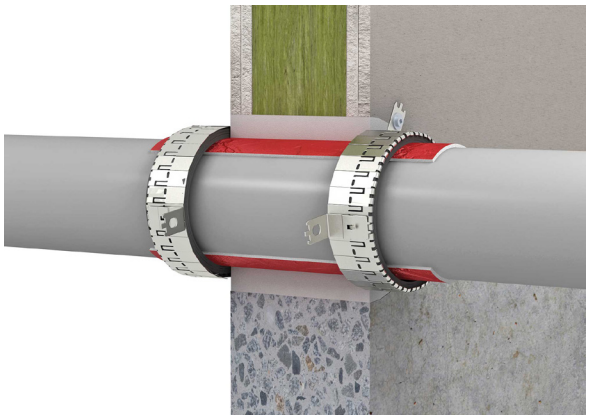
Assembly Instruction

FLAMRO Variant N EC U/C

Approval No.: ETA - 15/0802

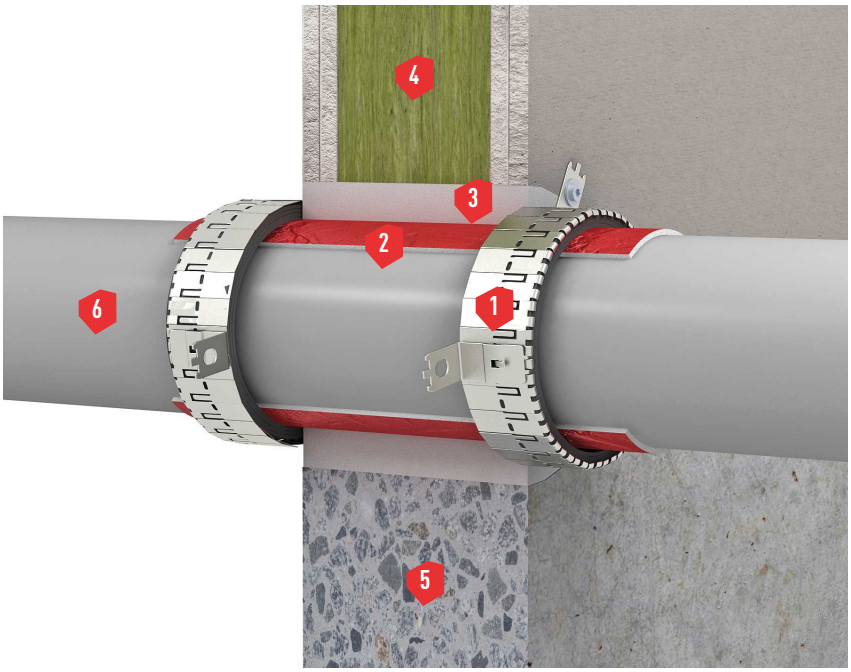
This assembly instruction does not replace the usage information contained in the ETA. This instruction and the ETA must be available at the point of use!

All documents can be downloaded from www.flamro.com/services/downloads.



Description

FLAMRO Variant N EC U/C consists of a high performance intumescent material that is wrapped around the pipe to be sealed off in a single or multiple layers, with or without insulation, and then fixed to the wall or floor using a single layer of the metal strap and the corresponding attachment hooks. In case of fire, the intumescent material responds with strong expansion pressure and closes the structural element opening permanently, preventing the ingress of fire and smoke. The pipe collar is attached to both sides on walls, and from bottom side to floors.



1. FLAMRO Variant N EC U/C
2. Sound insulation
3. Fire protection mortar/ gypsum
4. Flexible wall
5. Rigid wall
6. Plastic pipe

Assembly Instruction

FLAMRO Variant N EC U/C

Approval No.: ETA - 15/0802

Intended use (wall and floor application from page 5)

FLAMRO Variant N EC U/C is classified according to EN 13501 and can be installed on rigid walls, rigid floors and flexible walls according to the tables listed and is suitable for sealing off combustible pipes up to an outer diameter of 160 mm or 315 mm and non-combustible pipes up to an outer diameter of 108 mm.

