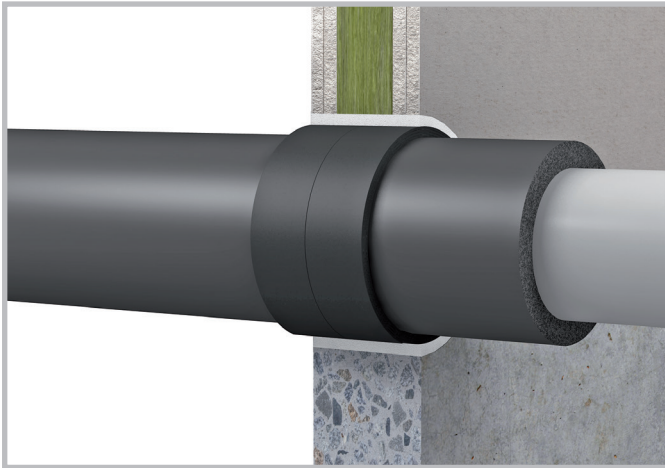


Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056



Content

Target audience, usage of assembly instruction, safety information	2
Components	3
Application field (Component strength, insulation strength and distances)	3
Approved assignments and classifications	4
Approved assignment – wall	14
Approved assignment – floor	15
Approved assignment – shaft wall	16
Approved assignment – System MFS according to ETA-15/0014	16
Applied products	17
Arrangement of the first support (backings)	18
Assembly steps	20
Declaration of performance	22

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Target audience

This assembly instruction is addressed exclusively to trained experts on fire technology.

Usage of assembly instruction

- Please read through the lot of this assembly instruction carefully prior to work start. Regard in particular the following safety information.
- The holder of assessment assumes no liability for damages which are caused by disregard for this assembly instruction.
- Graphic depictions serve as examples only. Assembly results may vary visually.

Safety information

For processing of partition components, please regard the safety data sheets.







Protection and hygiene measures:

- Observe the usual precautions when handling chemicals. Wash hands before work breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Take off stained or soaked clothes immediately.

Eye wash with clean water (EN 15154).

Wear closed work clothing.

	<p>Respiratory protection - Dust mask When exposure limit is exceeded (e.g. possible when turning on), use particle-filtering half mask FFP 1 (white).</p>
	<p>Hand protection - Protective gloves Use waterproof, abrasion- and alkali-resistant nitrile gloves. Different requirements can result depending on application. Therefore observe additional recommendations by the protective gloves' manufacturer.</p>
	<p>Eye protection - Use safety goggles</p>
	<p>Body protection - Use protective work wear</p>

Do not eat, drink or smoke during work. After work is finished, wash all uncovered body parts with water and soap thoroughly.

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Please respect the approval. All documents can be downloaded under www.flamro.com/services/downloads.

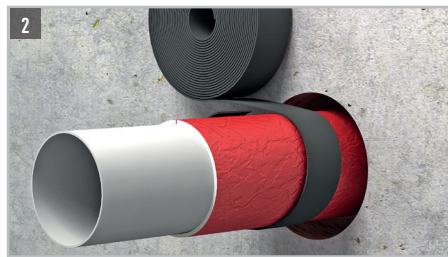
We assume that

- damage on the isolation will be repaired
- due to the installation of the isolation none of the adjoining components loose stability - also in case of fire
- wall or ceilings do not carry any further load on the isolation
- conducts will be mounted to adjoining components (not the isolation)

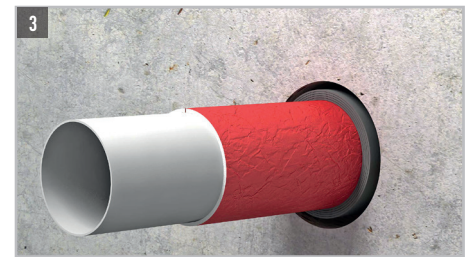
Assembly Steps



Before the installation of the pipe seal, it is to be checked if all boundary conditions (e.g. type and thickness of wall or floor, type and size of pipes and insulations as well as environmental conditions) comply with the regulations.



The wrap must be wrapped around the pipe in front of the reveal. By removing the self-adhesive protection film, the individual layers of the wrap are to be glued one below the other. For the non-adhesive variant, the wrap is to be secured with adhesive tape. Subsequently, insert the wrap through the reveal.

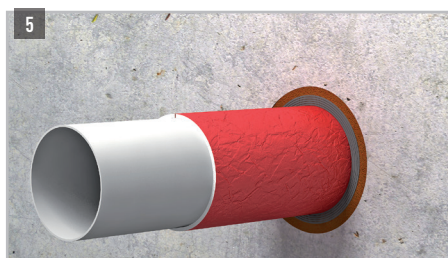


It must be ensured that the wrap is flush to the wall/ the floor's outer edge.

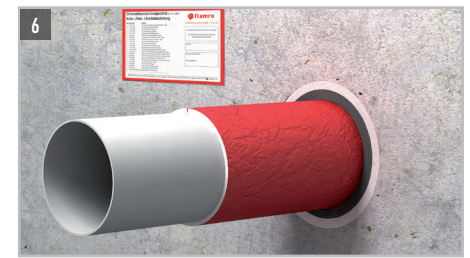
As a rule, the outer edges of various fire protection wraps can be adjacent.



For walls, use one collar on each side. For floors, use one underneath the floor.



All remaining joints and gaps inside the reveal are to be filled with gypsum or mortar.



Finally apply the identification sign to the penetration seal.

The identification sign must be placed next to the penetration seal to the building component and is available at FLAMRO Brandschutz-Systeme GmbH.

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Components

Rigid walls

Depending on the pipe dimensions and desired fire resistance class, the wall must have a minimum thickness of ≥ 100 mm and consist of concrete, aerated concrete or masonry with a minimum density of $630 \text{ kg} / \text{m}^3$. wall shall be classified in accordance to EN 13501 - 2 for the required fire resistance period.

