

HENSOTHERM® System für Schachtwand Fire protection solution for one-sided planked drywalls ≥ 90 mm

Technical data sheet and installation manual

Penetration seals of combustible, non-combustible and aluminium composite pipes, ventilation pipes and electrical cables in flexible electrical installation ducts (EIR).

- Complete system for heating, air conditioning, sanitary and electrical systems
- Simple and economical solution
- Fire resistance class up to EI 120 tested according to EN 1366-3
- Ventilation ducts according to OIB 095.4-001/06-012 with HENSOTHERM® FLI-VE, FLI90 and KRS
- Utility model granted for Austria (AT16156U1) and other countries

HENSOTHERM® System für Schachtwand

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General information

Intended use

The **HENSOTHERM® System für Schachtwand** (ETA 20/1307) offers fire protection solutions according to EN 1366-3 for one-sided planked drywall shaft walls ≥ 90 mm in interior rooms and is used to seal off combustible, non-combustible and aluminium composite pipes as well as electrical cables with **HENSOTHERM® 7 KS viskos** from the cartridge, **HENSOTHERM® 7 KS Gewebe 100** or **HENSOTHERM® RM** pipe sleeves with gypsum mortar filling of the annular gap.

According to OIB application principle no. 095.4-001/06-012, ventilation ducts (spiral ducts) up to 160 mm in diameter can also be fitted with the intumescent fire protection seal **HENSOTHERM® FLI90** and **KRS** (cold smoke barrier) or OIB application principle no. 095.4-001/06-008 with the **HENSOTHERM® FLI-VE** with mechanical sealing element. See detailed use cases on the following pages.

Permitted construction elements

The specific construction elements for which the **HENSOTHERM® System für Schachtwand** can be used for sealing off are: one-sided planked drywall (shaft) walls. Different construction variants are permitted. See the detailed use cases on the following pages.

Permitted supply ducts		Max. Ø [mm]
	Cable	≤ 14.0
	Cable bundle	≤ 50.0
	EIR / flexible tubes single	≤ 63.0
	Combustible pipes	≤ 110.0
	Non-combustible pipes with synthetic rubber insulation (FEF)	≤ 33.4 mm [steel]
	Aluminium composite pipes with PE or synthetic rubber insulation (FEF)	≤ 40 [PE] ≤ 32.0 [FEF]
	Ventilation pipes (spiral ducts)	≤ 160.0

Variant 1: The wall must have a minimum thickness of 90 mm and be comprised of a steel stud frame lined on one face with a minimum of two layers of plasterboards at least 20 mm thick, Type GM-F according to EN 15283-1. See chapters A, B and F for construction variants of the penetration seals.

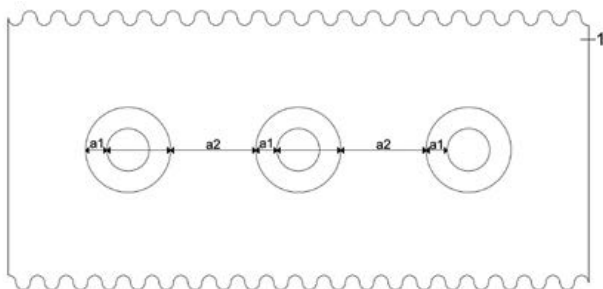
Variant 2: The wall must have a minimum thickness of 95 mm and be comprised of a steel stud frame lined on one face with a minimum of three layers of plasterboards at least 15 mm thick, Type DF according to EN 520. See chapters C, D, E and G for construction variants of the penetration seals.



Important: The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

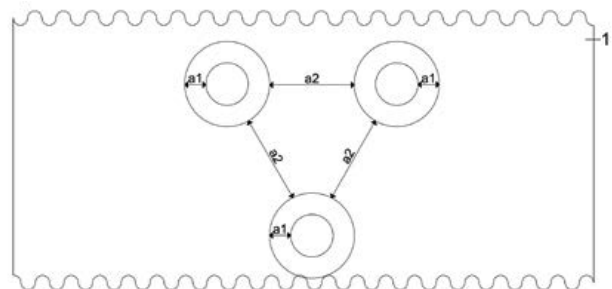
Permitted distances

Option 1



1: Supporting construction, a1: Annular gap, a2: Distance between pipes/seals

Option 2



The minimum distance between the pipes (a2) depends on the application. The annular gap (a1) is nominally 0 mm or 20 mm, whereby the remaining space is filled as described in the application case. In some applications, the cables may be routed with zero clearance (0 mm) to the floor or at an angle through the structural element. The cables must be supported at intervals of no more than 250 mm (or 200m, see the application) on both sides of the wall.

Permitted distances of the seal to other openings or fixtures:

Other penetration seals:


Minimum distance ≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

Other openings or fixtures:


Minimum distance ≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

Individual products in this product system


HENSOTHERM® 7 KS viskos

Product name	Packaging size	Article Number
 <p>HENSOTHERM® 7 KS viskos, anthracite grey</p>	310 ml cartridge in a box of 20 cartridges	1640700431

HENSOTHERM® 7 KS Gewebe 100

Product name	Packaging size	Article Number
 <p>HENSOTHERM® 7 KS Gewebe 100</p>	10 m roll, width 100 mm, thickness 1 mm	1600100000

HENSOTHERM® RM 50 (construction height 50 mm)*

Type / size	Pipe diameter [mm]	External diameter [mm]	Mounting brackets	Article Number	
	HENSOTHERM® RM 50- 40	≤ 40	53.7	2	1510040000
	HENSOTHERM® RM 50- 56	> 40 ≤ 56	69.4	2	1510056000
	HENSOTHERM® RM 50- 63	> 56 ≤ 63	85.0	2	1510063000
	HENSOTHERM® RM 50- 75	> 63 ≤ 75	95.9	3	1510075000
	HENSOTHERM® RM 50- 90	> 75 ≤ 90	112.1	3	1510090000
	HENSOTHERM® RM 50- 110	> 90 ≤ 110	132.8	4	1510110000
	HENSOTHERM® RM 50- 125	> 110 ≤ 125	150.6	4	1510125000
	HENSOTHERM® RM 50- 140	> 125 ≤ 140	169.5	4	1510140000
	HENSOTHERM® RM 50- 160	> 140 ≤ 160	193.7	5	1510160000
	HENSOTHERM® RM 50- 180	> 160 ≤ 180	213.4	5	1510180000
	HENSOTHERM® RM 50- 200	> 180 ≤ 200	240.3	5	1510200000
	HENSOTHERM® RM 50- 225	> 200 ≤ 225	271.8	6	1510225000
	HENSOTHERM® RM 50- 250	> 225 ≤ 250	301.5	7	1510250000

*The table shows all available sizes of HENSOTHERM® RM 50 pipe collars, not all of which are included in ETA No. 20/1307.

Individual products in this product system

HENSOTHERM® FLI90, HENSOTHERM® FLI-VE and HENSOTHERM® KRS

	Product name	Packaging size	Article Number
	HENSOTHERM® FLI90-80	50 units	1550080000
	HENSOTHERM® FLI90-100	50 units	1550100000
	HENSOTHERM® FLI90-125	25 units	1550125000
	HENSOTHERM® FLI90-160	25 units	1550160000
	HENSOTHERM® KRS-80	50 units	1540080000
	HENSOTHERM® KRS-100	50 units	1540100000
	HENSOTHERM® KRS-125	25 units	1540125000
	HENSOTHERM® KRS-160	25 units	1540160000
	HENSOTHERM® FLI-VE-80	40 units	1530080000
	HENSOTHERM® FLI-VE-100	40 units	1530100600
	HENSOTHERM® FLI-VE-125	40 units	1530125600
	HENSOTHERM® FLI-VE-160	25 units	1530160000

Environmental and emissions data

All emissions certificates and additional documentation are available for download on request and in the Rudolf Hensel Product Selector (www.productselector.de).

EPD - Transparent environmental information for sustainable construction

An Environmental Product Declaration (EPD) is a Type III environmental label that provides sound, scientifically based data on the environmental impact of construction products. It is based on international standards such as ISO 14025 and EN 15804 and is independently audited before publication. In contrast to certificates, the EPD does not assess product quality, but rather the quality and transparency of the life cycle assessment data.

The German declaration system for EPDs for construction products is organised by Institut Bauen und Umwelt e. V. (IBU). The IBU is an initiative of construction material manufacturers who are in favour of sustainable construction. The EPDs issued are publicly accessible (ibu-epd.com/veroeffentlichte-epds) and form a central basis for the sustainability assessment of buildings by providing comprehensive information on the entire life cycle of a construction product - from the extraction of raw materials to disposal or recycling. Aspects such as energy consumption, greenhouse gas emissions and resource utilisation as well as technical properties such as service life, thermal and acoustic insulation are presented.

This neutral, comparable data enables architects, planners and building owners to make informed decisions about materials and construction methods, particularly with regard to building certification systems such as DGNB, LEED or BREEAM. Thanks to their transparency, EPDs promote the planning of sustainable buildings and make an important contribution to resource conservation and the circular economy.

Sustainable construction and sustainability certification as an instrument of quality assurance are promoted nationally as part of various programmes in Germany, e.g. Climate-friendly New Construction (KFN) and Federal Funding for Efficient Buildings (BEG).



Environmental and emissions data

HENSOTHERM® 7 KS viskos

HENSOTHERM® 7 KS is an intumescent grey-black coating with extremely low emissions. The construction material based on expandable graphite with organic binders, water and additives is considered to be harmless to health. The coating has an environmental product declaration (EPD-RHG-20240228-IBA3-DE) certified by the IBU, is classified as low-emission and contains no borates, solvents, plasticisers, halogens, formaldehydes, alkylphenol ethoxylates (APEO), PFAS, or asbestos.

