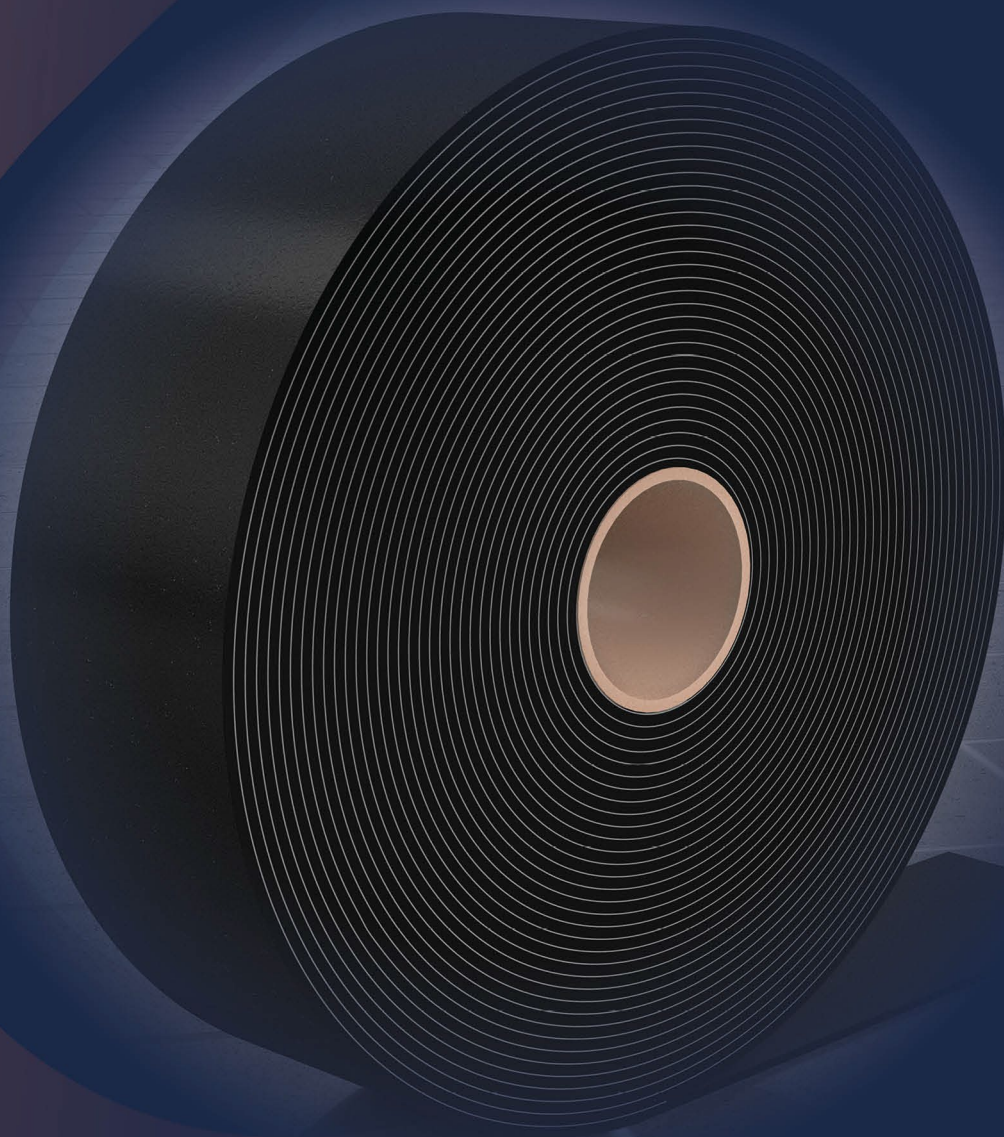


INTU FR WRAP L

Intumescent pipe roll

TECHNICAL DATA SHEET



CE

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INTU FR WRAP L

Intumescent pipe roll

PRODUCT DESCRIPTION

The **INTU FR WRAP L** fire protection tape is made of a graphite-based material which swells during a fire, preventing the spread of fire and creating a barrier that ensures the partition remains tight and insulated up to EI 240.

APPLICATION

INTU FR WRAP L tape is used for fire protection of plastic, composite and multi-layer composite pipes passing through fire separation barriers, either individually or in bundles, as well as combustible and non-combustible pipes in insulation.



Flexible wall:	The wall should be at least 100 mm thick. It should be made of double-sided cladding consisting of at least two plasterboard panels.
Rigid wall:	The wall should be at least 100 mm thick. It should be made of concrete or masonry elements with a density of not less than 450 kg/m ³ .
Rigid ceiling:	The ceiling should be at least 150 mm thick. It should be made of concrete, reinforced concrete or aerated concrete with a density of at least 550 kg/m ³ .

AVAILABILITY

Product	Type	Delivery form	Article number
INTU FR WRAP L	60 mm x 10 mb	1 pcs	1006010000
	60 mm x 10 mb (TS)	1 pcs	1006010001
	60 mm x 25 mb	1 pcs	1006025000
	60 mm x 25 mb (TS)	1 pcs	1006025001
	100 mm x 10 mb	1 pcs	1010010000
	100 mm x 10 mb (TS)	1 pcs	1010010001
	100 mm x 25 mb	1 pcs	1010025000
	100 mm x 25 mb (TS)	1 pcs	1010025001

(TS) – INTU FR WRAP L product variant with self-adhesive tape

COMPLIANCE

European Technical Assessment:

ETA-18/0593

Declaration of performance:

DoP 11/2019

Certificate of Constancy of Performance:

1488-CPR-0722/W

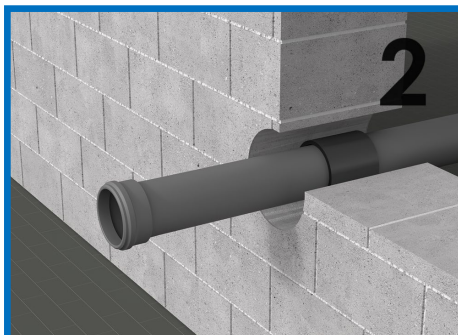
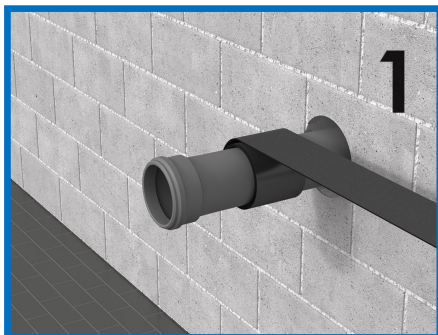


TRANSPORT AND STORAGE

Transport and store in a dry and cool place at a temperature between + 5°C and + 35°C.