For a pipe of outer diameter 160 mm:

Rigid walls	Flexible walls	Rigid floors
⩾ 100 mm	⩾ 94 mm	⩾ 150 mm

Flexible walls (⩾ EI 90) must have a minimum thickness of 94 mm and consist of steel studs, clad on both sides with at least two layers of ⩾ 12.5 mm thickness gypsum boards (classification A2-s1,d0 or A1 according to EN 13501-1). Timber studs should also be used instead of steel studs. Note that a minimum distance of 100 mm must be maintained between the timber studs and partition. The insulation between the studs must conform to at least building material class A1 or A2 (according to EN 13501-1) and have a minimum density of 85 to 115 kg/m³ (according to EN 1363-1). Rigid walls must have a minimum thickness of 100 mm and be made of concrete, aerated concrete or masonry. Rigid floors must have a minimum thickness of 150 mm and be made of concrete with a minimum density of 550 kg/m3. The walls and floors must be classified according to EN 13501-2 as regards the required fire resistance rating.

Permitted insulations

- PE foam strips of max. 4.0 mm thick may be used as sound insulation for plastic wastewater pipes
- Synthetic rubber insulation (AF/Armaflex or SH Armaflex) of 9 to max. 44 mm can be used in the case of multi-layer composite or non-combustible pipes

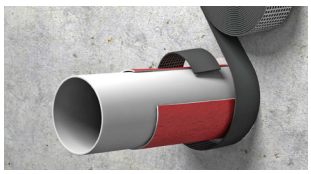
Permitted pipes

- PVC-U, PE-HD or PP-pipes of max. 160 mm outer diameter
- Mineral-reinforced plastic pipes incl. e.g. z. B. POLOPLAST - POLO-KAL NG, Wavin SiTech, Geberit Silent-PP, REHAU RAUPIANO PLUS, COES BluePower, Valsir Triplus, Mainpex Mainpower up to max. 160 mm
- Multi-layer composite pipes like Fusiotherm Stabi, Uponor UniPipe, alpex F50 PROFI / alpex L up to max. 110 mm / 135 mm
- Copper, steel or stainless steel pipes up to max. 108 mm

Assembly Instruction

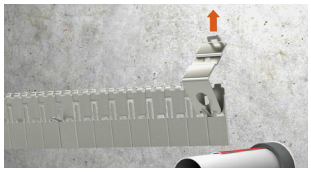
FLAMRO Variant N EC U/C

Approval No.: ETA - 15/0802



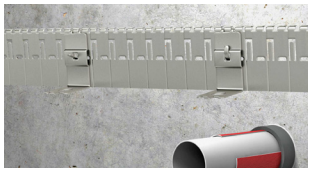
All the annular gaps around the pipe or insulation must be sealed using FLAMRO BSS fire protection foam or non-combustible building materials incl. e.g. mortar or gypsum.

The number of windings of the intumescent 40 mm wide ROKU® Strip is determined according to the tables and the strip cut to length using scissors or a knife. The intumescent strip is wrapped around the pipe or insulation and the individual layers are stuck together by removing the self-adhesive protection film.



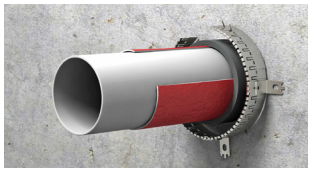
The metal strap is then wrapped around the intumescent ROKU® Strip in a single layer and broken off by counting off the required metal links with the aid of an attachment hook. The X impressed on every 3rd link will help with counting.

Insert the long lug of the hook into the long lug of the strip and fix the attachment points by pressing the hook down and finally turning the lug through 90°.

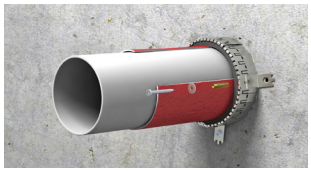


Hook the hooks in the appropriate positions, guide the lug turned through 90° through the opening and bend it back so that the hook sits firmly in place.

At the end of the metal strap, bend 2 lugs through 90°, so that the other end of the metal strap can be connected to one another by guiding the bent lugs into the horizontal notches on the other side of the strip; then bend the lugs again, so that the strip is firmly joined together.



Attach each attachment point to the wall/under the floor using the appropriate permitted dowels. In the case of flexible walls or mineral fibre partitions, use M6 or M8 threaded rods. Finally, the partition must be permanently indicated with an identification label.



Special penetration: Multiple penetration for up to 3 adjacent pipes (PVC, PE and PP) with a pipe outer diameter of ⩽ 75 mm. The distance between the pipes must not exceed 15 mm in this case.

For further information regarding installation see ETA-15/0802 Annexes E-1 to E-10.