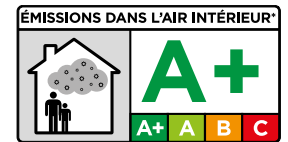


Regulation or protocol	Assessment	Connection	Emission rate after 3 days	Emission rate after 28 days
French VOC regulation	A+	TVOC	< 5 µg/m ³	≤ 5 µg/m ³
French CMR components	Compliant	TSVOC	< 5 µg/m ³	≤ 5 µg/m ³
ABG / AgBB guidelines DIBt	Compliant	R value	< 1	< 1
LEED credits EQ c4.2	Compliant	Carcinogenic	< 1 µg/m ³	< 1 µg/m ³
Belgian Royal Decree for Construction Products	Compliant			

General information

HENSOTHERM® 7 KS Gewebe 100

HENSOTHERM® 7 KS Gewebe is a highly-flexible intumescent fabric tape based on expandable graphite, with extremely low emissions and is considered to be harmless to human health. The highly flexible fabric strips consist of A2 glass filament fabric that is coated with the intumescent **HENSOTHERM® 7 KS** fire protection coating friction-fitted on both sides. **HENSOTHERM® 7 KS Gewebe** has its own environmental product declaration (EPD-RHG-20240375-IBA3-DE) certified by the IBU. The **HENSOTHERM® 7 KS** coating also fulfils the requirements of LEED credit EQ c4.2 with its non-VOC properties, and has also been classified as A+ in accordance with French VOC emission regulations.



Regulation or protocol	Assessment	Connection	Emission rate after 3 days	Emission rate after 28 days
French VOC regulation	A+	TVOC	< 5 µg/m ³	≤ 5 µg/m ³
French CMR components	Compliant	TSVOC	< 5 µg/m ³	≤ 5 µg/m ³
ABG / AgBB guidelines DIBt	Compliant	R value	< 1	< 1
LEED credits EQ c4.2	Compliant	Carcinogenic	< 1 µg/m ³	< 1 µg/m ³
Belgian Royal Decree for Construction Products	Compliant			

Pipe end configuration

For practical use, proper pipe end configuration must be taken into account when choosing a suitable fire penetration seal for e.g. plastic rainwater or ventilated sewage pipes, or unventilated drinking or heating water pipes. The classifications of penetration seal constructions stated in this manual, e.g. e.g. "EI 60 U/U", include whether the ends of tested pipes were closed (Capped, marked C) inside and outside of the furnace or were open (Uncapped, marked U). According to EN 1366-3, configuration U/U includes all other configurations (but not vice versa) and is therefore suitable for all applications:



Flexible elastomeric foam (FEF) insulation

On the basis of equivalent or better fire protection properties, it is possible to use different alternative insulations made of flexible elastomeric foam (FEF) or synthetic rubber with a classification equal to or better than prescribed in ETA 20/1309 (B-s1,d0, B-s2,d0 or B-s3,d0 according to EN 13501-1). The list below might not be exhaustive or up to date, so please reconfirm before installation.

Insulation made of flexible elastomeric foam with a classification of B-s1,d0 or better in accordance with EN 13501-1:

ArmaFlex Ultima	Kaiflex KKplus s1
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Insulation made of flexible elastomeric foam with a classification of B-s2,d0 or better in accordance with EN 13501-1:

AF/ArmaFlex Evo	Eurobatex	Kaiflex KKplus s1	K-FLEX SRC ECO
ArmaFlex LS	Eurobatex H	Kaiflex KKplus s2	K-FLEX ST
ArmaFlex Ultima	Eurobatex Plus UF	Kaiflex LS	K-FLEX ST/SK

Insulation made of flexible elastomeric foam with a classification of B-s3,d0 or better in accordance with EN 13501-1:



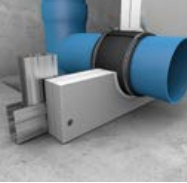



AF/ArmaFlex	Eurobatex	Kaiflex KKplus s3
AF/ArmaFlex Evo	Eurobatex H	Kaiflex LS
ArmaFlex Class 0	Eurobatex Plus UF	Kaiflex ST
ArmaFlex LS	FLEXEN Heizungskautschuk plus	K-FLEX H
ArmaFlex Ultima	Kaiflex HTplus	K-FLEX SRC ECO
ArmaFlex XG	Kaiflex KKplus s1	K-FLEX ST
SH/ArmaFlex	Kaiflex KKplus s2	K-FLEX ST/SK

A

Flexible wall constructions planked on one side,
with a minimum wall thickness of **90 mm**

HENSOTHERM® 7 KS Gewebe 100

A. Flexible wall construction planked on one side ≥ 90 mm | HENSOTHERM® 7 KS Gewebe 100

A.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	12
2.		Flexible electrical installation pipes (EIR) with cables with HENSOTHERM® 7 KS Gewebe 100	13
3.		Combustible plastic pipes without insulation with HENSOTHERM® 7 KS Gewebe 100	14 - 15
4.		Aluminium composite pipes without insulation with HENSOTHERM® 7 KS Gewebe 100	16
5.		Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS Gewebe 100	17 - 18
6.		Metal pipes with FEF-insulation (CS) with HENSOTHERM® 7 KS Gewebe 100	19

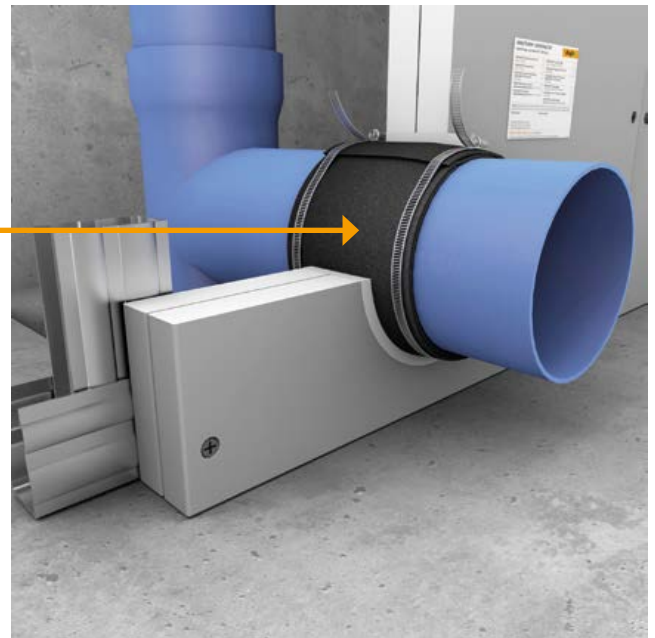
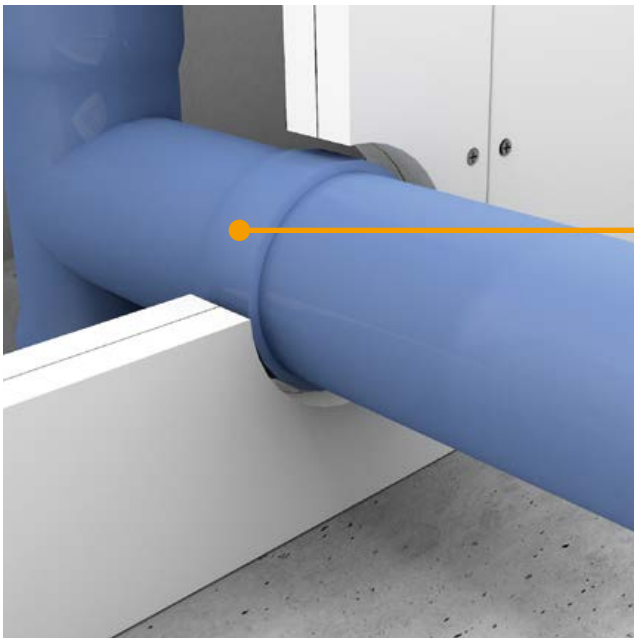
Installation steps for penetration seals with HENSOTHERM® 7 KS Gewebe 100

The **HENSOTHERM® 7 KS Gewebe 100** is wrapped around the pipe or insulation in the specified number of layers (see table in the application), cut to length with scissors or a cutter knife, aligned in the centre of the drywall panels and fixed on both sides with steel hose clamps, metal straps or wires ≥ 0.6 mm. The remaining annular gap is completely filled with gypsum mortar.



A, -B,
2 x GM-F ≥ 20 mm

Wrapping with **HENSOTHERM® 7 KS Gewebe 100** may be applied to a sleeve if this is specified in the application. Further information can be found in the design details of the respective application on the following pages.



A. Shaft wall ≥ 90 mm, 2 x GM-F ≥ 20 mm (EN 15283-1) | HENSOTHERM® 7 KS Gewebe 100

Permitted construction elements and supporting structures

A.1. Flexible wall construction planked on one side ≥ 90 mm

A.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire-resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 90 mm and be comprised of a steel stud frame lined on one face with a minimum of two layers of plasterboards at least 20 mm thick, Type GM-F according to EN 15283-1.

Maximum seal size

A.1.2. The maximum permitted annular gap width between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct and any insulation present.

Permitted minimum spacings and distance of the first support

A.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter A.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **250 mm** on both sides of the wall or must lie on the floor.