Lightweight partition walls:

Lightweight partition walls must have a minimum thickness of ≥ 94 mm and consist of steel stands (U and C profiles; 0,5 - 1,5 mm thickness) which are to be coated on both sides with at least two layers of 12,5 mm thick panels of classification A2-s1, d0 or A1 in accordance to EN 13501-1. Additionally, wood stands can be used instead of steel stands. In this context, it should be noted that there must be a minimum distance of 100 mm between wood stands and partition. The insulation in between those stands must be at least comply with the building material class A1 or A2 (in accordance to EN 13501-1) and have a raw density of $85 - 115 \text{ kg/m}^3$ (in accordance to EN 1363-1).

The soffit revetment must be built from steel stands with a minimum thickness of 0,6 mm and panels of the same specifications as of the wall.

The supporting structure shall be classified in accordance with EN13501 - 2.

Shaft walls:

Shaft walls must have a minimum thickness of 2×20 and be classified according to EN 13501-2.

For separated shaft walls, the number of panels must be at least 2×20 mm (gypsum board panels according to EN 15283), the shaft wall's total thickness must be at least 40 mm. Working with shaft walls, CW 50 stand profiles with max. 1000 mm centre distance can be mounted.

Rigid walls:

Depending on the pipe dimensions and desired fire resistance class, the floor must have a minimum thickness of ≥ 150 mm and consist of concrete, aerated concrete or masonry with a minimum density of $550 \text{ kg} / \text{m}^3$. The rigid floor shall be classified in accordance with EN 13501 - 2 for the required fire resistance period.

Application field

Identifier	Wall	Lightweight partition wall	Shaft wall	Floor
Thickness of the component	≥ 100 mm	≥ 94 mm	$\geq 2 \times 20$ mm	≥ 150 mm
Maximum dimensions of insulated combustible pipelines	≤ 160 mm	≤ 160 mm	≤ 110 mm	≤ 160 mm
Distance to other cable or pipe seal penetrations	200 mm	200 mm	200 mm	200 mm
Distance to other reveals or installations	200 mm	200 mm	200 mm	200 mm

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Approved assignments and classifications

The pipe screening can be used on straight pipes arranged perpendicular to the wall or floor surface. The pipelines must be intended for non-combustible liquids or gases, for pneumatic conveying systems or vacuum lines only. Pneumatic conveying systems, compressed air lines or alike must be turned off through additional measures in the case of fire.

PVC-U pipes according to EN 1452-1 - wall						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1.8 to 5.6	2 x 2	without	120	120	U/C
≤ 50 to ≤ 110	1.8 to 12.3	2 x 3				
≤ 50	1.8 to 5.6	2 x 3	4 mm PE sound insulation pipe*			
≤ 50 to ≤ 110	2.2 to ≤ 12.3	2 x 4				
≤ 50 to ≤ 110	3.2 to 11.9	2 x 3				
Insulation made of synthetic rubber, like e.g. AF/Armaflex**						
≤ 50	1.8 to 5.6	2 x 3	to 9.5 mm	120	120	U/C
≤ 50 to ≤ 110	1.8 to 12.3	2 x 3	to 31.5 mm			
≤ 50	1.8 to 2.7	2 x 3	17 – 18 MM			
≤ 50 to ≤ 110	1.8 to 2.7	2 x 3	to 31.5 mm			
≤ 50 to ≤ 110	2.2 to 12.3	2 x 4	to 31.5 mm			
The classification of PVC-U pipes according to EN 1453-1, EN 1329-1 or EN 1452-1 applies also for PVC-C pipes according to EN 1566-1.						

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

PE-HD pipes according to EN 1519-1 - wall										
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration				
≤ 50	1.8	2 x 2	without	120	120	U/C				
≤ 50 to ≤ 110	1.8 to 10.0	2 x 3								
≤ 50	1.8	2 x 3	4 mm PE sound insulation pipe*							
≤ 50 to ≤ 110	1.8 to 10.0	2 x 3								
Insulation made of synthetic rubber, like e.g. AF/Armaflex**										
≤ 50	1.8	2 x 3					to 9.5 mm	120	120	U/C
≤ 50 to ≤ 110	1.8 to 10.0	2 x 3	up to 31.5 mm							
≤ 50	1.8 to 10.0	2 x 4	up to 31.5 mm							
The classification for PE-HD pipes according to EN 1519-1 and EN 12666-1 applies also for PE pipes according to EN 12201-2, EN 1519-1 and EN 12666-1 as well as for ABS pipes according to EN 1455-1 and SAN+PVC- pipes according to EN 1565-1.										

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

PP pipes according to EN 15494 - wall						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1.8	2 x 2	without	120	120	U/C
> 50 to ≤ 110	1.8 to 10.0	2 x 3				
≤ 50	1.8	2 x 2	4 mm PE sound insulation pipe*			
> 50 to ≤ 110	1.8 to 10.0	2 x 3				
Insulation made of synthetic rubber, like e.g. AF/Armaflex**						
≤ 50	1.8	2 x 3	up to 9.5 mm	120	120	U/C
≤ 50 to ≤ 75	1.8 to 10.0	2 x 3				
≤ 50	1.8 to 10.0	2 x 4	up to 31.5 mm			

* e.g. Thermocompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Wavin-Si TECH pipes - wall						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	2.0	2 x 2	4 mm PE sound insulation pipe*	120	120	U/C
> 50 to ≤ 75	2.0 to 2.55	2 x 3				
> 50 to ≤ 90	2.0 to 3.05	2 x 3				
> 50 to ≤ 110	2.0 to 3.7	2 x 4				

* e.g. Thermocompact TF

Aquatherm green pipe MS (Fusiotherm Stabverbund) - wall						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40	5.6	2 x 2	with or without PE insulation* or with synthetic rubber**, like e.g. AF/Armaflex up to 31.5 mm	120	120	U/C
> 40 to ≤ 75	5.6 to 10.4	2 x 3				
> 40 to ≤ 110	10.4 to ≤ 15.2	2 x 4				