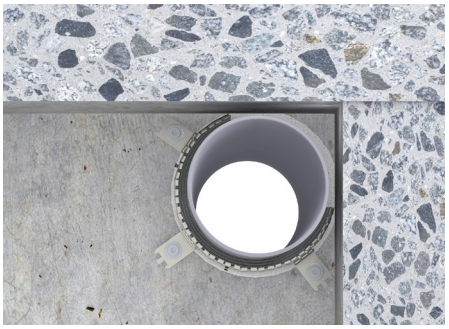
Assembly Instruction

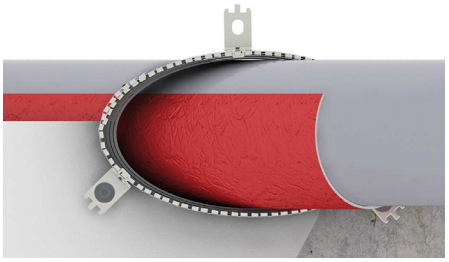
FLAMRO Variant N EC U/C

Approval No.: ETA - 15/0802

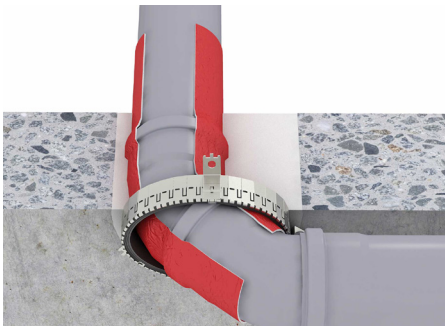
Tested special applications

Corner solution for tight spaces. In this case, the intumescent fire protection strip and the metal strap must only be applied from corner to corner. The distance between pipe and wall must not exceed 10 mm in this case; for larger distances, the collar must be installed completely around the pipe. All remaining joint gaps in the floor can be sealed using FLAMRO BSS fire protection foam or non-combustible building materials e.g. void-free mortar or concrete. The all round annular gaps surrounding the pipe or insulation must be no greater than 50 mm when filling with FLAMRO BSS fire protection foam.

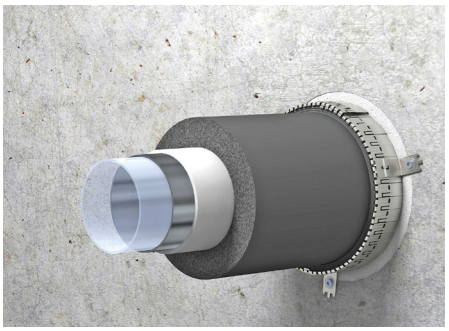




Inclined bushings

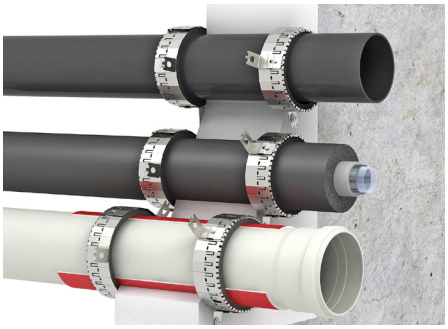


2 x 45° bows



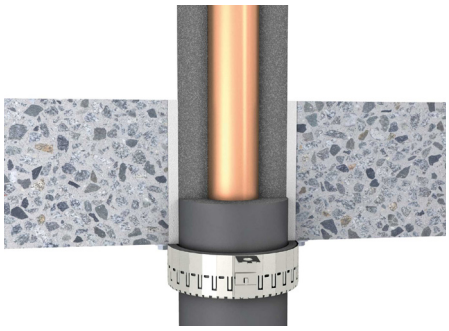
Multi-layer composite pipes with synthetic rubber

Additional installation for non-combustible pipes:



Installating strips in the wall

When covering and installing inside the floor, 2 strips must be installed behind one another



When covering and installing strips on the bottom side of the floor, only one band must be installed with the appropriate number of layers.