Key:

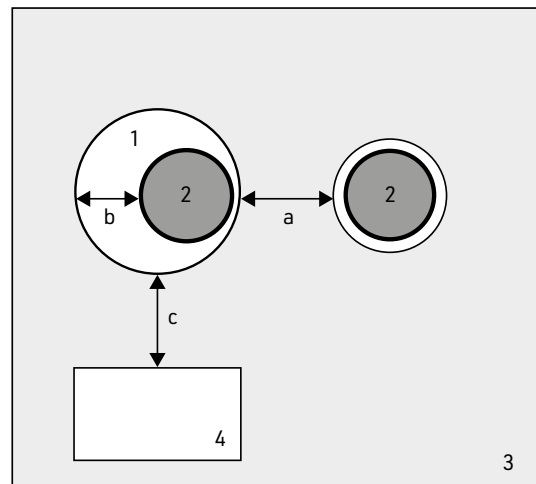
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations:

Minimum distances between penetrating supply ducts:

- a_{1-1} : between EIR/cables ≥ 100 mm
- a_{1-2} : between plastic pipes ≥ 100 mm
- a_{1-3} : between aluminium composite pipes ≥ 100 mm
- a_{1-4} : between metal pipes ≥ 100 mm

Annular gap:

b_{1-1} : Annular gap width max. 20 mm, completely filled with gypsum filler



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations::

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

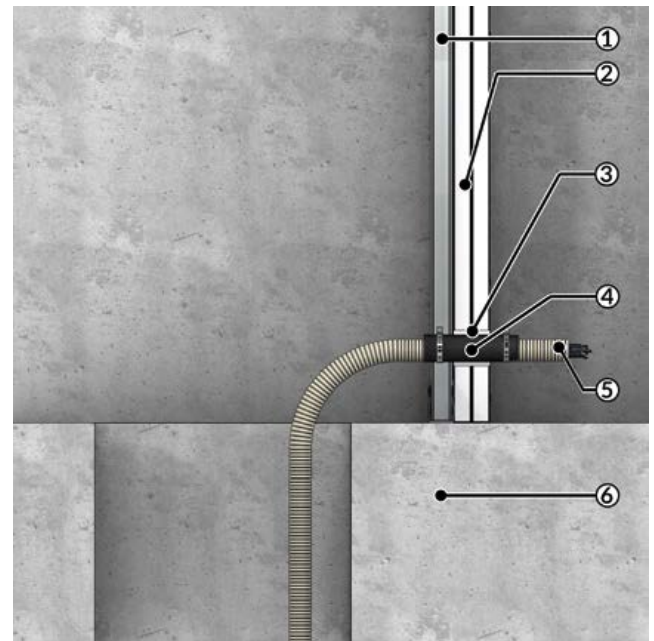
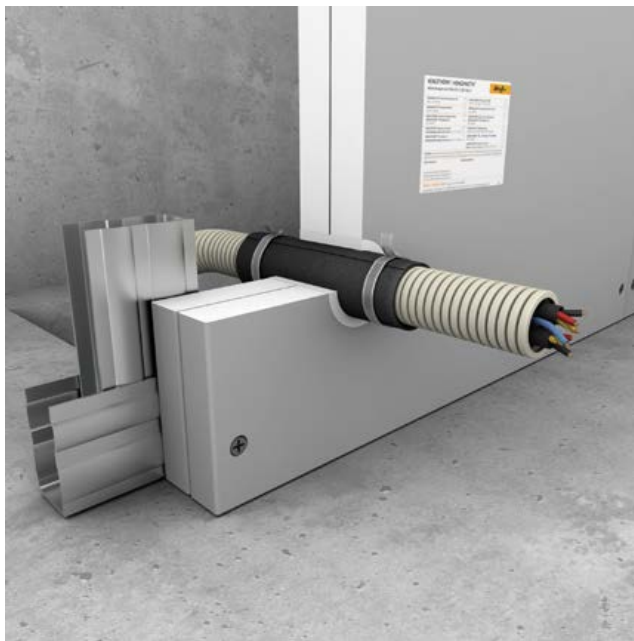
A.2. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS Gewebe 100

Construction details: Individual flexible or bendable combustible electrical installation conduits (EIC) made of polyolefin, with electric cables penetrating a flexible wall planked on one side

The penetrating cables may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the electrical installation conduit (EIC) with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



A, -B,
2 x GM-F ≥ 20 mm

(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F gypsum boards according to EN 15283-1 (3) Annular gap filled with gypsum filler (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Single electrical installation conduit with cables (6) Solid floor

A.2.1. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS Gewebe 100

Pipe / cable	Max. diameter single EIR [mm]	Max. diameter single cable [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Individual flexible or bendable combustible electrical installation conduits (EIC) made of polyolefin, with cables of type A1, A2 or A3, individually or in bundles	32	10	2	EI 90	EI 90

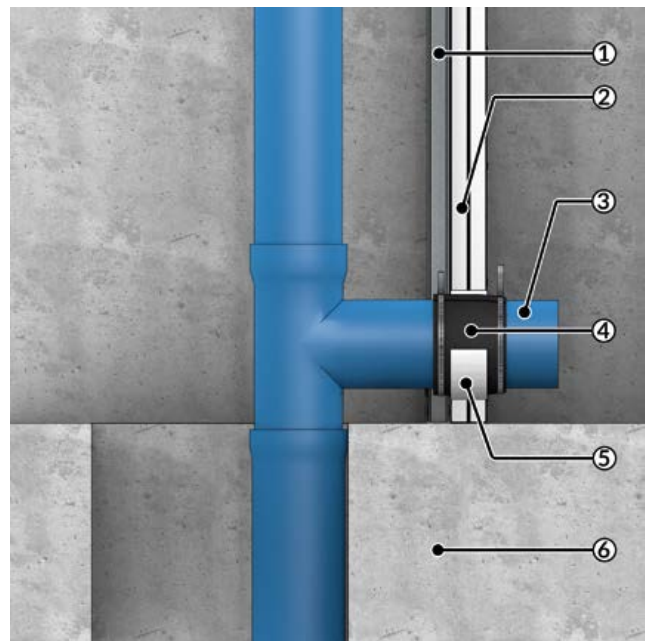
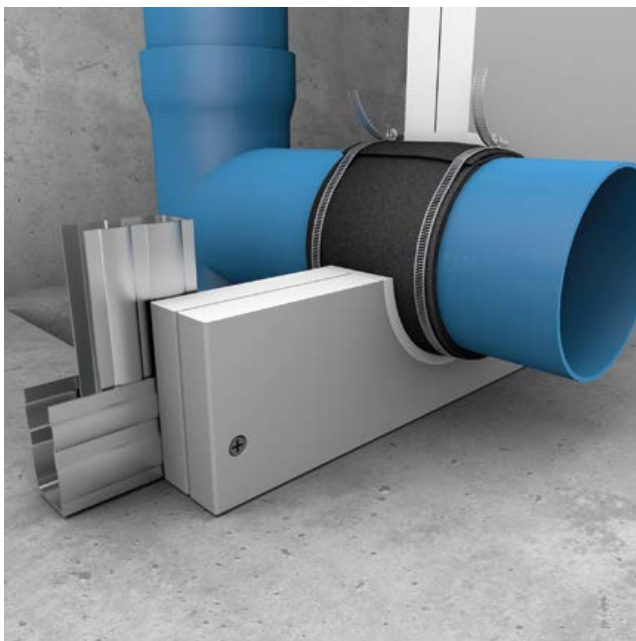
A.3. Combustible plastic pipes without insulation with HENSOTHERM® 7 KS Gewebe 100

Construction details: Combustible plastic pipes without insulation that penetrate a flexible wall planked on one side, installed with or without a pipe connection inside the wall.

The penetrating cables may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the pipe with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick GM-F plasterboard according to EN 15283-1 (3) Combustible pipe, with or without pipe connection inside the wall (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Annular gap filled with gypsum filler (6) Solid floor

A.3.1. Geberit Silent-PP

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Geberit Silent-PP	32	2.0	3	EI 90 U/U	-
	40				
	50				
	75	2.6	4	-	EI 90 U/U
	90	3.1	6	EI 90 U/U	EI 90 U/U
	110	3.6			

A.3.2. Pipelife MASTER 3 PLUS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Pipelife MASTER 3 PLUS	32	1.8	3	-	EI 90 U/U
	40				
	50	2.0			
	75	2.1	4		
	90	2.5	6		
	110	2.8			

A.3.3. POLO-KAL NG

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
POLO-KAL NG	32	1.8	3	EI 90 U/U	EI 90 U/U
	40				
	50	2.0			
	75	2.6	4		

A, -B,
2 x GM-F ≥ 20 mm

A.3.4. POLO-KAL XS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
POLO-KAL XS	32	1.8	3	EI 90 U/U	EI 90 U/U
	40				
	50	2.0			
	75	2.6	4		
	90	3.0	6		
	110	3.4			

A.3.5. Rehau RAUPIANO PLUS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Rehau RAUPIANO PLUS	32	1.8	3	-	EI 90 U/U
	40				
	50			4	
	75	1.9			
	90	2.2	6		
	110	2.7			

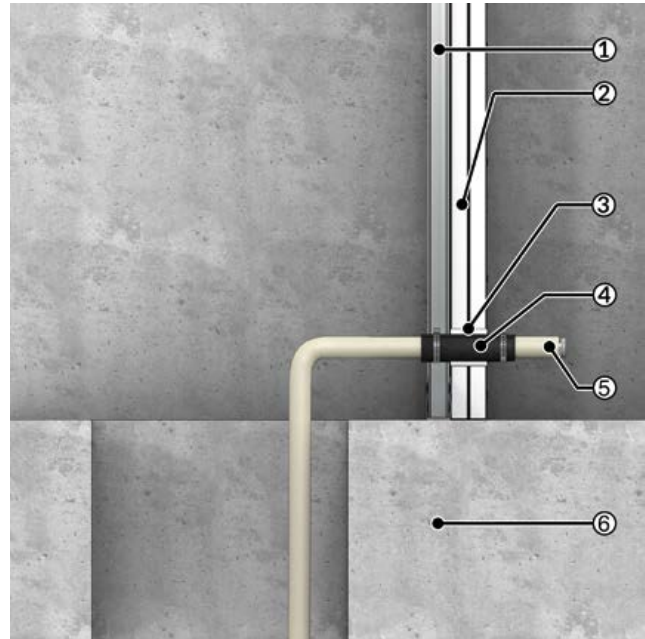
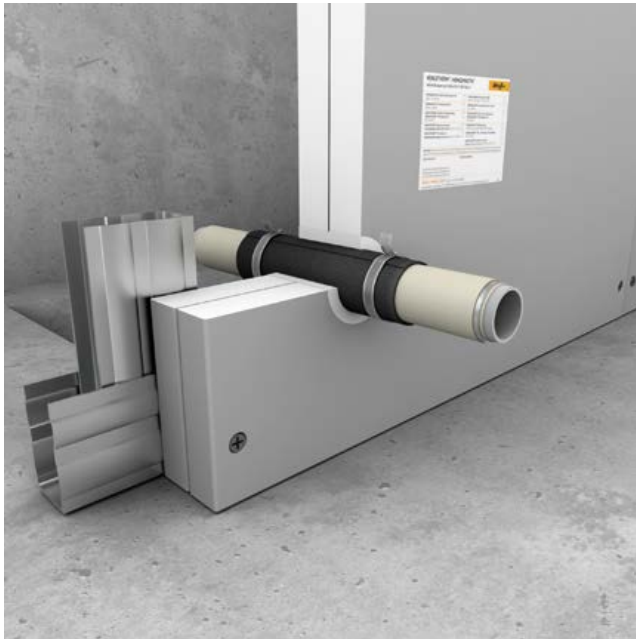
A.4. Aluminium composite pipes without insulation with HENSOTHERM® 7 KS Gewebe 100

Construction details: Multi-layer aluminium composite pipes without insulation that penetrate a flexible wall planked on one side.