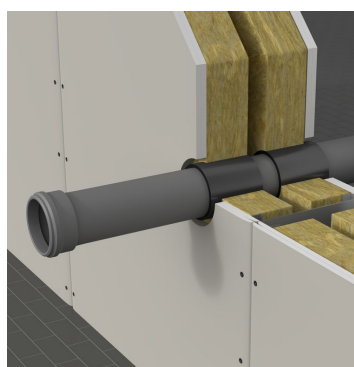
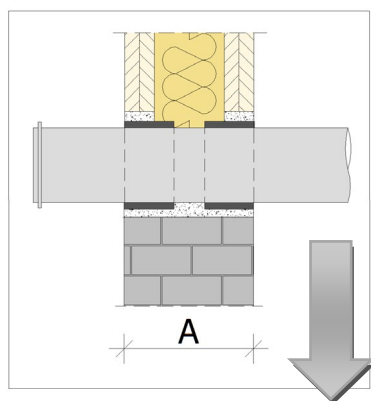
INSTEELLATION

- 1) Prepare the appropriate length of **INTU FR WRAP L** tape (cut a piece from the roll). Wrap the tape around the pipe.
- 2) Insert the tape into the partition.
- 3) Fill the gap with mortar or fireproof compound, e.g. **ALFA FR MASTIC**.

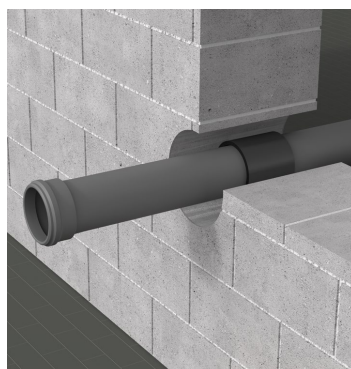
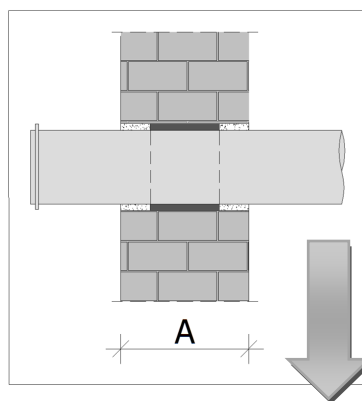


INSTEELLATION DEPENDING ON THE TYPE OF PARTITION

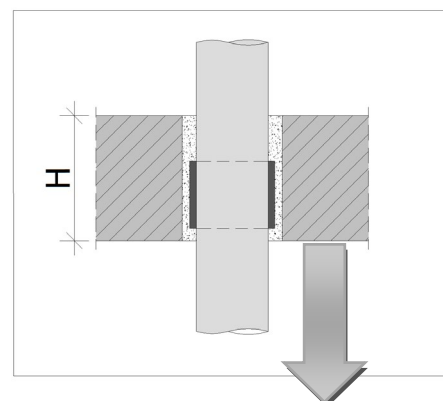
**Rigid or flexible wall
with a thickness of $A \geq 125$ mm**
Two rows of tape on both sides of the wall



**Rigid wall
with a thickness of $A \geq 150$ mm**
One row of tape in the wall axis



Rigid ceiling with a thickness of $H \geq 150$ mm
One row of tape, maximum inSteellation
10 mm from the bottom of the ceiling



INTU FR WRAP L

Intumescent pipe roll

TECHNICAL DATA SHEET



Pipe diameter Ø [mm]	INTU FR WRAP L Length [cm]	Number of layers	Number of pipes wrapped with 1 piece of 10 m
32	10	1	100
40	13	1	79
50	16	1	63
55	18	1	57
63	20	1	50
75	24	1	42
90	58	2	17
110	71	2	14
125	165	4	6
160	264	5	3
200	538	8	1



Pipe Ø [mm]	Insulation thickness [mm]	INTU FR WRAP L Length [cm]	Number of layers	Number of pipes wrapped with 1 piece of 10 m
21,3	9	12	1	80
	13	31	2	32
42,4	9	19	1	52
	13	45	2	22
88,9	13	74	2	13
	25	135	3	7
114,3	25	159	3	6
	50	277	4	3
168,3	25	210	3	4
	50	345	4	2
219,1	50	409	4	2

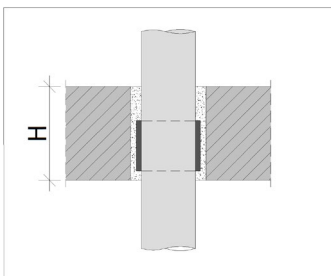
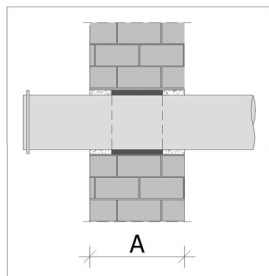
TECHNICAL DATA

Calculation example for INTU FR WRAP L consumption

- Pipe without insulation: $L_{TAPE} = \pi \cdot \varnothing_{PIPE}$
Example for a Ø50 pipe: $L_{TAPE} = \pi \cdot 50 = \sim 160 \text{ mm}$
- Pipe with insulation: $L_{TAPE} = \pi \cdot (\varnothing_{PIPE} + 2 \cdot \text{insulation thickness})$
Example for a Ø21.3 pipe with 9 mm thick insulation: $L_{TAPE} = \pi \cdot (21.3 + 2 \cdot 9) = \sim 130 \text{ mm}$