* e.g. Thermocompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Uponor MLC pipe white (Unipipe Mehrschichtverbundrohr) - wall							
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration	
≤ 40	5.6	2 x 2	without insulation, PE* or synthetic rubber** like e.g. AF/Armaflex	120	120	U/C	
> 40 to ≤ 75	5.6 to 10.4	2 X 3	without	120	90		
		2 x 4		120	120		
		2 X 3	4 mm PE*	120	120		
		2 X 3	synthetic rubber**, up to 31.5 mm	120	120		
> 40 to ≤ 110	10.4 to ≤ 15.2	2 x 4	without	120	90		
		2 X 5		120	120		
		2 x 4	4 mm PE	120	120		
		2 x 4	synthetic rubber**, UP TO 31.5 MM	120	120		
120 mm wall thickness							
> 40 to ≤ 110	10.4 to ≤ 15.2	2 x 4	without	120	120		U/C

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 - AF2 +- 1,0 mm; AF3 - AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Alpex Duo Mehrschichtverbundrohre - wall						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40		2 x 2	without insulation, PE* or synthetic rubber** like e.g. AF/Armaflex	120	120	U/C
> 40 to ≤ 75	3.5 to 5.0	2 X 3	without	120	90	
		2 X 3	up to 9.5 mm**	120	90	
		2 x 4	12.5 to 18 mm**	120	120	
		2 x 4	25 to 31.5 mm**	120	120	
		2 x 5	up to 31.5 mm**	120	120	

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 - AF2 +- 1,0 mm; AF3 - AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

PVC-U pipes according to EN 1452-1 - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1.8 to 5.6	2	without	120	120	U/C
> 50 bis ≤ 110	1.8 to 12.3	2				
≤ 50	3.7	3				
≤ 160	4.7	6				
≤ 110	1.8 to ≤ 12.3	3	4 mm PE sound insulation pipe*	120	120	
Insulation made of synthetic rubber, e.g. AF/Armaflex**						
≤ 110	1.8 to 12.3	3	up to 9.5 mm	90	90	U/C
≤ 110	12.3	3	up to 18 mm	90	90	
≤ 110	1.8 to < 12.3	4	up to 23 mm	90	90	
≤ 110	12.3	4	15.5 - 23 mm	120	120	
≤ 110	1.8 to < 12.3	5	12.5 to 31.5 mm	90	90	
≤ 110	12.3	5		120	120	
The classification of PVC-U pipes according to EN 1453-1, EN 1329-1 or EN 1452-1 applies also for PVC-C pipes according to EN 1566-1.						

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

PE-HD pipes according to EN 1519-1 - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1.8	2	without	120	120	U/C
> 50 to ≤ 110	1.8 to 10.0	3		240	240	
50	1.8	2		120	120	
110	1.8 to 10.0	4		120	120	
≤ 50	1.8	3	4 mm PE sound insulation pipe*	120	120	
> 50 to ≤ 110	1.8 to 10.0	3		120	120	
Insulation made of synthetic rubber, e.g. AF/Armaflex**						
≤ 50	1.8	3	up to 9.5 mm	120	120	U/C
> 50 to ≤ 75	1.8 to 1.9	3		120	120	
> 75 to ≤ 110	1.9 to 10.0	3	up to 9.5 mm	90	90	
110	10.0	4		120	90	
110	10.0	3	9.5 to 18 mm	120	120	
110	1.8 to 10.0	4	9.5 to 31.5 mm	120	120	
The classification for PE-HD pipes according to EN 1519-1 and EN 12666-1 applies also for PE pipes according to EN 12201-2, EN 1519-1 and EN 12666-1 as well as for ABS pipes according to EN 1455-1 and SAN+PVC-pipes according to EN 1565-1.						

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31.5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

PP pipes according to EN 15494 - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - ROKU® Strip	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1.8	2	without	120	120	U/C
> 50 to ≤ 110	1.8 to 10.0	3				
≤ 50	1.8	2	4 mm PE sound insulation pipe*			
> 50 to ≤ 110	1.8 to 10.0	3				
Insulation made of synthetic rubber, e.g. AF/Armaflex**						
≤ 110	1.8 to 10.0	3	up to 9.5 mm	120	120	U/C
≤ 110	1.8 to 10.0	4	up to 31.5 mm			

* e.g. Thermocompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 - AF2 +- 1,0 mm; AF3 - AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Wavin-Si TECH pipes - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	2.0	2	4 mm PE sound insulation pipe*	120	120	U/C
> 50 to ≤ 75	2.0 to 2.55	3				
> 50 to ≤ 90	2.0 to 3.05	4				
> 50 to ≤ 110	2.0 to 3.7	5				

* e.g. Thermocompact TF

POLO-KAL NG pipes - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40	2,0	2	4 mm PE sound insulation pipe*	120	120	U/C
> 50 to ≤ 75	2.0 to 2.5	3				
> 50 to ≤ 90	2.0 to 2.9	4				
> 50 to ≤ 110	2.0 to 3.4	5				

* e.g. Thermocompact TF

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Geberit Silent PP pipes - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	2,0	2	4 mm PE sound insulation pipe*	120	120	U/C
> 50 to ≤ 75	2.0 to 2.5	3				
> 50 to ≤ 90	2.0 to 3.1	4				
> 50 to ≤ 110	2.0 to 3.6	5				

* e.g. Thermacompact TF

Rehau Raupiano pipes - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 50	1,8	2	4 mm PE sound insulation pipe*	120	120	U/C
> 50 to ≤ 75	1.8 to 2.1	3				
> 50 to ≤ 90	1.8 to 2.4	4				
> 50 to ≤ 110	1.8 to 2.7	5				

* e.g. Thermacompact TF

PVC pipes and multi-layer composite pipings, like Unipipe, Alpex Duo, Uponor MLC pipe white and Aquatherm green pipe MS (old trade name: Fusiotherm Stabverbund) with zero clearance - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 110	1.8 to 12.3	2	without/ 4 mm PE sound insulation pipe / AF/ Armaflex** up to 31,5 mm	90	90	U/C
≤ 110	1.8 to 12.3	3	AF/Armaflex** 9.5 to 31.5 mm			

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Aquatherm green pipe MS (Fusiotherm Stabverbund) - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40	5,6	2	without/ 4 mm PE sound insulation pipe / AF/ Armaflex** up to 31,5 mm	120	120	U/C
> 40 to ≤ 75	5.6 to 10.4	3				
> 40 to ≤ 110	10.4 to 15.2	4				