The penetrating cables may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the pipe with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboard according to EN 15283-1 (3) Annular gap filled with gypsum filler (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Aluminium composite pipe (6) Solid floor

A.4.1. Rehau RAUTITAN

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Rehau RAUTITAN	16.2	2.6	2	EI 90 U/C	EI 90 U/C
	20.0	2.9			
	25.0	3.7			
	32.0	4.7			

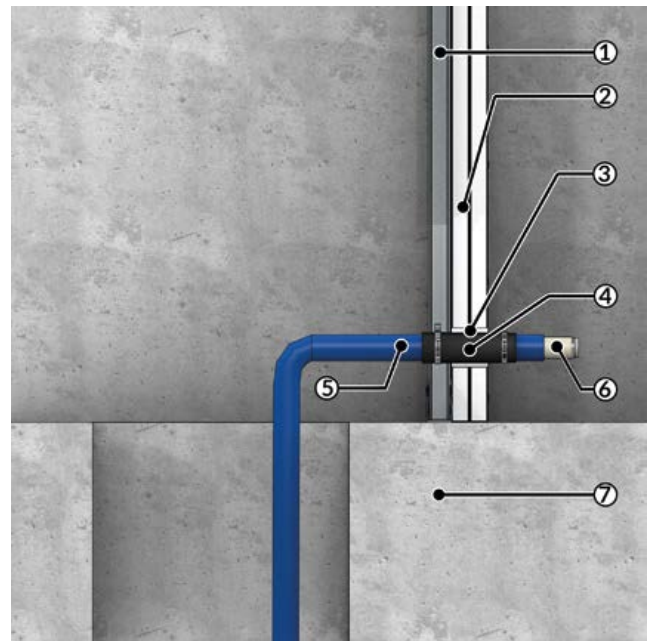
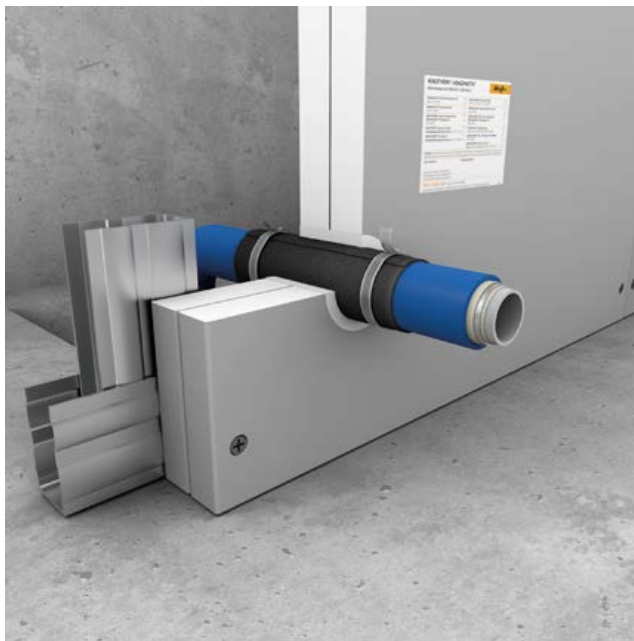
A.5. Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS Gewebe 100

Construction details: Multi-layer aluminium composite pipes mit continuous sustained (CS) PE insulation (any manufacturer) that penetrate a flexible wall planked on one side

The penetrating cables may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the insulation with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



A, -B,
2 x GM-F ≥ 20 mm

- (1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboard according to EN 15283-1 (3) Annular gap filled with gypsum filler (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Insulation (6) Aluminium composite pipe (7) Solid floor

A.5.1. ALVA ACTA SIS with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
ALVA ACTA SIS	16.0	2.0	PE	≤ 9.0	CS	4	EI 90 U/C	EI 90 U/C
	20.0							
	26.0	3.0						

A.5.2. HakaGerodur HAKAthen with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
HakaGerodur HAKAthen	16.0	2.0	PE	≤ 9.0	CS	4	EI 90 U/C	EI 90 U/C
	20.0							
	26.0	3.0						

A.5.3. HERZ composite pipe PE-RT with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
HERZ composite pipe PE-RT	16.0	2.0	PE	≤ 9.0	CS	4	EI 90 U/C	EI 90 U/C
	20.0							
	26.0	3.0						

A.5.4. Pipelife RADOPRESS with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
Pipelife RADOPRESS	16.0	2.0	PE	≤ 9.0	CS	4	EI 90 U/C	EI 90 U/C
	20.0							
	26.0	3.0						

A.5.5. Winkler MT composite pipe with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
Winkler MT composite pipe	16.0	2.0	PE	≤ 9.0	CS	4	EI 90 U/C	EI 90 U/C
	20.0							
	26.0	3.0						

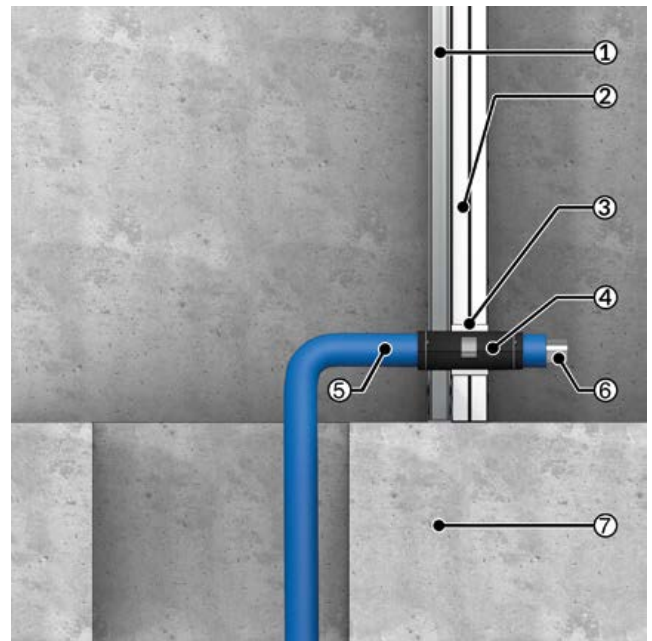
A.6. Metal pipes with FEF insulation (CS) with HENSOTHERM® 7 KS Gewebe 100

Construction details: Non-combustible metal pipes mit continuous sustained (CS) flexible elastomer foam (FEF) insulation that penetrate a flexible wall planked on one side.

The penetrating cables may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the insulation with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



A, - B,
2 x GM-F ≥ 20 mm

- (1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboard according to EN 15283-1 (3) Annular gap filled with gypsum filler (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Insulation (6) Non-combustible metal pipe (7) Solid floor

A.5.1. ALVA ACTA SIS with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
Steel, cast iron	21.3 - 33.4	2.0 - 2.6	ArmaFlex XG, $\leq B-s3,d0$	13.0	CS	2	EI 90 C/U	EI 90 C/U

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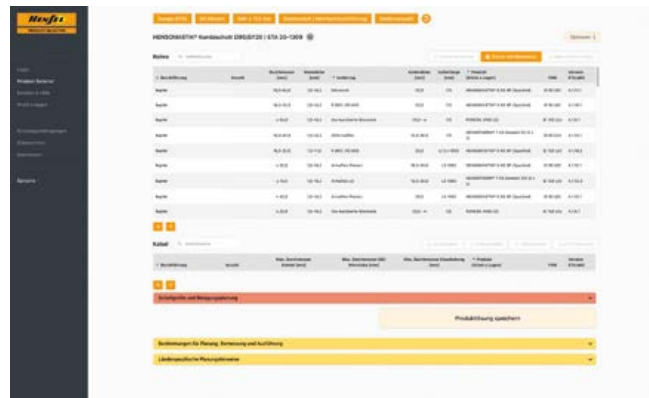
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Use the Product Selector to configure your first penetration seal solution. The Product Selector will open in a browser window using an encrypted connection. You can immediately start configuring an approved penetration seal solution without registering.

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Let's go!

B

Flexible wall constructions planked on one side,
with a minimum wall thickness of **90 mm**