Colour	Graphite
Category of use	Type Z ₂ : for indoor use, with humidity below 85% RH, not exposed to temperatures below 0°C, rain or UV radiation
Fire reaction class	E
Method used for assessment	EAD 350454-00-1104 'Fire-retardant and fire-resistant products. Sealing of inSteellation openings'
European Technical Assessment	ETA-18 / 0593
Filling gaps	Cement mortar or fireproof compound ALFA FR MASTIC
Large openings	System compatible with ALFA FR BOARD A based on classification report number 01988.2/23/Z00NZP

FIRE CLASSIFICATION



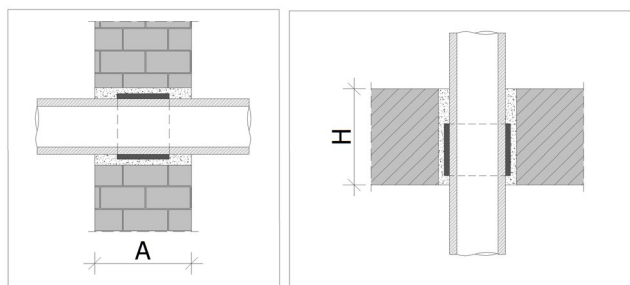
Protect combustible pipe penetrations with one row of tape
in a rigid wall with a thickness of $A \geq 150$ mm
in a rigid ceiling with a thickness of $H \geq 150$ mm

Fig.1-2 p.15

Pipe type	Outer pipe diameter $\varnothing$ [mm]	RIGID WALLS			CEILINGS		
		Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
PVC	$\varnothing \leq 50$	1,8 – 3,6	1 x 1 x 60	EI 240	1,8 – 4,2	1 x 1 x 60	EI 240
		3,7 – 4,2		EI 180			
	$50 < \varnothing \leq 75$	1,9 – 3,5	1 x 1 x 60	EI 180	1,9 – 4,2	1 x 1 x 60	EI 240
		3,6		EI 240			
	$75 < \varnothing \leq 90$	2,1 – 3,5	1 x 2 x 60	EI 120	2,1 – 3,4	1 x 2 x 60	EI 240
		3,6		EI 240	3,5 – 4,2		EI 180
		3,7 – 4,2		EI 180			
	$90 < \varnothing \leq 110$	2,2 – 3,5	1 x 2 x 60	EI 120	2,2	1 x 2 x 60	EI 240
		3,6		EI 240	2,3 – 4,2		EI 180
		3,7 – 4,2		EI 180			
	$110 < \varnothing \leq 125$	3,4 – 6,1	1 x 4 x 100	EI 120	2,5 – 3,9	1 x 4 x 100	EI 120
		6,2	1 x 5 x 100	EI 240	4,0 – 5,3		EI 240
		6,3 – 9,5		EI 180	5,4 – 7,7	1 x 5 x 100	
	$125 < \varnothing \leq 160$	6,2	1 x 5 x 100	EI 240	3,2 – 7,6	1 x 5 x 100	EI 120
		6,3 – 9,5		EI 180	7,7		EI 240
	$160 < \varnothing \leq 170$	5,9	1 x 8 x 100	EI 180	4,4 – 7,6	1 x 6 x 100	EI 120
		6,0 – 6,1	1 x 7 x 100		7,7		EI 240
		6,2 – 9,1	1 x 6 x 100	EI 120			
	$170 < \varnothing \leq 185$	5,9	1 x 8 x 100	EI 180	6,1 – 7,6	1 x 7 x 100	EI 120
		6,0	1 x 7 x 100		7,7		EI 240
		6,1 – 8,4	1 x 6 x 100	EI 120			
	$185 < \varnothing \leq 200$	5,9	1 x 8 x 100	EI 180	7,7	1 x 8 x 100	EI 240
		6,0 – 7,7		EI 120			

Pipe type	Outer pipe diameter Ø [mm]	RIGID WALLS			CEILINGs		
		Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
PE-HD PE ABS SAN+PVC	Ø ≤ 32	2,0 – 6,8	1 x 1 x 60	EI 240	2,0 – 6,8	1 x 1 x 60	EI 240
		6,9 – 10,0		EI 120	6,9 – 10,0	1 x 2 x 60	EI 120
	32 < Ø ≤ 40	2,3 – 6,7	1 x 1 x 60	EI 240	2,2 – 6,8	1 x 1 x 60	EI 240
		6,8		EI 240	6,9 – 10,0	1 x 2 x 60	EI 120
		6,9 – 10,0		EI 120			
	40 < Ø ≤ 50	2,6 – 6,7	1 x 1 x 60	EI 240	2,5 – 6,8	1 x 1 x 60	EI 240
		6,8		EI 240	6,9 – 10,0	1 x 2 x 60	EI 120
		6,9 – 10,0		EI 120			
	50 < Ø ≤ 55	2,7 – 6,7	1 x 1 x 60	EI 240	2,6 – 6,8	1 x 1 x 60	EI 240
		6,8		EI 240	6,9 – 10,0	1 x 2 x 60	EI 120
		6,9 – 10,0		EI 120			
	55 < Ø ≤ 63	2,9 – 6,7	1 x 1 x 60	EI 240	2,8 – 6,8	1 x 1 x 60	EI 240
		6,8		EI 240	6,9 – 10,0	1 x 2 x 60	EI 120
		6,9 – 10,0		EI 120			
	63 < Ø ≤ 75	3,3 – 6,7	1 x 1 x 60	EI 240	3,0 – 6,8	1 x 1 x 60	EI 240
		6,8		EI 240	6,9 – 10,0	1 x 2 x 60	EI 120
		6,9 – 10,0		EI 120			
	75 < Ø ≤ 90	3,7 – 10,0	1 x 2 x 60		3,6 – 5,7	1 x 2 x 60	EI 240
		5,8 – 10,0			EI 120		
		90 < Ø ≤ 110		4,2 – 10,0	1 x 2 x 60	5,7	1 x 2 x 60
	5,8 – 10,0		EI 120				
	110 < Ø ≤ 125					4,8 – 5,8	1 x 4 x 100
		4,8 – 9,4	1 x 4 x 100	EI 120	5,9 – 6,2	EI 120	
		9,5	1 x 5 x 100	EI 180	6,3 – 9,5	1 x 5 x 100	EI 240
					1 x 4 x 100	EI 120	
					1 x 5 x 100	EI 240	
				9,6 – 9,9	1 x 4 x 100	EI 120	
	125 < Ø ≤ 160	6,2 – 9,4	1 x 5 x 100	EI 120	6,2 – 9,5	1 x 5 x 100	EI 240
		9,5		EI 180			
	160 < Ø ≤ 170	6,6 – 9,1	1 x 6 x 100	EI 90			
		9,2 – 10,1		EI 60	6,6 – 10,1	1 x 6 x 100	EI 90
		10,2 -11,0	1 x 7 x 100		10,2 – 11,0	1 x 7 x 100	
		11,1 – 11,9	1 x 8 x 100		11,1 – 11,9	1 x 8 x 100	
	170 < Ø ≤ 185	7,2 – 8,4	1 x 7 x 100	EI 90			
		8,5 – 11,0		EI 60	7,2 – 11,0	1 x 7 x 100	EI 90
		11,1 – 11,9	1 x 8 x 100		11,1 – 11,9	1 x 8 x 100	
	185 < Ø ≤ 200	7,7	1 x 8 x 100	EI 90			
7,8 – 11,9		EI 60		7,7 – 11,9	1 x 8 x 100	EI 90	