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Uponor MLC pipe white (Unipipe Mehrschichtverbundrohr) - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40	5.6	2	without/ 4 mm PE sound insulation pipe / AF/ Armaflex** up to 31,5 mm	120	120	U/C
> 40 to ≤ 75	5.6 to 10.4	3				
> 40 to ≤ 110	10.4 to 15.2	4				

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Alpex Duo Mehrschichtverbundrohre - floor						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 40	3.5	2	without	120	120	U/C
> 40 to ≤ 75	3.5 to 5.0	3				
> 50 to ≤ 110	1.8 to 10.0	5	4 mm PE sound insulation pipe	120	90	
Isolierung aus Synthetikgummi, z.B. AF/Armaflex**						
> 40 to ≤ 75	3.5 to 5.0	3	up to 9.5 mm	120	120	U/C
		4	up to 31.5 mm			

* e.g. Thermacompact TF

** synthetic rubber e.g. AF/Armaflex AF-1 to AF-5 (up to 31,5 mm insulation thickness, tolerance AF1 – AF2 +- 1,0 mm; AF3 – AF4 +- 1,5 mm; AF5 +- 2,5 mm)

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Metal pipes (copper, steel, stainless steel pipes - floor)						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - FLAMRO Variant N III wrap	Insulation / Insulation thickness	E	I	Pipe end configuration
≤ 88.9 (copper)	1.2 - 14.2	1 x 2	AF/Armaflex 10 to 38 mm	120	120	U/C
≤ 219.1 (steel)	1.2 - 14.2	1 x 2	AF/Armaflex 19 to 38 mm	120	120	

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Installation of mineral wool seals in walls based on ETA-16/0320						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - ROKU® Strip	Insulation / Insulation thickness	E	I	Pipe end configuration
PVC Ø 50	2,4	2	without	120	120	U/U
PVC Ø 75	3,6	3				
PVC Ø 110	5,3	4				
PP Ø 50	2,9	2				
PP Ø 75	4,3	3				
PP Ø 160	9,1	6				

Installation of mineral wool seals in floors based on ETA-16/0320						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - ROKU® Strip	Insulation / Insulation thickness	E	I	Pipe end configuration
PVC Ø 50	2,4	2	without	120	120	U/U
PVC Ø 75	3,6	3				
PVC Ø 110	5,3	4				
PVC Ø 160	7,7	6				
PP Ø 50	2,9	2				
PP Ø 75	4,3	3				
PP Ø 110	6,3	4				
PP Ø 160	9,1	6				

Shaft wall ≥ 2 x 20 mm						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - ROKU® Strip	Insulation / Insulation thickness	E	I	Pipe end configuration
PE Ø 110	6.3	4	without	90	90	U/C
PP Ø 110	6.3	4				
PVC Ø 110	5.3	4				
PE Ø 50	4.6	2				
PP Ø 50	4.6	2				
PVC Ø 50	3.7	2				

Shaft wall ≥ 2 x 20 mm + 2 x 20 mm doubling						
Outer diameter [mm]	Wall thickness [mm]	Additional fire protection measures - ROKU® Strip	Insulation / Insulation thickness	E	I	Pipe end configuration
PE Ø 110	6.3	4	without	120	120	U/C
PP Ø 110	6.3	4				
PVC Ø 110	5.3	4				

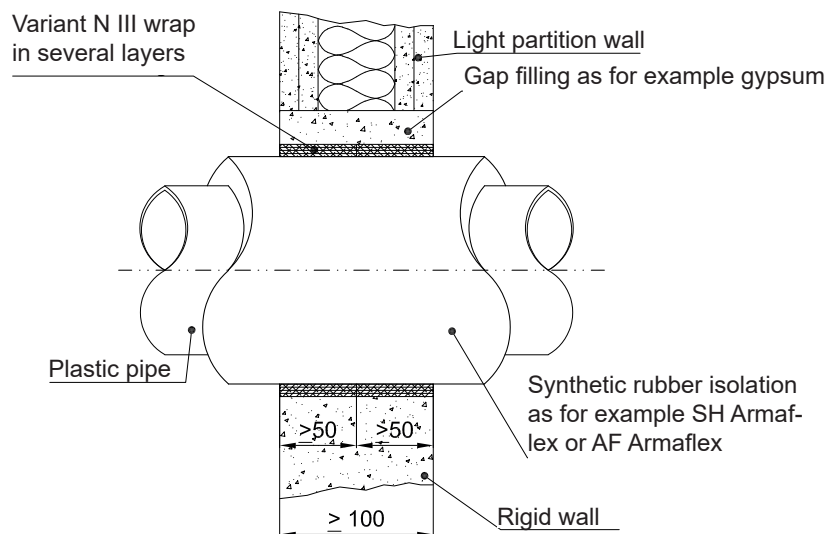
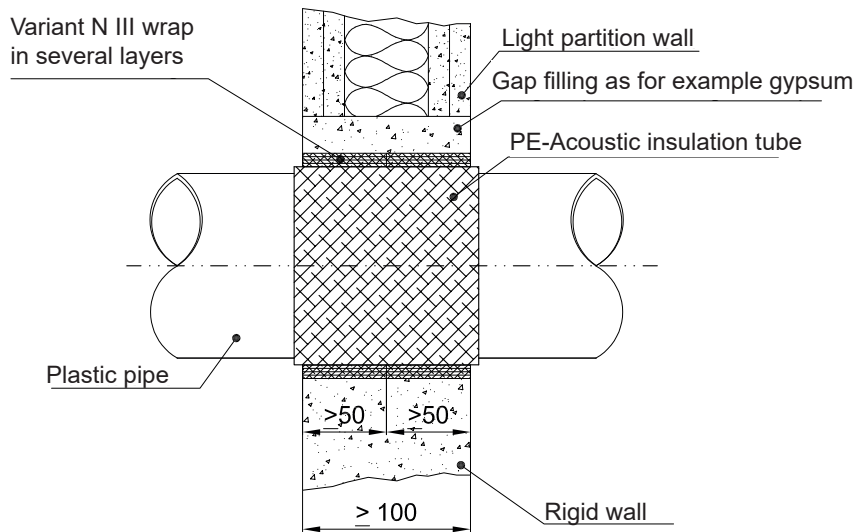
Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Approved assignment - wall