Assembly Instruction

FLAMRO Variant N EC

Wall installation

PVC - U pipes without insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 5.6	...	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	1.8 to 12.3	...	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 125	2.2 to 12.2	...	X	5	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	3.2 to 11.9	...	X	6	EI 120 U/C E 120 U/C

PVC - U pipes without insulation installed in an angle between 90° and 45° in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 5.6	...	x	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	1.8 to 12.3	...	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 125	2.2 to 12.2	...	X	6	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	3.2 to 11.9	...	X	8	EI 90 U/C E 90 U/C

Assembly Instruction

FLAMRO Variant N EC

PVC - U pipes with 4.0 mm thick PE sound insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	1.8	≤ 4	X	4	EI 90 U/C E 120 U/C
> 50 to ≤ 75	1.8	≤ 4	X	5	EI 90 U/C E 120 U/C
> 75 to ≤ 110	1.8	≤ 4	X	4	EI 90 U/C E 120 U/C
> 110 to ≤ 125	1.8 to 2.2	≤ 4	X	6	EI 90 U/C E 120 U/C

PE - HD pipes without insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	1.8 to 4.6	...	X	2	EI 120 U/C E 120 U/C
> 50 to ≤ 75	1.8 to 8.4	...	X	3	EI 120 U/C E 120 U/C
> 75 to ≤ 110	2.7 to 10.0	...	X	4	EI 120 U/C E 120 U/C
> 110 to ≤ 160	4.0	...	X	8	EI 120 U/C E 120 U/C
> 110 to ≤ 160	4.0 to 14.6	...	X	8	EI 60 U/C E 60 U/C

Assembly Instruction

FLAMRO Variant N EC

PE - HD pipes without insulation in an angle between 90° and 45 ° in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8	...	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8	...	X	4	EI 90 U/C E 90 U/C
> 75 to ⩽ 110	2.7	...	X	5	EI 90 U/C E 90 U/C
> 110 to ⩽ 125	3.2	...	X	7	EI 90 U/C E 90 U/C
> 125 to ⩽ 160	4.0	...	X	8	EI 90 U/C E 90 U/C

PE- HD pipes mit 4.0 mm thick PE sound insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 4.6	⩽ 4	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8 to 6.8	⩽ 4	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	1.8 to 10.0	⩽ 4	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 160	4.0	⩽ 4	X	6	EI 120 U/C E 120 U/C
> 110 to ⩽ 160	4.0 to 14.6	⩽ 4	X	6	EI 90 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

PP pipes without insulation in flexible and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 4.6	...	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	2.7 to 10.0	...	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 160	4.0	...	X	8	EI 90 U/C E 120 U/C
> 110 to ⩽ 160	4.0 to 14.6	...	X	6	EI 90 U/C E 90 U/C

PP pipes without insulation installed in an angle between 90° and 45° in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8	...	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	1.8	...	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	2.7	...	X	4	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes alpex F50 PROFI / alpex L, insulated using SH/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.0	9.0	X	2	EI 120 U/C E 120 U/C
≤ 50	4.0	10.0	X	3	EI 60 U/C E 120 U/C
≤ 75	5.0	9.0	X	4	EI 90 U/C E 120 U/C
≤ 75	5.0	> 9.0 to 20.0	X	5	EI 90 U/C E 90 U/C
≤ 75	5.0	> 20.0 to 30.0	X	6	EI 90 U/C E 90 U/C
≤ 75	5.0	> 30.0 to 44.0	X	6	EI 90 U/C E 120 U/C

Plastic pipes alpex F50 PROFI / alpex L, insulated using AF/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 75	5.0	9.5	X	4	EI 120 U/C E 120 U/C
≤ 75	5.0	> 9.5 to 20.0	X	5	EI 120 U/C E 120 U/C
≤ 75	5.0	> 20.0 to 30.0	X	6	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes COES BluePower, with 4.0 mm thick PE sound insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8	⩽ 4	X	2	EI 120 U/C E 120 U/C
⩽ 75	2.5	⩽ 4	X	3	EI 120 U/C E 120 U/C
⩽ 110	3.4	⩽ 4	X	4	EI 120 U/C E 120 U/C

Plastic pipes Uponor Unipipe without insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 16	2.0	...	X	2	EI 120 U/C E 120 U/C

Plastic pipes Uponor Unipipe, insluated with SH/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 16	2.0	9.0	X	2	EI 120 U/C E 120 U/C
⩽ 50	4.5	10.0	X	3	EI 60 U/C E 120 U/C
⩽ 110	10.0	9.0	X	6	EI 120 U/C E 120 U/C
⩽ 110	10.0	> 9.0 to 20.0	X	6	EI 90 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Uponor Unipipe, iinsulated using AF/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	4.5	27.5	X	4	EI 120 U/C E 120 U/C
⩽ 110	10.0	9.5	X	6	EI 120 U/C E 120 U/C
⩽ 110	10.0	19.0	X	6	EI 90 U/C E 120 U/C
⩽ 110	10.0	30.0	X	6	EI 120 U/C E 120 U/C