Pipe type	Outer pipe diameter Ø [mm]	RIGID WALLS			CEILINGs			
		Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	
PP	Ø ≤ 50	1,8	1 x 1 x 60	EI 240	1,8 – 12,5	1 x 1 x 60	EI 240	
		1,9 – 18,4		EI 180	12,6 – 18,4	1 x 2 x 60		
	50 < Ø ≤ 75	1,9 – 18,4			1,9 – 12,5	1 x 1 x 60		
		2,3 – 18,4			12,6 – 18,4	1 x 2 x 60		
		2,7 – 18,4			2,3 – 18,4			
		2,7 – 18,4			2,7 – 18,4			
	110 < Ø ≤ 125	3,8 – 16,7	1 x 4 x 100	EI 60	3,6 - 3,7	1 x 4 x 100	EI 45	
					3,8 – 14,8		EI 90	
					14,9 – 16,7		EI 45	
	125 < Ø ≤ 160	5,5 – 12,5	1 x 5 x 100		5,5 – 6,1	1 x 5 x 100	EI 45	
					6,2		EI 90	
					6,3 – 12,5		EI 45	
					160 < Ø ≤ 170	6,1 – 11,3		1 x 6 x 100
	170 < Ø ≤ 185	6,9 – 9,5	1 x 7 x 100					
	185 < Ø ≤ 200	7,7	1 x 8 x 100		7,7	1 x 8 x 100		
PE-RT/AI/PE-RT	Ø ≤ 20	2,0 – 7,5	EI 240	2,0	1 x 1 x 60	EI 240		
	20 < Ø ≤ 75			2,1 – 7,5		EI 180		
PE-X	Ø ≤ 20			2,0		7,5		
	PE-X/AI/PE-X			Ø ≤ 20	7,5	EI 120	2,0 – 7,5	1 x 1 x 60
20 < Ø ≤ 75				7,5				
PP-R	Ø ≤ 20			3,4	EI 240			
PP-R/AI/PP-R	Ø ≤ 20	18,3	1 x 1 x 60	3,4 – 12,5		1 x 1 x 60	EI 240	
	20 < Ø ≤ 75			12,6 – 18,4		1 x 2 x 60		
				12,5		1 x 1 x 60		
				12,6 – 18,4		1 x 2 x 60		
75 < Ø ≤ 110	18,4							
PP-R/PP-R-GF/PP-R	Ø ≤ 20	18,3		EI 180	2,8 – 12,5	1 x 1 x 60	EI 240	
	20 < Ø ≤ 75		12,6 – 18,4		1 x 2 x 60			
			12,5		1 x 1 x 60			
			12,6 – 18,4		1 x 2 x 60			
75 < Ø ≤ 110	18,4	1 x 1 x 60						



Protecting insulated non-combustible pipes with a single row of tape
in a rigid wall with a thickness of $A \geq 150$ mm
in a rigid ceiling with a thickness of $H \geq 150$ mm

Fig.3-4 p.16

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS			CEILINGS				
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness s [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class		
Copper	Ø ≤ 15,0	9	1,0 – 1,4	1 x 1 x 60	EI 180	≥ 1,0	1 x 1 x 60	EI 240		
		10 - 22		1 x 2 x 60			1 x 2 x 60			
		23 – 36		1 x 3 x 60			1 x 3 x 60			
		37 - 50		1 x 4 x 60			1 x 4 x 60			
		9	≥ 1,5	1 x 1 x 60	EI 240					
		10 - 22		1 x 2 x 60	EI 180					
		23 – 36		1 x 3 x 60						
		37 - 50		1 x 4 x 60						
	15,0 < Ø ≤ 42,4	9	1,4	1 x 1 x 60	EI 240	≥ 1,4	1 x 1 x 60	EI 120		
		10 - 22	≥ 1,5				1 x 2 x 60		1 x 2 x 60	
		23 – 36	≥ 1,4	1 x 3 x 60	EI 180		1 x 3 x 60			
		37 - 38		1 x 4 x 60	EI 120		1 x 4 x 60			
		39 - 50							EI 180	
		15,0 < Ø ≤ 44,5	9	1,4	1 x 1 x 60	EI 180	≥ 1,4	1 x 1 x 60	EI 120	
			≥ 1,5		EI 240	1 x 2 x 60				
	10 – 19		≥ 1,4	1 x 2 x 60	EI 180	1 x 3 x 60				
	20 - 22			1 x 3 x 60	EI 120	1 x 4 x 60				
	23 - 36			1 x 4 x 60						
	37 - 40									
	41 - 49									
	50						EI 180			
	44,5 < Ø ≤ 54,0	9	≥ 1,5	1 x 1 x 60	EI 240	≥ 1,5	1 x 1 x 60	EI 120		
		10 - 22		1 x 2 x 60	EI 120		1 x 2 x 60			
		23 – 36		1 x 3 x 60			1 x 3 x 60			
		37 - 49		1 x 4 x 60			1 x 4 x 60			
		50								EI 180