Installations in lightweight partition walls or rigid walls with or without additional pipe insulation



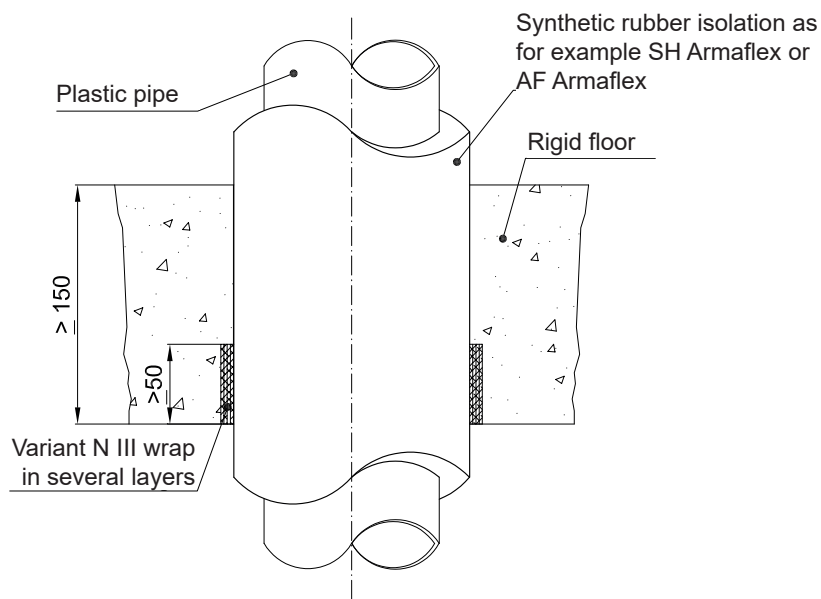
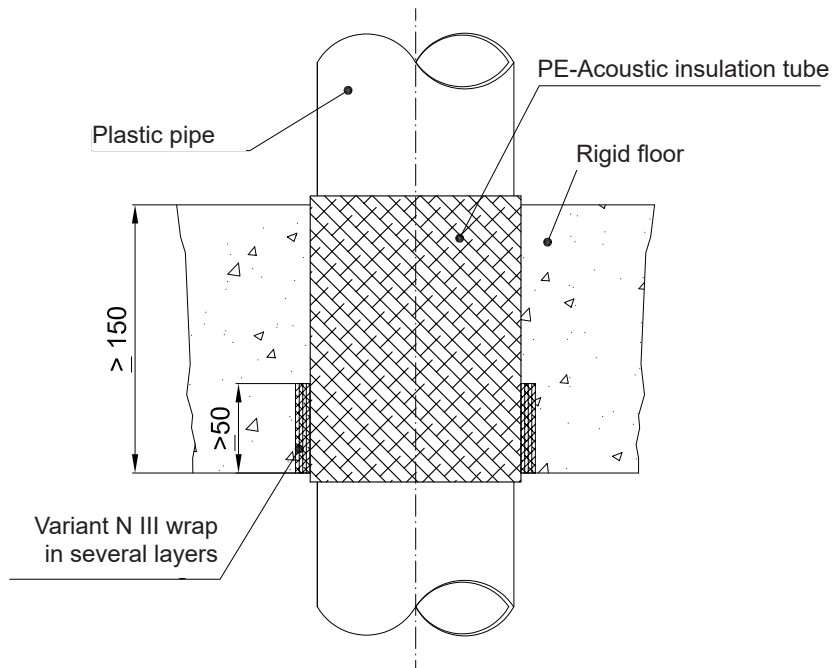
Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Approved assignment - floor

Installations in rigid floors with or without additional insulation



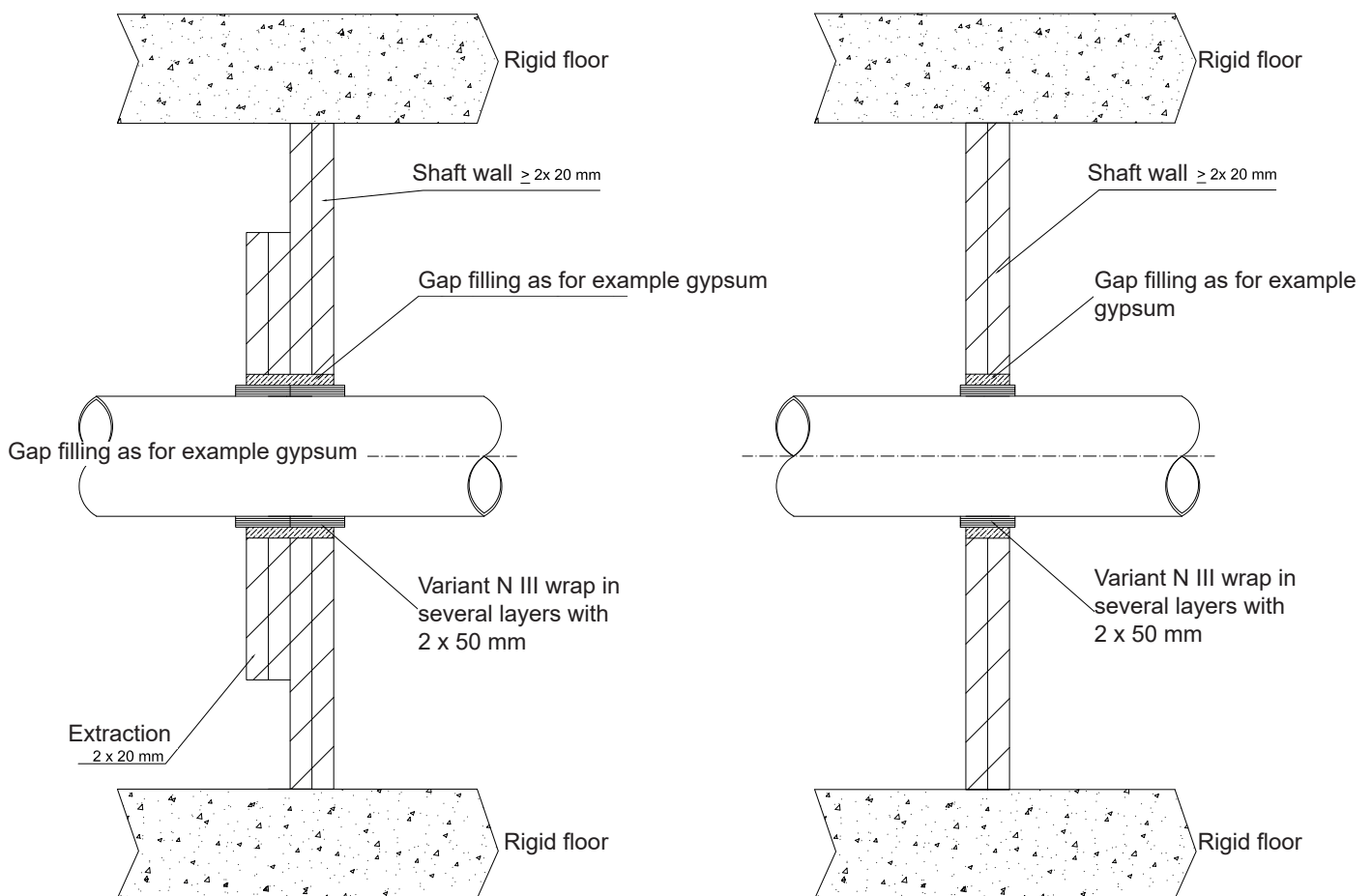
Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Approved assignment - shaft wall