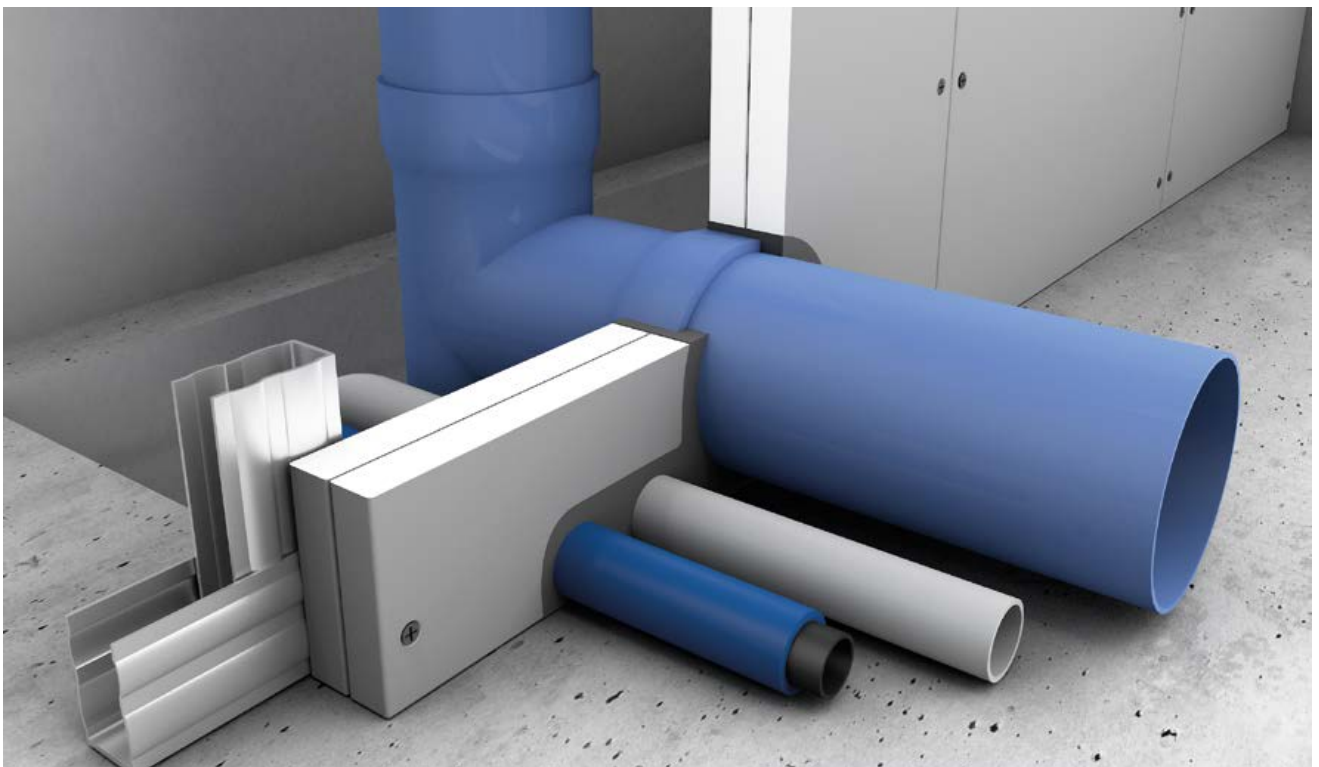
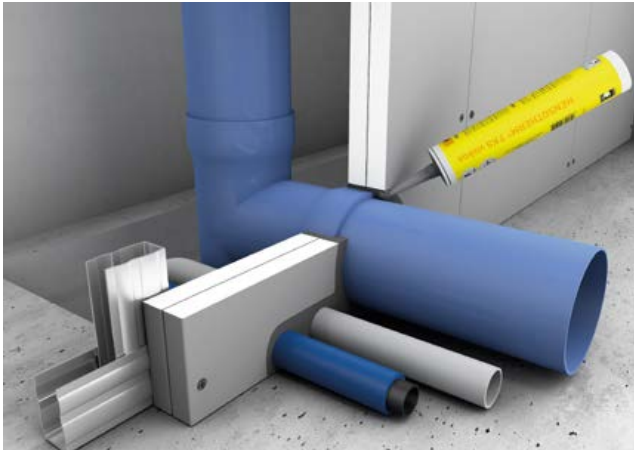
HENSOTHERM® 7 KS viskos

B. Flexible wall construction planked on one side ≥ 90 mm | HENSOTHERM® 7 KS viskos

B.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	24
2.		Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos	25
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5.		Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS viskos	30

Installation steps for penetration seals with HENSOTHERM® 7 KS viskos

The annular gap is completely filled with **HENSOTHERM® 7 KS viskos**. The ducts can be laid directly on the floor with zero clearance. It can also be used on sockets or with angled feedthroughs where this is specified in the application. Further information can be found in the design details for the respective application on the following pages.



HENSOTHERM® 7 KS viskos product properties

Density:	approx. 1.3 g/cm ³
Application temperature range:	+ 5 °C to + 40 °C
Temperature resistance:	- 40 °C to + 140 °C
Curing time:	1 mm / day
First foaming:	approx. + 150 °C
Max. total deformation:	10 %
Building material class in accordance with DIN 4102. T.1:	B2
Shelf life (at + 20 °C and dry storage):	12 months
Storage and transport:	+ 5 °C to + 30 °C
VOC according to LEED:	< 1 g / l
Application temperature range:	+ 5 °C to + 40 °C
Paintability:	Yes

A, -B,
2 x GM-F ≥ 20 mm

B. Shaft wall ≥ 90 mm, 2 x GM-F ≥ 20 mm (EN 15283-1) | HENSOTHERM® 7 KS viskos

Permitted construction elements and supporting structures

B.1. Flexible wall construction planked on one side ≥ 90 mm

B.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire-resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 90 mm and be comprised of a steel stud frame lined on one face with a minimum of two layers of plasterboards at least 20 mm thick, type GM-F according to EN 15283-1.

Maximum seal size

B.1.2. The maximum permitted annular gap width is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating cable and the cable assembly and any insulation present.

Permitted minimum spacings and distance of the first support

B.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter B.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **250 mm** on both sides of the wall or must lie on the floor!

Key:

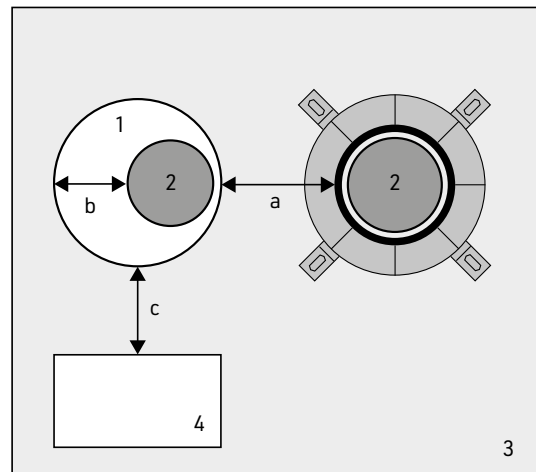
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations

Minimum distances between penetrating supply ducts:

- a_{1-1} : between EIC/cables ≥ 0 mm
- a_{1-2} : between plastic pipes ≥ 0 mm
- a_{1-3} : between aluminium composite pipes ≥ 0 mm

Annular gap:

- b_{1-1} : Annular gap width 10 – 20 mm, completely filled with HENSOTHERM® 7 KS viskos



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations::

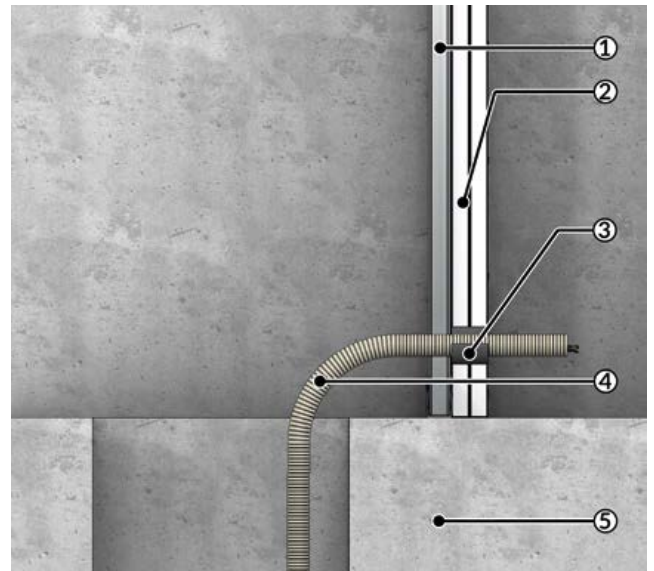
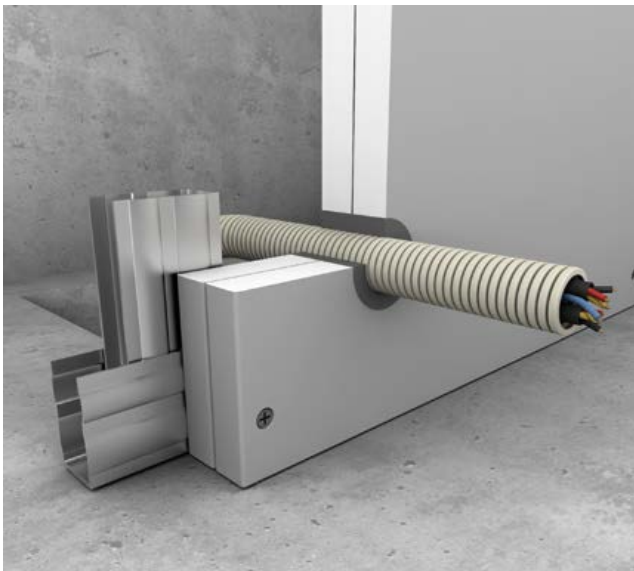
≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

B.2. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos

Construction details: Polyolefin flexible or bendable combustible electrical installation conduits (EIC), laid individually or in series with zero spacing on the floor, with electrical cables penetrating a flexible wall planked on one side.

The penetrating cables may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboards according to EN 15283-1 (3) Annular gap filled with HENSOTHERM® 7 viskos (4) Electrical installation conduit with cables (5) Solid floor

B.2.1. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos

Pipe / cable	Max. diameter single EIR [mm]	Max. diameter single cable [mm]	Classification	
			Stud on fire side	Stud on cold side
Flexible combustible electrical installation conduits (EIC) made of polyolefin, individually or in series, with type A1, A2 or A3 cables, individually or in bundles	32	10	EI 90 C/C	EI 90 C/C
Flexible combustible electrical installation conduits (EIC) made of polyolefin, individually or in series, with type A3 cables, individually or in bundles	63	14	EI 90	-