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS			
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	
Copper	54,0 < Ø ≤ 57,0	12 – 22	≥ 1,6	1 x 2 x 60	EI 60	
		23 – 36		1 x 3 x 60		
		37 - 50		1 x 4 x 60		
	57,0 < Ø ≤ 63,5	17 – 22		1 x 2 x 60		
		23 – 36		1 x 3 x 60		
		37 - 50		1 x 4 x 60		
	63,5 < Ø ≤ 70,0	23 – 36	≥ 1,7	1 x 3 x 60		
		37 - 50		1 x 4 x 60		
	70,0 < Ø ≤ 76,1	26 – 36	≥ 1,8	1 x 3 x 60		
		37 - 50		1 x 4 x 60		
	76,1 < Ø ≤ 82,5	31 – 36		1 x 3 x 60		
		37 - 50		1 x 4 x 60		
	82,5 < Ø ≤ 88,9	37 - 50	≥ 1,9			
	88,9 < Ø ≤ 101,6	46 - 50	≥ 2,0			
	101,6 < Ø ≤ 108,0	50				

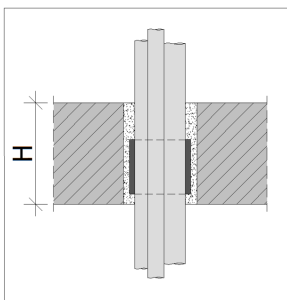
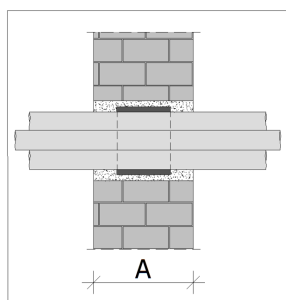
Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS		
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
Copper	Ø ≤ 6,35	9	≥ 0,8	1 x 2 x 60	EI 240
	6,35 < Ø ≤ 15,88		≥ 1,0		EI 180

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS			CEILINGS			
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	
Steel	Ø ≤ 42,4	9	≥ 2,0	1 x 1 x 60	EI 180	≥ 2,0	1 x 1 x 60	EI 240	
		10 - 22		1 x 2 x 60			1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
	42,5 < Ø ≤ 44,5	9	2,1 – 2,5	1 x 1 x 60	EI 180	2,1 – 2,5	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60			1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
		9	≥ 2,6	1 x 1 x 60	EI 240	≥ 2,6	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60	EI 180		1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS			CEILINGs			
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thicknes s [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	
Steel	44,5 < Ø ≤ 54,0	9	2,2- 2,5	1 x 1 x 60	EI 180	2,2- 2,5	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60			1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
		9	≥ 2,6	1 x 1 x 60	EI 240	≥ 2,6	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60	EI 180		1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
	54,0 < Ø ≤ 57,0	9	2,2 – 2,5	1 x 1 x 60	EI 180	2,3 – 2,5	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60			1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
		9	≥ 2,6	1 x 1 x 60	EI 240	≥ 2,6	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60	EI 180		1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
	57,0 < Ø ≤ 63,5	9	2,3 – 2,5	1 x 1 x 60	EI 180	2,4 – 2,5	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60			1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
		9	≥ 2,6	1 x 1 x 60	EI 240	≥ 2,6	1 x 1 x 60	EI 120	
		10 - 22		1 x 2 x 60	EI 180		1 x 2 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
	63,5 < Ø ≤ 70,0	9	≥ 2,4	1 x 1 x 60	EI 240	≥ 2,5	1 x 1 x 60	EI 120	
		10 - 12			EI 180		1 x 2 x 60		EI 180
		13		1 x 2 x 60		2,6	1 x 1 x 60		
		14 - 22				≥ 2,5	1 x 2 x 60	EI 120	
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60	1 x 4 x 60				
	70,0 < Ø ≤ 88,9	9	≥ 2,6	1 x 1 x 60	EI 240	≥ 2,6	1 x 1 x 60	EI 120	
		10 - 12			EI 180			EI 180	
		13		1 x 2 x 60			1 x 2 x 60	EI 120	
		14 - 22					1 x 3 x 60		
		23 - 36		1 x 3 x 60			1 x 3 x 60		
		37 - 50		1 x 4 x 60			1 x 4 x 60		
	88,9 < Ø ≤ 101,6	9	≥ 2,9	1 x 1 x 60	EI 60	≥ 3,1	1 x 1 x 60	EI 120	
		10 - 16		1 x 2 x 60	EI 180		1 x 2 x 60		
		17 - 22					1 x 3 x 60		
		23 - 34		1 x 3 x 60			1 x 3 x 60		
				1 x 4 x 60			1 x 4 x 60		
		35 - 50							

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS			CEILINGS		
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class	Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
Steel	101,6 < Ø ≤ 108	9	≥ 3,0	1 x 1 x 60	EI 60	≥ 3,2	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 180	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 50						
	108 < Ø ≤ 114,3	9	≥ 3,2	1 x 1 x 60	EI 60	≥ 3,3	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 180	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 50						
	114,3 < Ø ≤ 127	9	≥ 3,4	1 x 1 x 60	EI 60	≥ 3,5	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 90	1 x 3 x 60		1 x 3 x 60	
		23 - 31			1 x 4 x 60		1 x 4 x 60	
		32 - 50			EI 180			
	127 < Ø ≤ 133	9	≥ 3,5	1 x 1 x 60	EI 60	≥ 3,6	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 90	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 50			EI 180			
	133 < Ø ≤ 139,7	9	≥ 3,7	1 x 1 x 60	EI 60	≥ 3,7	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 90	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 50			EI 180			
	139,7 < Ø ≤ 152,4	9	≥ 3,9	1 x 1 x 60	EI 60	≥ 3,9	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 90	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 46			EI 180			
		47 - 50						
	152,4 < Ø ≤ 159	9	≥ 4,0	1 x 1 x 60	EI 60	≥ 4,0	1 x 1 x 60	EI 120
		10 - 16		1 x 2 x 60			1 x 2 x 60	
		17 - 22		EI 90	1 x 3 x 60		1 x 3 x 60	
		23 - 34			1 x 4 x 60		1 x 4 x 60	
		35 - 49			EI 180			
		50						