Installation in shaft walls with or without additional insulation



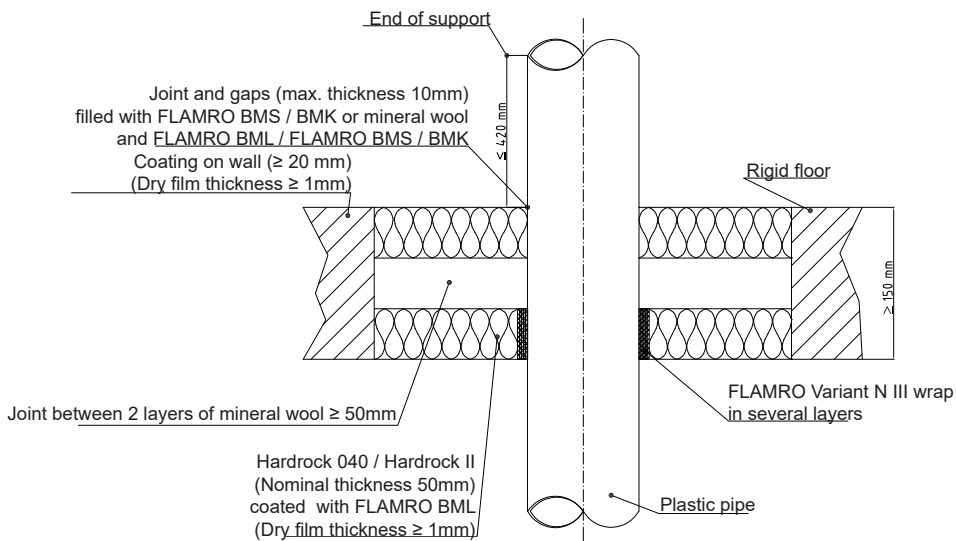
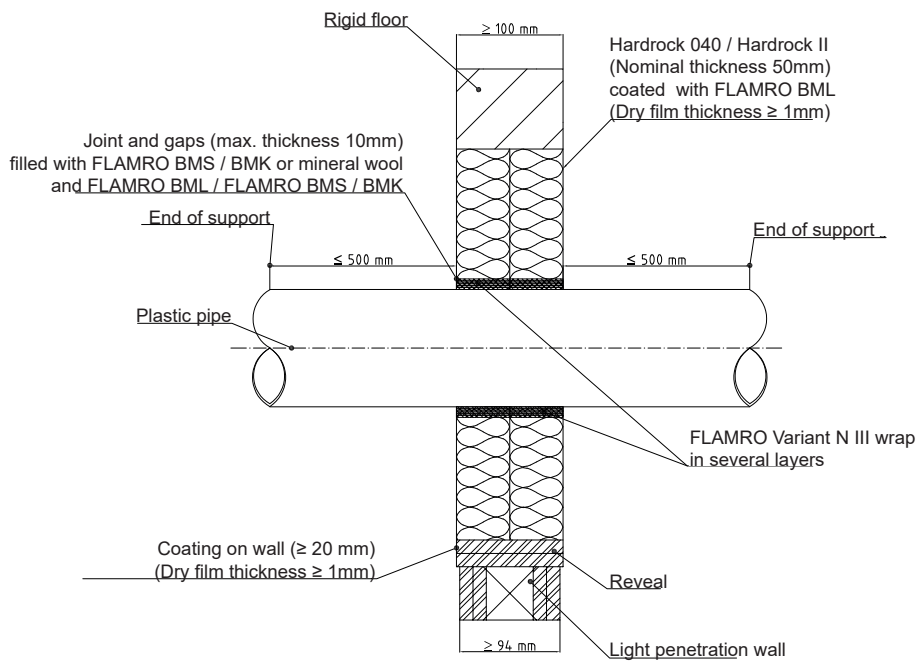
Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Approved assignment - System KSL

See assembly instruction for FLAMRO KSL according to ETA-16/0320



Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

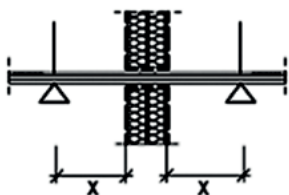
Applied products

Image	Article identifier	Art.-No.:
	FLAMRO Variant N III wrap	15512
	10.000 x 50 x 2 mm self-adhesive 10.000 x 50 x 2 mm inot self-adhesive incl. assembly steps	15012
	FLAMRO BSL 50-1	50050
	Identification sign	14000

Arrangement of the first support (backings)

Supports/Backings of the installations in front of the wall insulation must consist of essentially non-combustible components and be arranged with a distance according to the following overview.