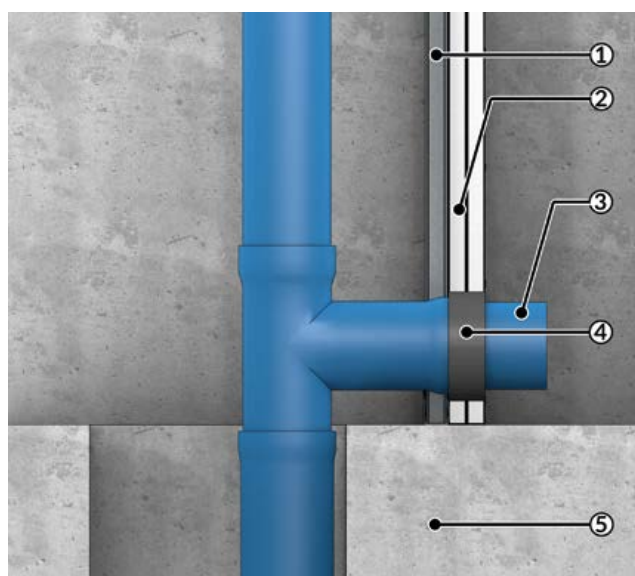
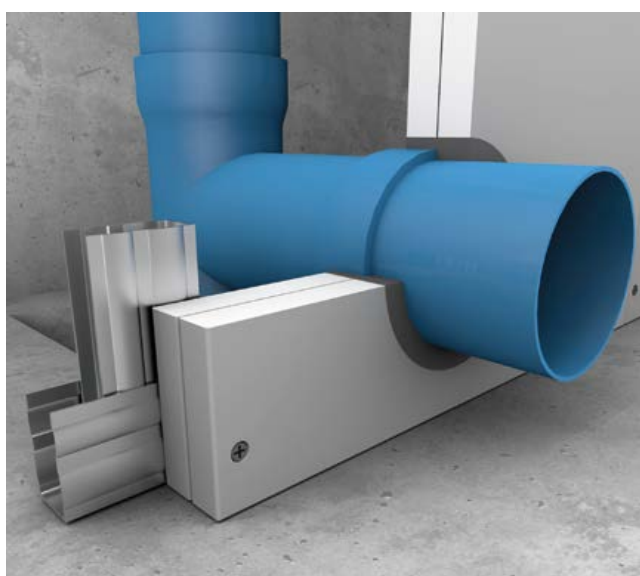
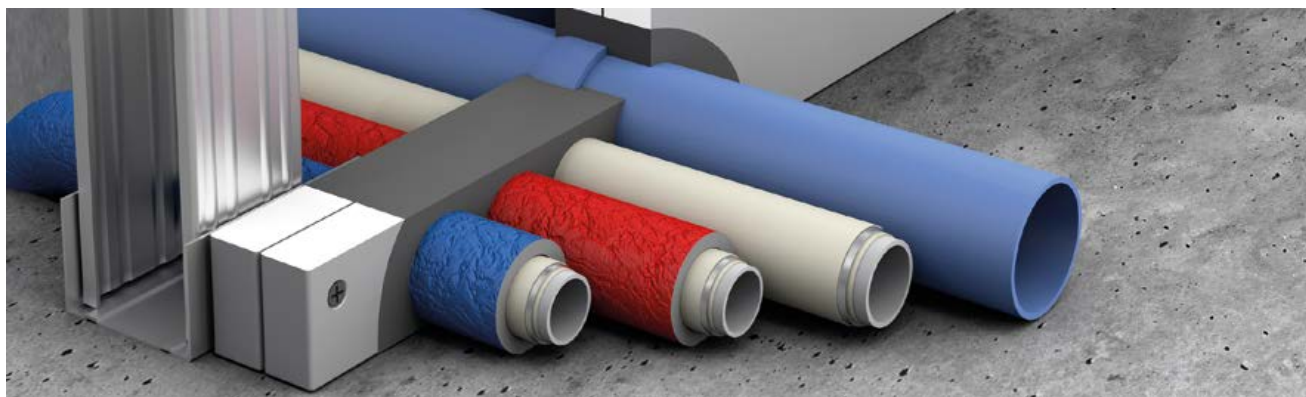
A, -B,
2 x GM-F ≥ 20 mm

B.3. Combustible plastic pipes without insulation with HENSOTHERM® 7 KS viskos

Construction details: Combustible plastic pipes without insulation that penetrate a flexible wall planked on one side, installed with or without a pipe connection inside the wall.

The penetrating cables may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboards according to EN 15283-1 (3) Combustible pipe with or without pipe connection inside the wall (4) Annular gap filled with HENSOTHERM® 7 KS viskos (5) Solid floor

B.3.1. Geberit Silent-PP

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Geberit Silent-PP	32	2.0	EI 90 U/U	EI 90 U/U
	40			
	50			

B.3.2. POLO-KAL NG

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
POLO-KAL NG	32	1.8	EI 90 U/U	EI 90 U/U
	40			
	50	2.0		

B.3.3. POLO-KAL XS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
POLO-KAL XS	32	1.8	EI 90 U/U	EI 90 U/U
	40			
	50	2.0		

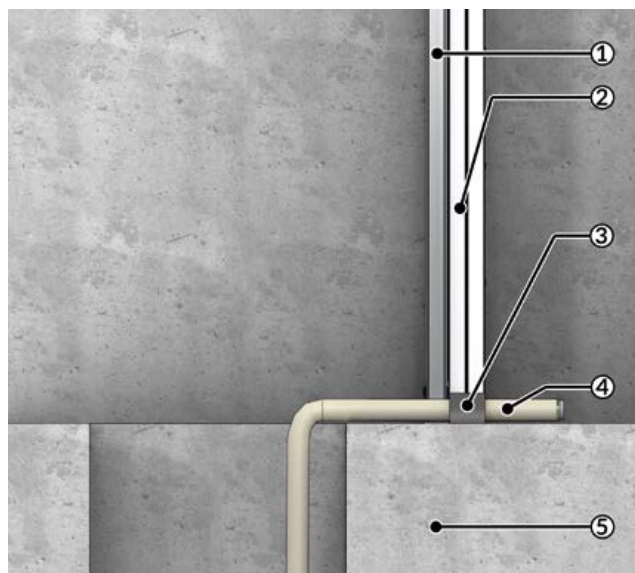
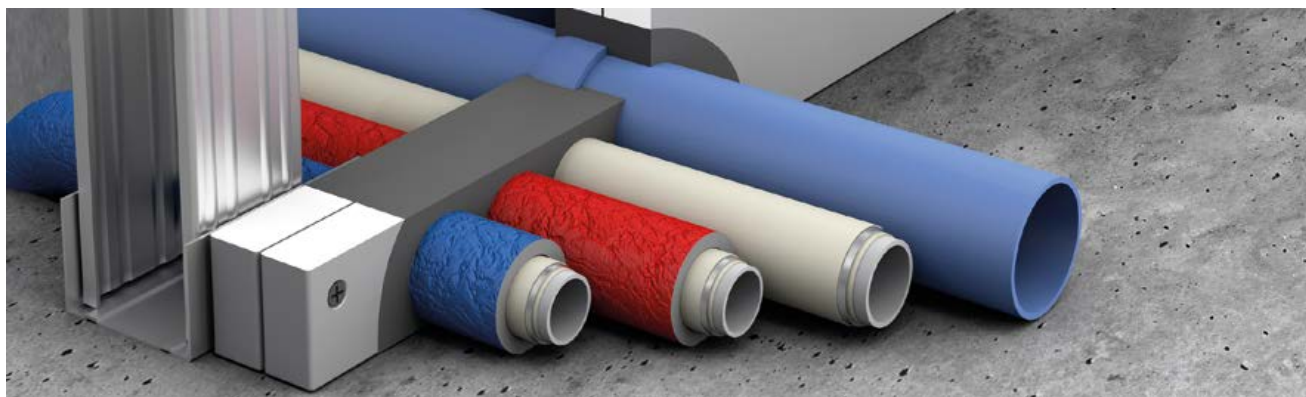
A., B.
2 x GM-F ≥ 20 mm

B.4. Aluminium composite pipes without insulation with HENSOTHERM® 7 KS viskos

Construction details: Multi-layer aluminium composite pipes without insulation, laid individually or in series with zero spacing on the floor, penetrating a flexible wall planked on one side.

The penetrating cables may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboards according to EN 15283-1 (3) Annular gap filled with HENSOTHERM® 7 viskos (4) Aluminium composite pipe, individually or in series with zero spacing (5) Solid floor

B.4.1. Geberit Mepla

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Geberit Mepla	16.0	2.25	EI 90 U/C	EI 90 U/C
	20.0	2.5		
	26.0	3.0		
	32.0			

B.4.2. KE KELIT KELOX

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
KE KELIT KELOX	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0	2.25		
	25.0	2.5		
	32.0	3.0		

B.4.3. TECEflex

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
TECEflex	17.0	2.75	EI 90 U/C	EI 90 U/C
	21.0	3.45		
	26.0	4.0		

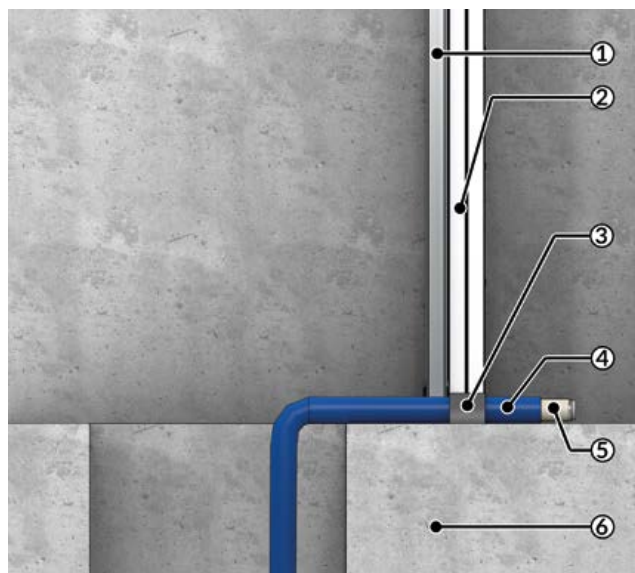
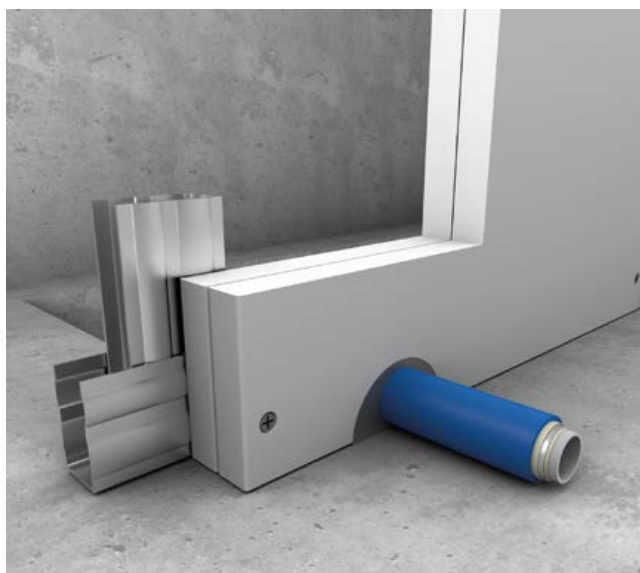
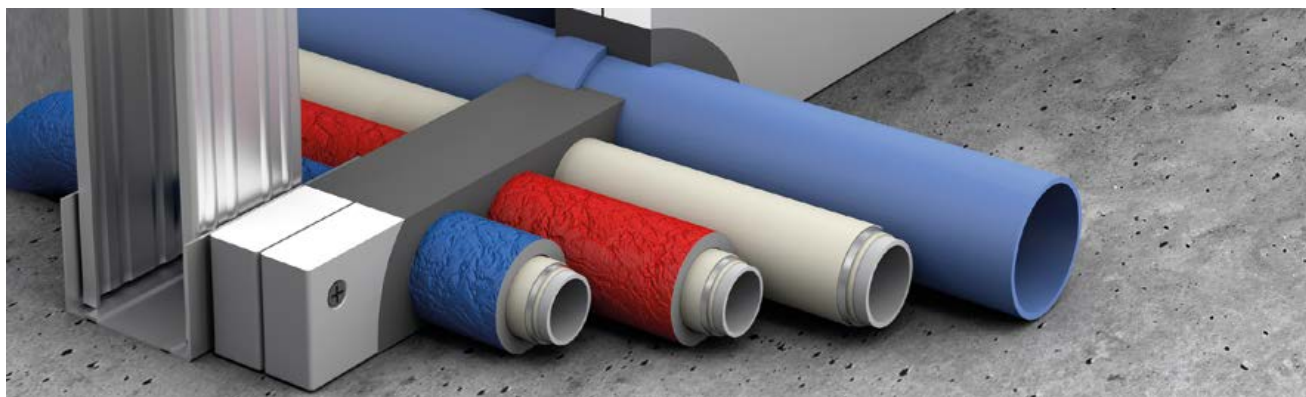
A.-B.
2 x GM-F ≥ 20 mm