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	RIGID WALLS		
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
Steel	159 < Ø ≤ 169	16 - 23	≥ 4,0	1 x 2 x 60	EI 60
		24 – 6		1 x 3 x 60	
		37 – 49		1 x 4 x 60	
		50		1 x 3 x 60	
	169 < Ø ≤ 180	24 – 36		1 x 4 x 60	EI 60
		37 – 49			EI 90
		50			EI 60
	180 < Ø ≤ 200	38 – 49			EI 90
	200 < Ø ≤ 219	50			

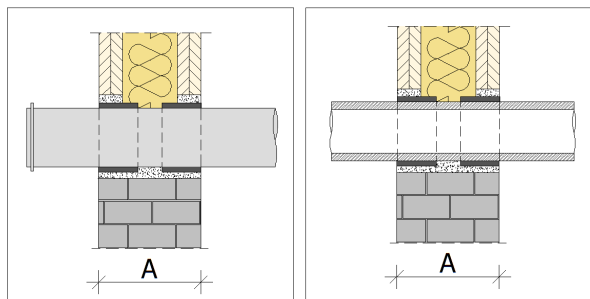


Securing pipe bundles with a single row of tape
in a rigid wall with a thickness of $A \geq 150$ mm
in a rigid ceiling with a thickness of $H \geq 150$ mm

Fig.5-6 p.16

Składowe jednej wiązki	Outer pipe diameter Ø [mm]	Grubość izolacji PE [mm]	RIGID WALLS		
			Pipe wall thickness [mm]	Liczba rzędów x liczba owinięć taśmą x grubość taśmy [mm]	Fire resistance class
1) Rura miedziana	Ø ≤ 6,35	9	≥ 0,8	1 x 2 x 60	EI 180
2) Rura miedziana	Ø ≤ 6,35	9	≥ 1,0		
1) Rura PE-HD lub ABS lub SAN+PVC	Ø ≤ 32	-	2,0	1 x 1 x 60	EI 240
2) Rura PVC	Ø ≤ 50	-	1,8		

Składowe jednej wiązki	Outer pipe diameter Ø [mm]	Grubość izolacji PE [mm]	CEILINGS		
			Pipe wall thickness [mm]	Liczba rzędów x liczba owinięć taśmą x grubość taśmy [mm]	Fire resistance class
1) Rura miedziana	Ø ≤ 15,88	9	≥ 1,0	1 x 2 x 60	EI 180
2) Rura miedziana	Ø ≤ 6,35	9	≥ 0,8		



Securing combustible and non-combustible pipe penetrations in insulation using two rows of tape in a rigid or flexible wall with a thickness of $A \geq 125$ mm

Fig.7-8 p.17

Pipe type	Outer pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS		
		Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
PVC	Ø ≤ 50	1,8 – 3,6	2 x 1 x 60	EI 120
		3,7 – 4,2	2 x 2 x 60	
	50 < Ø ≤ 75	1,9 – 3,6	2 x 1 x 60	
		3,7 – 4,2	2 x 2 x 60	
	75 < Ø ≤ 90	2,1 – 4,2		
	90 < Ø ≤ 110	2,2 – 4,2		
PE-HD ABS SAN+PVC	Ø ≤ 32	2,0 – 3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	32 < Ø ≤ 40	2,2 – 3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	40 < Ø ≤ 50	2,5 – 3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	50 < Ø ≤ 55	2,6 – 3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	55 < Ø ≤ 63	2,8 – 3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	63 < Ø ≤ 75	3,0	2 x 1 x 60	EI 120
		3,1 – 6,8		EI 90
		6,9 – 10,0	2 x 2 x 60	EI 120
	75 < Ø ≤ 90	3,6 – 10,0	2 x 2 x 60	EI 120
	90 < Ø ≤ 110	4,2 – 10,0		

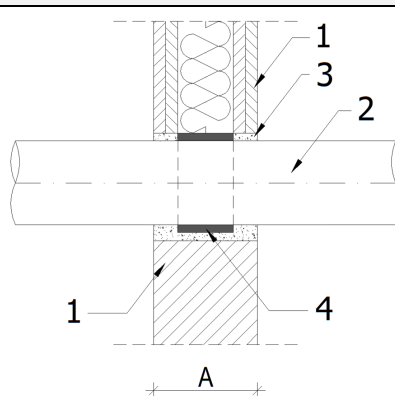
Pipe type	Outer pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS		
		Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
PP	Ø ≤ 50	1,8 – 12,5	2 x 1 x 60	EI 120
		12,6 – 18,4	2 x 2 x 60	EI 90
	50 < Ø ≤ 75	1,9 – 12,5	2 x 1 x 60	EI 120
		12,6 – 18,4	2 x 2 x 60	EI 90
	75 < Ø ≤ 90	2,3 – 8,3	2 x 2 x 60	EI 120
		8,4 – 8,4		EI 90
	90 < Ø ≤ 110	2,7	2 x 2 x 60	EI 120
		2,8 – 18,4		EI 90