Installation	Wall	Floor
non-combustible pipes	≤ 500 mm on both sides	≤ 420 mm above



Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Assembly

Guidelines for installation

Description of installation for preserving of fire resistance in min. 100 mm thick walls

The following applies for penetration seals in walls with the presented characteristics:

- > Walls must be classified according to EN 13501-2
- > Minimum wall thickness 100 mm
- > Walls must consist of concrete, aerated concrete or masonry or be designed as lightweight partition wall.
- > For flexible walls, there must be at least 2 panels mounted on both sides, the total thickness of the panels must be at least 25 mm on each side.
- > For flexible walls with wood stands, there must be at least 2 panels mounted on both sides, the total thickness of the panels must be at least 25 mm on each side. The minimum distance between pipe penetration seal and the next wood stand must be at least 100 mm. The hollow space must be filled with and insulation of the building material class A1 oder A2 according to EN 13501-1.
- > The pipes can only be led through the wall in an rectangular angle.
- > Penetrations as single penetrations only
- > The minimum length of Af/Armaflex pipe insulation must be at least 350 mm from both sides of the wall.
- > The pipe insulation must be led through the penetration seal without any interruptions.
- > The annular gap between pipe and wall can be 10 mm to 50 mm.
- > The pipes can be equipped with sound insulation on PE basis with a thickness \leq 4 mm.

Description of installation for FLAMRO KSL in min. 100 mm thick walls

The following applies for penetration seals in walls with the presented characteristics:

- > Walls must be classified according to EN 13501-2.
- > Minimum wall thickness 100 mm
- > Walls must consist of concrete, aerated concrete or masonry or be designed as lightweight partition wall.
- > For flexible walls, there must be at least 2 panels mounted on both sides, the total thickness of the panels must be at least 25 mm on each side.
- > For flexible walls with wood stands, there must be at least 2 panels mounted on both sides, the total thickness of the panels must be at least 25 mm on each side. The minimum distance between pipe penetration seal and the next wood stand must be at least 100 mm. The hollow space must be filled with and insulation of the building material class A1 oder A2 according to EN 13501-1.
- > The thickness of the mineral fibre penetration seal must be at least 2 x 50 mm (FLAMRO KSL acc. to ETA -16/0320).
- > The pipes can only be led through the wall in an rectangular angle.
- > The assembly instruction for FLAMRO KSL is to be observed.

Description of installation for preserving of fire resistance in min.150 mm thick rigid walls

The following applies for penetration seals in floors with the presented characteristics:

- > Rigid floors must be classified according to EN 13501-2
- > Minimum floor thickness 150 mm
- > Rigid floors must consist of concrete or aerated concrete with a raw density of 550 kg/m³.
- > The distance between two single pipe penetrations \varnothing 110 mm must be at least 100 mm.
- > PVC pipes and multi-layer composite piping Unipipe, Alpex Duo and Fusiotherm Stabverbund of less than 100 mm or with a zero clearance in linear arrangement can be installed. In such cases, the requirements listed in the table regarding zero clearance is to be observed.
- > The pipes can only be led through the floor perpendicularly.
- > The minimum length of Af/Armaflex pipe insulation must be at least 350 from both sides of the wall.
- > The pipe insulation must be led through the penetration seal without interruptions.
- > The annular gap width between pipe and wall can be 10 mm to 50 mm.
- > The pipes can be applied with a sound insulation on PE basis and with a thickness of \leq 4 mm.

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056

Description of installation for FLAMRO KSL in min. 150 mm thick rigid floors

The following applies for penetration seals in floors with the presented characteristics:

- > Rigid floors must be classified according to EN 13501-2.
- > The minimum floor thickness must be 150 mm.
- > Rigid floors must consist of concrete or aerated with a minimum raw density of 650 kg/m³.
- > The pipes can only be inserted rectangularly through the penetration seal.
- > The thickness of the mineral fibre seal must be at least 2 x 50 mm (FLAMRO KSL according to ETA- 16/0320).
- > The assembly instruction of FLAMRO KSL is to be observed.

Description of installation for preserving of fire resistance in shaft walls with a wall thickness of $\geq 2 \times 20$ mm

The following applies for penetration seals in floors with the presented characteristics:

- > Shaft walls must be classified according to EN 13501-2
- > Shaft walls must have a minimum thickness of 2 x 20 mm.
- > For separated shaft walls, the number of panels must be at least 2 * 20 mm (gypsum board panels according to EN 15283), the total thickness of the shaft wall must be 40 mm.
- > For shaft walls, CW 50 stand profiles with max. 1000 mm centre distance can be mounted.
- > The distance between a pipe penetration seal and a neighbouring one can be max. 300 mm.
- > The distance between a pipe penetration seal to another penetration seals for e.g. cables etc. must be min. 100 mm.
- > The pipes can only be inserted rectangularly through the penetration seal.
- > The pipe coating can only be arranged centred within the shaft wall paneling.

Description of installation for preserving of fire resistance in shaft walls with a wall thickness of $\geq 2 \times 20$ mm and a doubling of 2 x 20 mm