Plastic pipes Wavin SiTech, with 4.0 mm thick PE sound insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	2.0	⩽ 4	X	2	EI 120 U/C E 120 U/C
⩽ 110	3.6	⩽ 4	X	4	EI 90 U/C E 120 U/C
⩽ 110	3.6	⩽ 4	X	5	EI 120 U/C E 120 U/C
⩽ 160	5.3	⩽ 4	X	8	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Fusiotherm Stabi, without insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.2	...	X	2	EI 120 U/C E 120 U/C
≤ 50	6.9	...	X	2	EI 120 U/C E 120 U/C
≤ 75	6.9	...	X	3	EI 120 U/C E 120 U/C
≤ 110	15.2	...	X	4	EI 120 U/C E 120 U/C

Plastic pipes Fusiotherm Stabi, insulated SH/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.2	9.0	X	3	EI 120 U/C E 120 U/C
≤ 50	6.9	10.0	X	3	EI 120 U/C E 120 U/C

Plastic pipes Fusiotherm Stabi, insulated with AF/Armaflex in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 110	15.2	31.0	X	6	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Geberit Silent-PP, with 4.0 mm thick PE sound insulation in flexible and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	2.0	≤ 4	X	2	EI 120 U/C E 120 U/C
≤ 75	2.6	≤ 4	X	3	EI 90 U/C E 120 U/C
≤ 75	2.6	≤ 4	X	4	EI 120 U/C E 120 U/C
≤ 110	3.6	≤ 4	X	4	EI 90 U/C E 120 U/C
≤ 110	3.6	≤ 4	X	5	EI 120 U/C E 120 U/C
≤ 125	4.2	≤ 4	X	6	EI 120 U/C E 120 U/C
≤ 160	5.2	≤ 4	X	8	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes POLOPLAST - POLO-KAL NG, with 4.0 mm thick PE sound insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	2.0	≤ 4	X	2	EI 120 U/C E 120 U/C
≤ 75	2.6	≤ 4	X	3	EI 90 U/C E 120 U/C
≤ 110	3.4	≤ 4	X	4	EI 90 U/C E 120 U/C
≤ 110	3.4	≤ 4	X	5	EI 120 U/C E 120 U/C
≤ 125	3.9	≤ 4	X	5	EI 120 U/C E 120 U/C
≤ 160	4.9	≤ 4	X	6	EI 120 U/C E 120 U/C

Multiple penetration (max. 3 Plastic pipes) made from PVC - U, PE - HD or PP through a pipe collar, linear arrangement, without insulation in flexible walls and rigid walls

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 75	1.8 to 8.4	...	X	4	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Metal pipes (copper-, steel-, and stainless steel pipes), insulated using AF/Armaflex in flexible walls and rigid walls - intumscent inlay flush-mounted on both sides of wall (without metal strap)

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 28	1.0 to 14.2	6.0 to 35.0	X	2	EI 120-C/U E 120-C/U
≤ 54	1.5 to 14.2	9.0 to < 35.0	X	2	EI 60-C/U E 120-C/U
≤ 54	1.5 to 14.2	35.0	X	2	EI 120-C/U E 120-C/U

Metal pipes (copper-, steel-, and stainless steel pipes), insulated with AF/Armaflex and additional AF/Armaflex insulation in flexible walls and rigid walls - intumescent inlay flush-mounted on both sides of wall (without metal strap)

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 54	1.5 to 14.2	9.0 to < 35.0	X	2	EI 90-C/U E 120-C/U

Assembly Instruction

FLAMRO Variant N EC

Floor installlation

PVC - U pipes without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 5.6	...	X	2	EI 240 U/C E 240 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 240 U/C E 240 U/C
> 75 to ⩽ 110	1.8 to 12.3	...	X	4	EI 240 U/C E 240 U/C
> 110 to ⩽ 125	2.2 to 12.1	...	X	5	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	3.2 to 11.9	...	X	6	EI 120 U/C E 120 U/C