B.5. Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS viskos

Construction details: Multi-layer aluminium composite pipes with continuous sustained (CS) PE insulation (any manufacturer), laid individually or in series with zero spacing on the floor, penetrating a flexible wall planked on one side.

The penetrating cables may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least two layers of at least 20 mm-thick type GM-F plasterboards according to EN 15283-1 (3) Annular gap filled with HENSOTHERM® 7 viskos (4) Insulation (5) Aluminium composite pipe, individually or in series with zero spacing (6) Solid floor

B.5.1. Geberit Mepla with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
Geberit Mepla	16.0	2.25	PE	≤ 9.0	CS	EI 90 U/C	EI 90 U/C
	20.0	2.5					
	26.0	3.0					

B.5.2. KE KELIT KELOX with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
KE KELIT KELOX	16.0	2.0	PE	≤ 9.0	CS	EI 90 U/C	EI 90 U/C
	20.0	2.25					
	25.0	3.0					

B.5.3. TECEflex with PE insulation (CS)

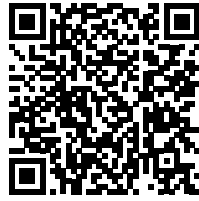
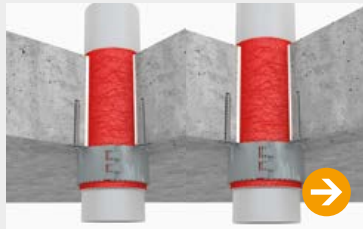
Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
TECEflex	17.0	2.75	PE	≤ 9.0	CS	EI 90 U/C	EI 90 U/C
	21.0	3.45					
	26.0	4.0					

A.-B.
2 x GM-F ≥ 20 mm

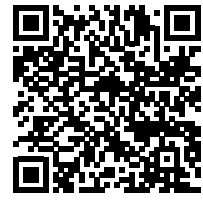
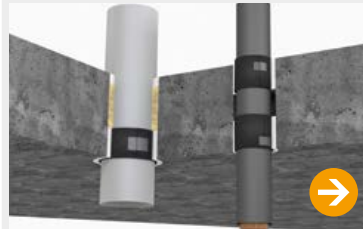
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Single penetrations



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Single penetration with collar | ETA 20/1308



HENSOTHERM® system for single pipe
Single penetration with fabric | ETA 20/1306



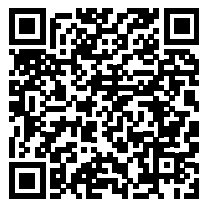
HENSOTHERM® 7 KS viskos
Single penetration with filler | ETA 20/1306



HENSOTHERM® Service Transit
Intumescent fire sleeve | ETA 22/0542



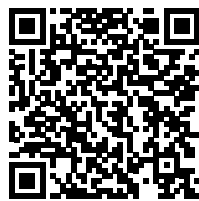
Mixed and multiple penetration seals



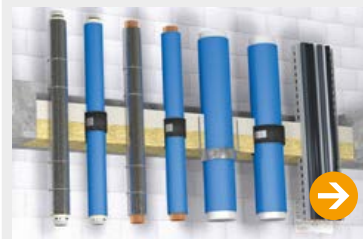
HENSOMASTIK® Mixed Penetration Seal EI 60
Mixed soft penetration seal | ETA 20/1310



HENSOMASTIK® Mixed Penetration Seal EI 90/EI 120
Mixed soft penetration seal | ETA 20/1309



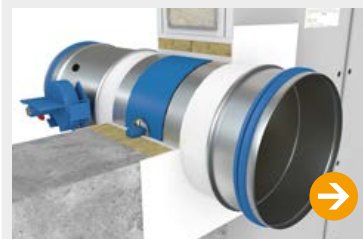
HENSOTHERM® M 2000 Fireproof mortar
Mixed rigid penetration seal | ETA 20/1325



HENSOTHERM® GM 2000
Mixed rigid penetration seal | ETA 22/0702



HENSOMASTIK® 5 KS Vorschott
Cable soft penetration seal | ETA 20/1311



HENSOMASTIK® Weichschott with fire dampers
KB No. 14011408




The QR codes lead to the websites of our EN-approved HENSOTHERM® and HENSOMASTIK® product systems for fire protection penetration seals with ETA for installation in Europe and VKF approval for Switzerland, along with the documentation.

C

Flexible wall constructions planked on one side,
with a minimum wall thickness of **95 mm**

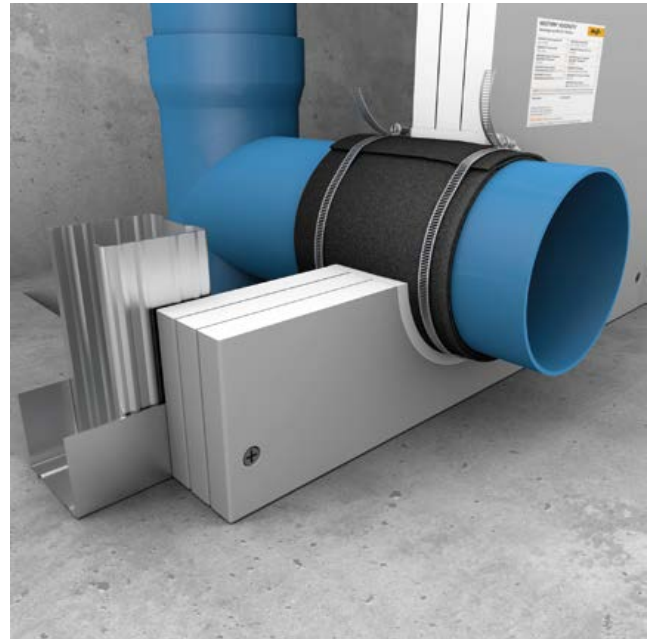
HENSOTHERM® 7 KS Gewebe 100

C. Flexible wall construction planked on one side ≥ 95 mm | HENSOTHERM® 7 KS Gewebe 100

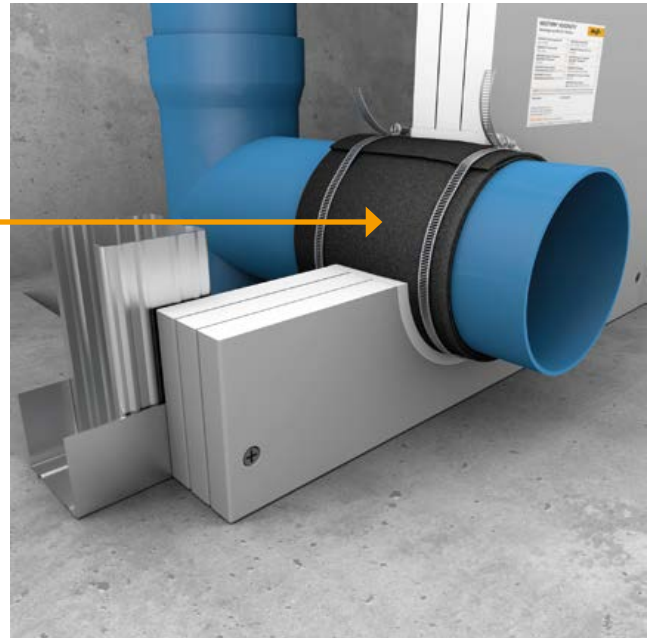
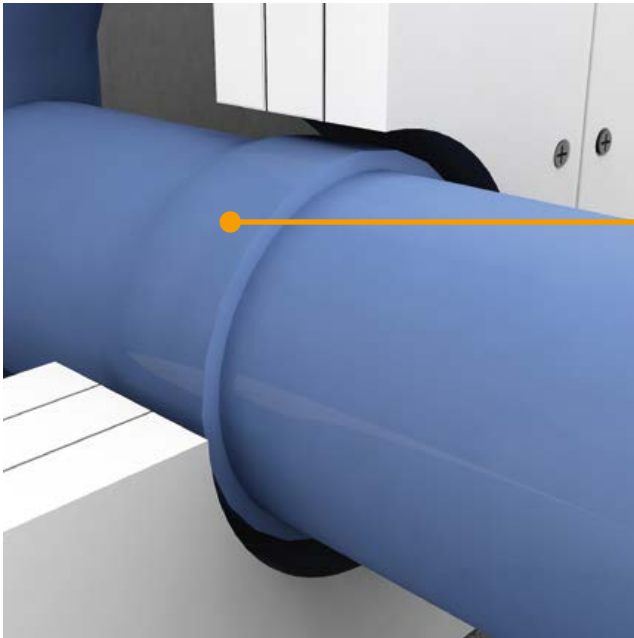
C.		Application	Page
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3.		Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS Gewebe 100	39

Installation steps for penetration seals with HENSOTHERM® 7 KS Gewebe 100

The **HENSOTHERM® 7 KS Gewebe 100** is wrapped around the pipe or insulation in the specified number of layers (see table in the application), cut to length with scissors or a cutter knife, aligned in the centre of the drywall panels and fixed on both sides with steel hose clamps, metal straps or wires ≥ 0.6 mm. The remaining annular gap is completely filled with gypsum mortar.