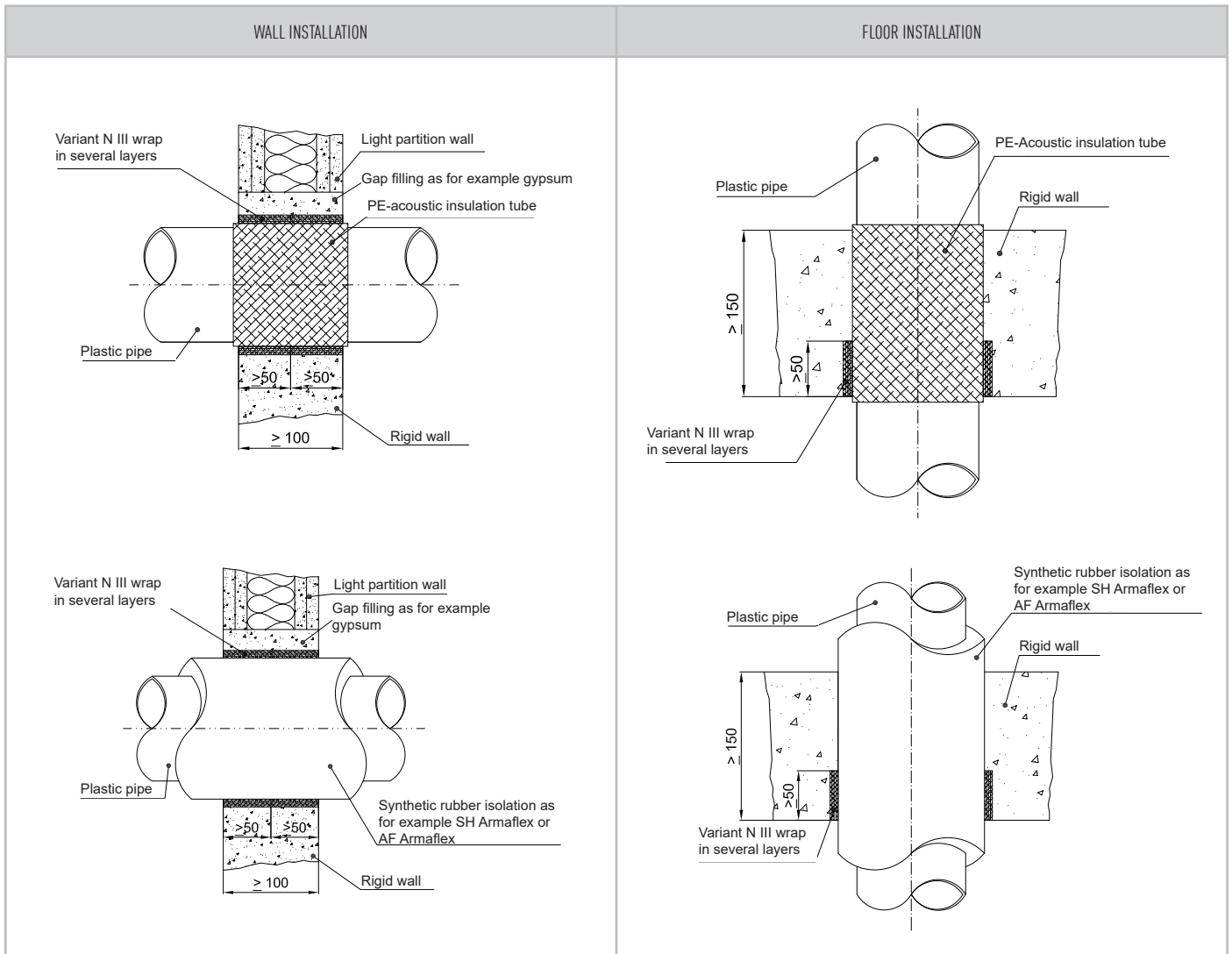
The following applies for penetration seals in floors with the presented characteristics:

- > Shaft walls must be classified according to EN 13501-2
- > Shaft walls must have a minimum thickness of 2 x 20 mm and have a doubling of 2 x 20 mm around the pipe.
- > For separated shaft walls, the number of panels must be at least 2 * 20 mm (gypsum board panels according to EN 15283), the total thickness of the shaft wall must be 40 mm.
- > For shaft walls, CW 50 stand profiles with max. 1000 mm centre distance can be mounted.
- > The distance between a pipe penetration seal and a neighbouring one can be max. 300 mm.
- > The distance between a pipe penetration seal to another penetration seals for e.g. cables etc. must be min. 100 mm.
- > The pipes can only be inserted rectangularly through the penetration seal.
- > The pipe coating can only be arranged centred within the shaft wall paneling.

Assembly Instruction

FLAMRO Variant N III wrap

according to ETA-16/0056





DECLARATION OF PERFORMANCE

for the product **FLAMRO Variant N III wrap**

1.	Unique identification code of the product-type:	RA-16-0056
2.	Intended use:	Pipe penetration seal
3.	Manufacturer:	FLAMRO Brandschutz-Systeme GmbH Am Sportplatz 56291 Leiningen
4.	Authorised representative:	Not relevant
5.	System(s) of AVCP:	System 1
6.a)	Harmonised standard	Not relevant
6.b)	European Assessment Document:	ETAG-026, Part 2, August 2011
	European Technical Assessment:	ETA-16/0056
	Technical Assessment Body:	OIB - Österreichisches Institut für Bautechnik, Vienna
	Notified bod/ies:	Materialprüfanstalt für das Bauwesen Braunschweig, NO. 0761

7. Declared performances

Essential characteristics	Performance	Harmonised technical specification
Fire resistance as a pipe penetration seal for combustible pipes by means of the fire protection collar type Variant N III wrap ≤ 160 mm on flexible walls ≥ 94 mm, rigid walls ≥ 100 mm, shaft walls ≥ 40 mm or rigid floor constructions ≥ 150 mm and in FLAMRO KSL	Max. EI 120 - U/U or Max. EI 240 - U/C	ETA-16/0056
Durability and serviceability	Use category type Y ₂ / X	
Air permeability	NPD	
Water permeability	NPD	
Release of dangerous substances	none	
Mechanical resistance and stability	NPD	
Resistance to impact / movement	NPD	
Adhesion	NPD	
Airborne sound insulation	NPD	
Thermal properties	NPD	
Water vapour permeability	NPD	
Components - reactions to fire	Class acc. to EN 13501-1	
FLAMRO Variant N III wrap	E	
FLAMRO BML	E	
FLAMRO BMS	E	
FLAMRO BMK	E	
Mineral wool raw density 150 kg/m ³	A1	
*) according to ETA-16/0056		

8. Appropriate Technical Documentation /
Specific Technical Documentation:

Not relevant

**Website where Declaration of Performance can be viewed:
www.flamro.com**



The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued in accordance with Regulation (EU) No. 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Dr. Hemp, Head of R&D / Authorised officer, FLAMRO Brandschutz-Systeme
(Name and position)

Leiningen, 27.10.2017
(Place and date of issue)

A handwritten signature in blue ink, appearing to read 'Dr. Hemp', written over a horizontal dotted line.

(signature)