PVC - U pipes without insulation installed in an angle between 90° and 45° in massive floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8	...	X	2	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	12.3	...	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 125	12.1	...	X	5	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	11.9	...	X	6	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	3.2	...	X	8	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

PE - HD pipes without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 4.6	...	X	2	EI 240 U/C E 240 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 240 U/C E 240 U/C
> 75 to ⩽ 110	2.7 to 10.0	...	X	4	EI 180 U/C E 240 U/C
> 110 to ⩽ 160	4.0 to 14.6	...	X	6	EI 120 U/C E 240 U/C

PE - HD pipes without insulation installed in a corner between 90° and 45° in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	4.6	...	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 110	2.7 to 10.0	...	X	4	EI 120 U/C E 120 U/C

PE - HD pipes with 4,0 mm thick PE sound insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8	⩽ 4	X	2	EI 120 U/C E 120 U/C
> 50 to ⩽ 75	2.2	⩽ 4	X	3	EI 120 U/C E 120 U/C
> 75 to ⩽ 110	2.7 to 10.0	⩽ 4	X	4	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

PE - HD pipes with 4,0 mm thick PE sound insulation in rigid floors (corner installation)

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 110	10.0	⩽ 4	X	4	EI 120 U/C E 120 U/C

PP pipes without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	1.8 to 4.6	...	X	2	EI 240 U/C E 240 U/C
> 50 to ⩽ 75	1.8 to 8.4	...	X	3	EI 240 U/C E 240 U/C
> 75 to ⩽ 110	2.7 to 10.0	...	X	4	EI 180 U/C E 180 U/C
> 110 to ⩽ 125	3.1 to 11.4	...	X	6	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	4.0 to 14.6	...	X	8	EI 120 U/C E 120 U/C

PP pipes without insulation installed in a corner between 90° and 45° in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 110	2.7 to 10.0	...	X	4	EI 120 U/C E 120 U/C
> 110 to ⩽ 125	3.2 to 12.0	...	X	6	EI 120 U/C E 120 U/C
> 125 to ⩽ 160	4.0 to 14.6	...	X	8	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

PP pipes with 4.0 mm thick PE sound insulation in rigid floors (corner installation)

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 110	2.7	≤ 4	X	4	EI 120 U/C E 120 U/C

Plastic pipes alpex F50 PROFI, without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.0	...	X	2	EI 120 U/C E 120 U/C
≤ 50	4.0	...	X	2	EI 120 U/C E 120 U/C
≤ 75	5.0	...	X	4	EI 120 U/C E 120 U/C

Plastic pipes alpex F50 PROFI / alpex L, insulated using SH/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.0	9.0	X	2	EI 120 U/C E 120 U/C
≤ 75	5.0	9.0	X	4	EI 120 U/C E 120 U/C
≤ 75	5.0	> 9.0 to 20,0	X	5	EI 120 U/C E 120 U/C
≤ 75	5.0	> 20.0 to 30,0	X	6	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes alpex F50 PROFI / alpex L, insulated using AF/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 75	5.0	9.5	X	4	EI 120 U/C E 120 U/C

Plastic pipes COES BluePower, with 4.0 mm thick PE sound insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	1.8	≤ 4	X	2	EI 120 U/C E 120 U/C
≤ 75	2.5	≤ 4	X	4	EI 90 U/C E 90 U/C
≤ 110	3.4	≤ 4	X	5	EI 90 U/C E 90 U/C

Plastic pipes Uponor Unipipe without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	4.5	...	X	2	EI 120 U/C E 120 U/C
≤ 75	7.5	...	X	3	EI 90 U/C E 90 U/C
≤ 110	10.0	...	X	4	EI 90 U/C E 90 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Uponor Unipipe, insulated using SH/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	4.5	10.0	X	3	EI 120 U/C E 120 U/C
≤ 63	6.0	9.0	X	4	EI 120 U/C E 120 U/C
≤ 90	8.5	9.0	X	5	EI 120 U/C E 120 U/C
≤ 110	10.0	> 9.0 to 20.0	X	6	EI 120 U/C E 120 U/C