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	FLEXIBLE / RIGID WALLS		
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
Steel	Ø ≤ 42,4	9	≥ 2,0	2 x 1 x 60	EI 120
		10 – 22		2 x 2 x 60	
		23 – 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	
	42,4 < Ø ≤ 44,5	9	≥ 2,1	2 x 1 x 60	EI 90
		10 – 11		2 x 2 x 60	EI 120
		12 – 22			
		23 – 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	
	44,5 < Ø ≤ 54,0	9	≥ 2,2	2 x 1 x 60	EI 90
		10 – 20		2 x 2 x 60	EI 120
		21 - 22			
		23 – 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	
	54,0 < Ø ≤ 57,0	9	≥ 2,2	2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	EI 120
		23 - 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	
	57,0 < Ø ≤ 63,5	9	≥ 2,3	2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	EI 120
		23 – 28			
		29 – 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	
	63,5 < Ø ≤ 70,0	9	≥ 2,4	2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	
		23 – 34		2 x 3 x 60	
		35 - 50		2 x 4 x 60	EI 120
	70,0 < Ø ≤ 76,1	9	≥ 2,5	2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	
		23 – 34		2 x 3 x 60	
		35 – 39		2 x 4 x 60	
		40 - 50			EI 120

Pipe type	Outer pipe diameter Ø [mm]	FEF insulation thickness [mm]	FLEXIBLE / RIGID WALLS		
			Pipe wall thickness [mm]	Number of rows x number of tape wraps x tape thickness [mm]	Fire resistance class
Steel	76,1 < Ø ≤ 82,5	9	≥ 2,6	2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	
		23 – 34		2 x 3 x 60	
		35 - 45		2 x 4 x 60	EI 120
		46 - 50			
	82,5 < Ø ≤ 88,9	9		2 x 1 x 60	EI 90
		10 – 22		2 x 2 x 60	
		23 – 34		2 x 3 x 60	
		35 - 49		2 x 4 x 60	
		50			

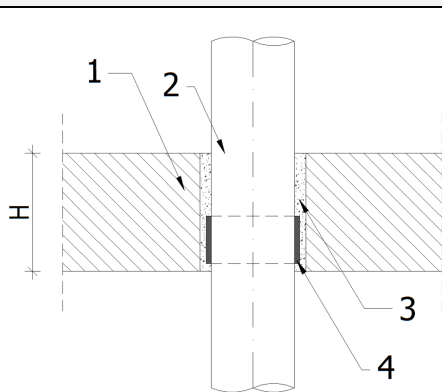
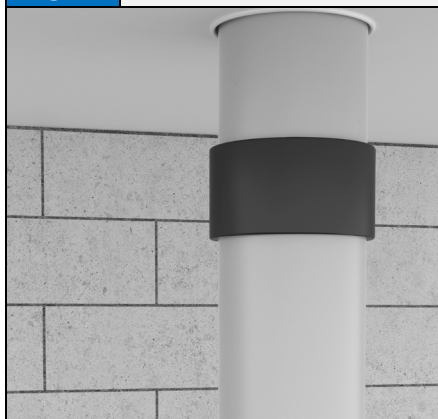
SOLUTION DETAILS

Fig.1 Combustible pipes in a flexible or rigid wall with a thickness of A ≥ 150 mm



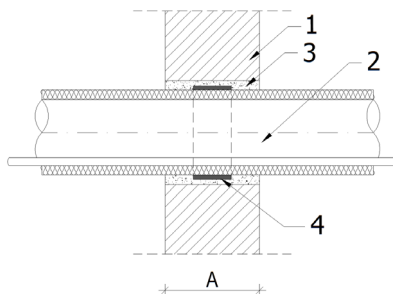
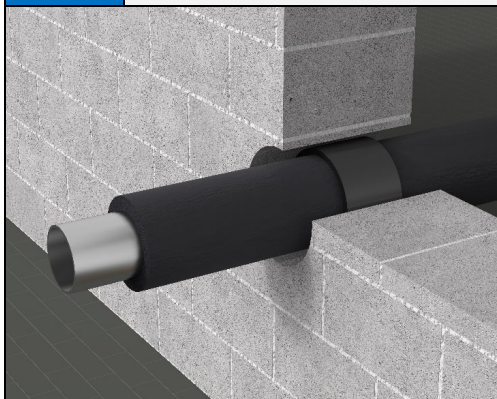
1. Rigid/flexible wall with a thickness of: A ≥ 150 mm
2. Combustible pipe
3. Fill the gap with cement mortar or **ALFA FR MASTIC** compound
4. **INTU FR WRAP L** tape, single row placed in the axis of the partition

Fig.2 Combustible pipes in the ceiling H ≥ 150 mm



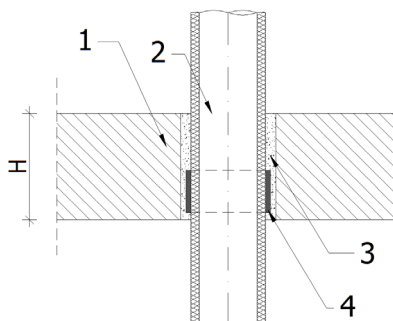
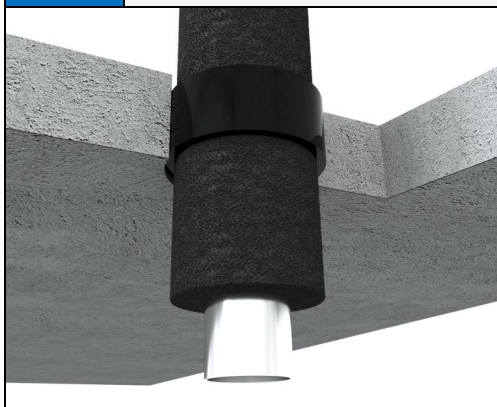
1. Rigid ceiling with a thickness of: H ≥ 150 mm
2. Combustible pipe
3. Fill the gap with cement mortar or **ALFA FR MASTIC** compound
4. **INTU FR WRAP L** tape, single row placed max. 10 mm from the bottom edge of the ceiling

Fig.3 Non-combustible pipes with continuous insulation passing through a rigid wall $A \geq 150$ mm



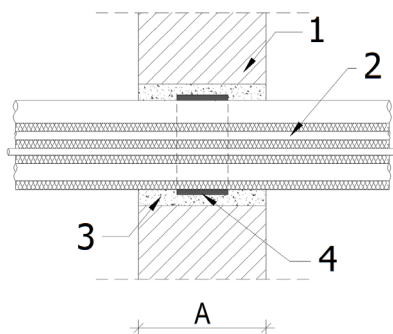
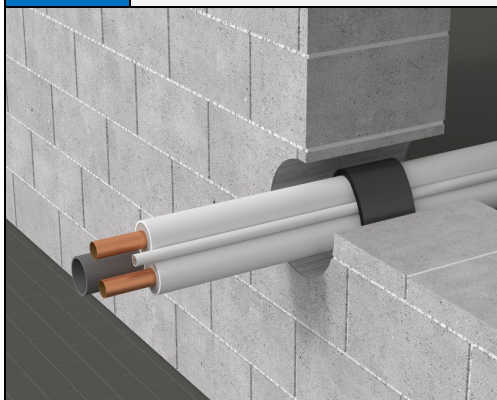
1. Rigid wall with a thickness of: $A \geq 100$ mm
2. Metal pipe with heating cable or without, in continuous insulation
3. Gap filled with cement mortar
4. **INTU FR WRAP L** tape: single row, placed in the wall axis

Fig.4 Non-combustible pipes with continuous insulation passing through the floor $H \geq 150$ mm



1. Rigid ceiling with a thickness of: $H \geq 150$ mm
2. Non-combustible pipe (with or without heating cable) in continuous insulation
3. Gap filled with cement mortar
4. **INTU FR WRAP L** tape, single row placed on insulation max. 10 mm from the bottom edge of the ceiling

Fig.5 Air conditioning pipe bundle with condensate pipe and cable in rigid wall with thickness $A \geq 150$ mm



1. Rigid wall with a thickness of $A \geq 150$ mm
2. Bundle of combustible/non-combustible pipes and cables.
3. Gap filled with cement mortar
4. **INTU FR WRAP L** tape: single row, placed in the axis of the wall

Fig.6 Air conditioning pipe bundle with condensate pipe and cable in ceiling with thickness $H \geq 150$ mm

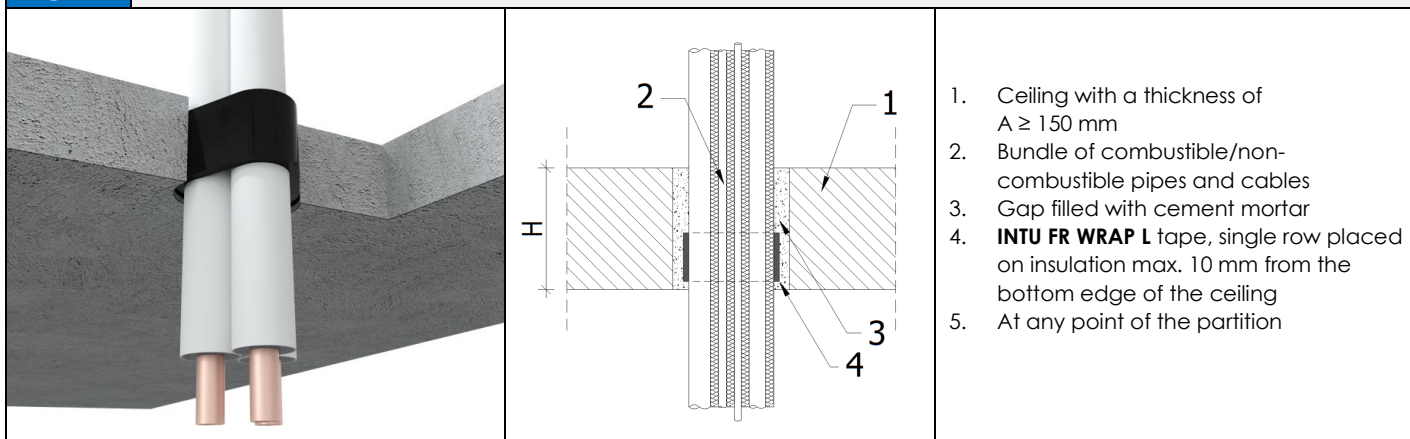


Fig.7 Combustible pipes in a flexible/rigid wall with a thickness of $A \geq 125$ mm

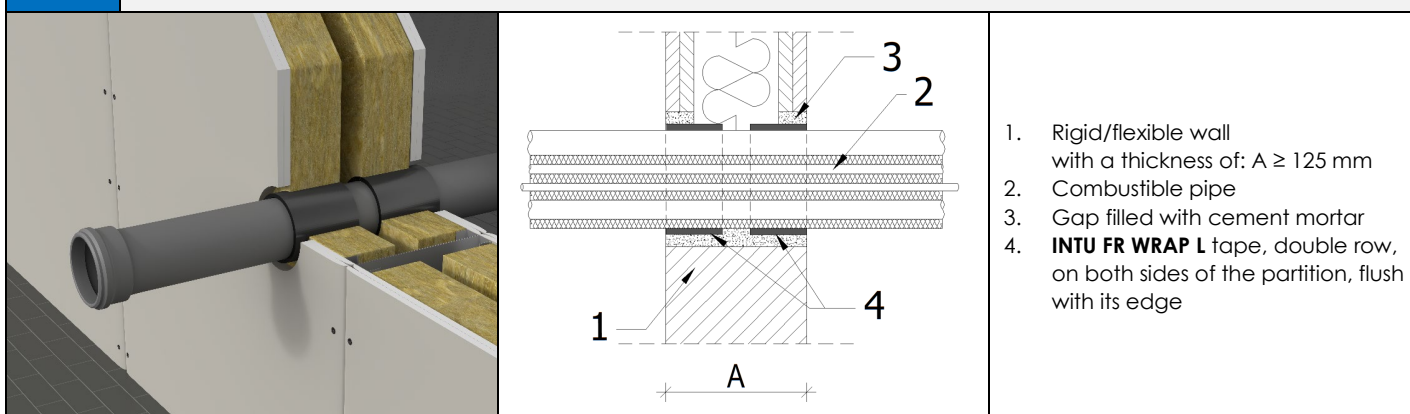


Fig.8 Non-combustible pipes in continuous insulation in a flexible/rigid wall with a thickness of $A \geq 125$ mm