Plastic pipes Uponor Unipipe, insulated in AF/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	4.5	27.5	X	4	EI 120 U/C E 120 U/C
≤ 75	7.5	30.0	X	5	EI 120 U/C E 120 U/C
≤ 110	10.0	9.5 to 31.0	X	6	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Wavin SiTech, with 4.0 mm thick PE sound insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumeszierende Einlage		Fire protection classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	2.0	⩽ 4	X	2	EI 120 U/C E 120 U/C
⩽ 75	2.6	⩽ 4	X	3	EI 120 U/C E 120 U/C
⩽ 110	3.6	⩽ 4	X	4	EI 120 U/C E 120 U/C
⩽ 125	4.2	⩽ 4	X	5	EI 60 U/C E 60 U/C
⩽ 160	5.3	⩽ 4	X	6	EI 60 U/C E 60 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Fusiotherm Stabi, without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 16	2.2	...	X	2	EI 120 U/C E 120 U/C
≤ 50	7.9	...	X	2	EI 120 U/C E 120 U/C
≤ 75	11.8	...	X	3	EI 120 U/C E 120 U/C
≤ 110	17.2	...	X	4	EI 120 U/C E 120 U/C

Plastic pipes Fusiotherm Stabi, insulated using SH/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	6.9	10.0	X	3	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes Fusiotherm Stabi, insulated using AF/Armaflex in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 110	15.2	31,0	X	6	EI 120 U/C E 120 U/C

Plastic pipes Fusiotherm® SDR 11, without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 315	28.6	...	X	20	EI 120 U/C E 120 U/C

Plastic pipes Geberit Silent-PP, mit 4,0 mm thick PE sound insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 50	2.0	⩽ 4	X	2	EI 120 U/C E 120 U/C
⩽ 75	2.6	⩽ 4	X	3	EI 120 U/C E 120 U/C
⩽ 110	3.6	⩽ 4	X	4	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Plastic pipes POLOPLAST - POLO-KAL NG, with 4.0 mm thick PE sound insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 50	2.0	≤ 4	X	2	EI 90 U/C E 120 U/C
≤ 75	2.6	≤ 4	X	3	EI 90 U/C E 120 U/C
≤ 110	3.4	≤ 4	X	4	EI 120 U/C E 120 U/C

Assembly Instruction

FLAMRO Variant N EC

Multiple penetration (max. 3 plastic pipes) made from PVC - U, PE - HD or PP through a pipe collar, linear arrangement, without insulation in rigid floors

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 75	1.8 to 8.4	...	X	4	EI 120 U/C E 120 U/C

Metal pipes (copper-, steel-, and stainless steel pipes), insulated using AF/Armaflex in rigid walls - intumescent inlay arranged behind each other flush with the bottom side of the floor, continuous LS

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
≤ 28	1.0 to 14.2	6.0	X	2	EI 120-C/U E 120-C/U
≤ 28	1.0 to 14.2	6.0 to < 20.0	X	3	EI 120-C/U E 120-C/U
≤ 28	1.0 to 14.2	> 20.0 to 35.0	X	4	EI 120-C/U E 120-C/U

Assembly Instruction

FLAMRO Variant N EC

Metal pipes (copper, steel, and stainless steel pipes), insulated using AF/Armaflex in rigid floors - intumescent inlay arranged behind each other flush with the bottom side of the floor (without metal strap), interrupted LI

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 54	1.5 to 14.2	9.0	X	2	EI 120-C/U E 120-C/U
⩽ 54	1.5 to 14.2	> 9.0 to 22.0	X	3	EI 120-C/U E 120-C/U
⩽ 54	1.5 to 14.2	> 22.0 to 35.0	X	4	EI 120-C/U E 120-C/U
⩽ 89	2.0 to 14.2	13.0	X	2	EI 120-C/U E 120-C/U
⩽ 108	2.5 to 14.2	13.0	X	2	EI 120-C/U E 120-C/U

Metal pipes (steel, and stainless steel pipes), insulated using AF/Armaflex in rigid floors - intumescent inlay arranged behind each other flush with the bottom side of the floor (without metal strap)

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 108	2.0 to 14.2	13.0 to 30.0	X	2	EI 120-C/U E 120-C/U

Metal pipes (steel, and stainless steel pipes), insulated using AF/Armaflex in rigid floors - intumescent inlay arranged behind each other flush with the bottom side of the floor

Pipe dimensions (mm)		Thickness of insulation (mm)	Intumescent inlay		Fire resistance classification
Outer diameter (mm)	Wall thickness (mm)		ROKU® Strip EM	Number of layers	
⩽ 108	2.0 to 14.2	13.0 to 30.0	X	2	EI 120-C/U E 120-C/U