Wrapping with **HENSOTHERM® 7 KS Gewebe 100** may be applied to a sleeve if this is specified in the application. Further information can be found in the design details of the respective application on the following pages.



C. Shaft wall ≥ 95 mm, 3 x DF ≥ 15 mm (EN 520) | HENSOTHERM® 7 KS Gewebe 100

Permitted construction elements and supporting structures

C.1. Flexible wall construction planked on one side ≥ 95 mm

C.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire-resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 95 mm and be comprised of a steel stud frame lined on one face with a minimum of three layers of plasterboards at least 15 mm thick, type DF according to EN 520.

Maximum seal size

C.1.2. The maximum permitted annular gap width between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct and any insulation present.

Permitted minimum spacings and distance of the first support

C.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter C.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **250 mm** on both sides of the wall or must lie on the floor!

Key:

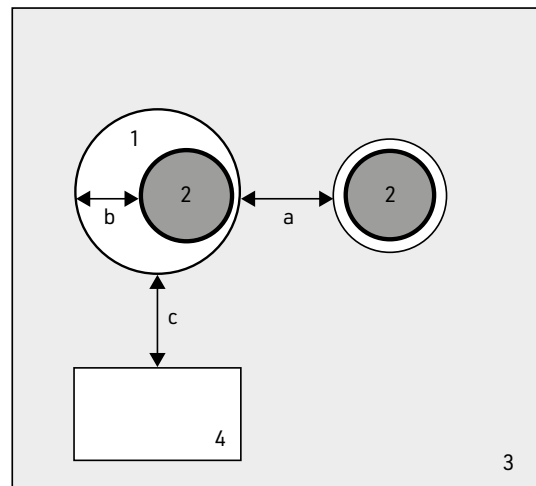
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations:

Minimum distances between penetrating supply ducts:

- a_{1-1} : between plastic pipes ≥ 100 mm
- a_{1-2} : between aluminium composite pipes ≥ 100 mm

Annular gap:

b_{1-1} : Annular gap width max. 20 mm, completely filled with gypsum filler



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations::

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

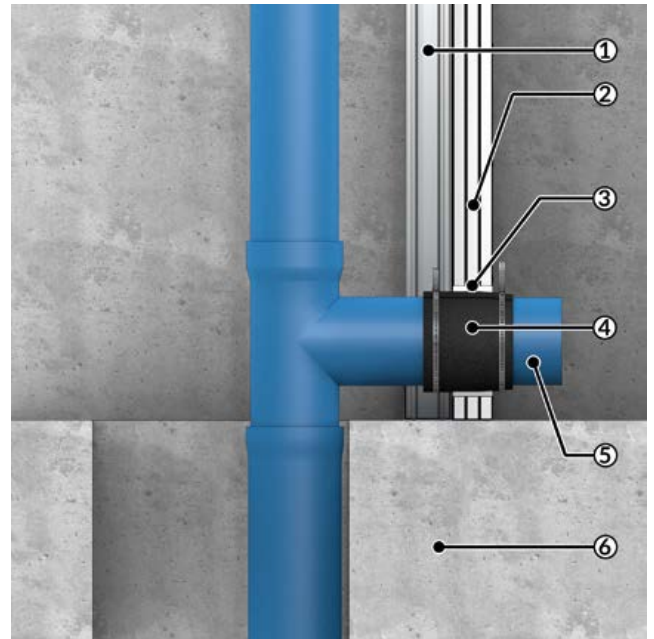
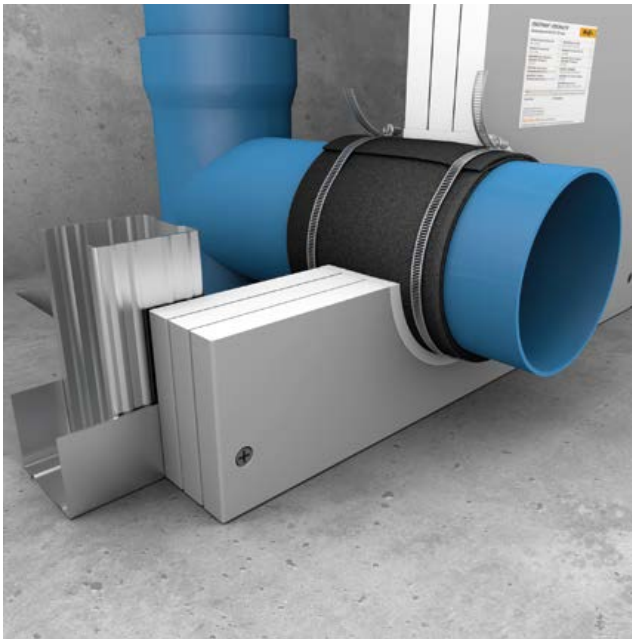
C.2. Combustible plastic pipes without insulation with HENSOTHERM® 7 KS Gewebe 100

Construction details: Combustible plastic pipes without insulation that penetrate a flexible wall planked on one side, installed with or without a pipe connection inside the wall.

The penetrating ducts may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the pipe with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboard according to EN 520 (3) Combustible pipe, with or without pipe connection inside the wall (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Annular gap filled with gypsum filler (6) Solid floor

C - E:
3 x DF ≥ 15 mm

C.2.1. Geberit Silent-PP

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Geberit Silent-PP	32	2.0	3	EI 90 U/U	EI 90 U/U
	40				
	50				
	75	2.6	4	EI 120 U/U	
	90	3.1	6		
	110	3.6			

C.2.2. Geberit Silent-Pro

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Geberit Silent-Pro	50	3.0	3	EI 90 U/U	-
	75	3.8	4		

C.2.3. POLO-KAL NG

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
POLO-KAL NG	32	1.8	3	EI 120 U/U	EI 120 U/U
	40				
	50	2.0	4	EI 120 U/U	EI 90 U/U
	75	2.6			
	90	3.0	6	EI 90 U/U	EI 120 U/U
	110	3.4			

C.2.4. Valsir TRIPLUS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Valsir TRIPLUS	32	1.8	3	EI 90 U/U	-
	40				
	50				

C.2.5. Wavin AS+

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Stud on fire side	Stud on cold side
Wavin AS+	50	3.0	3	EI 90 U/U	-
	75	3.5	4		
	90	4.6	6		
	110	5.3			

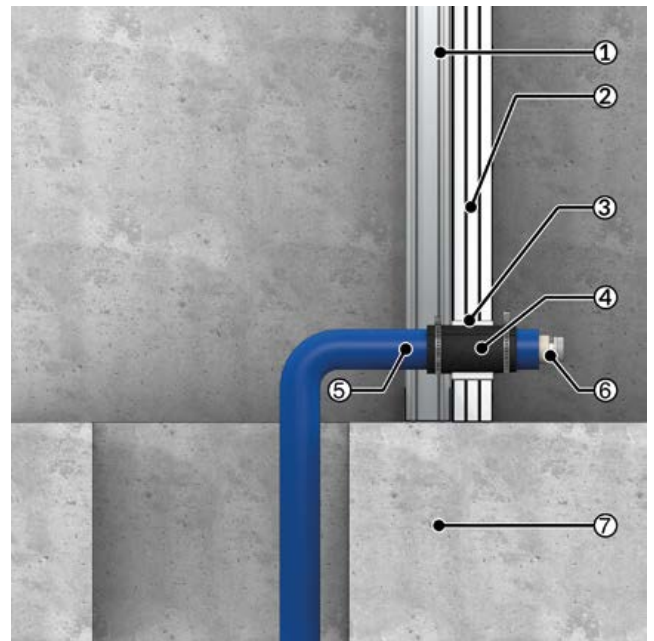
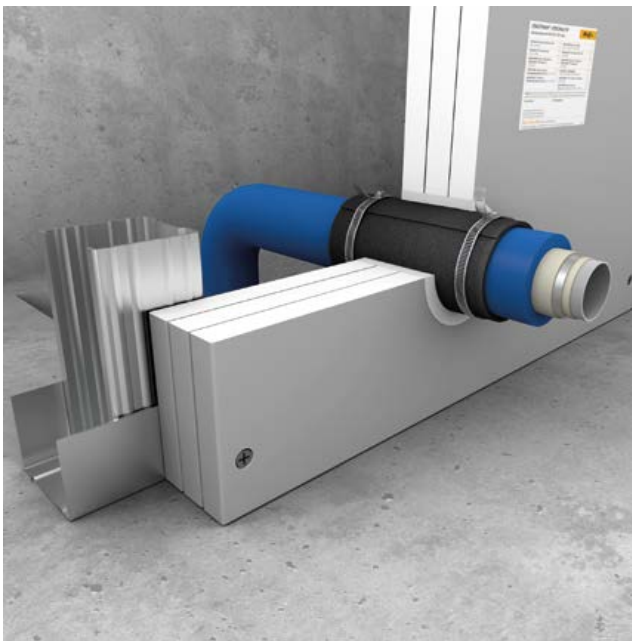
C.3. Aluminium composite pipes with PE insulation (CS) with HENSOTHERM® 7 KS Gewebe 100

Construction details: Multi-layer aluminium composite pipes mit continuous sustained (CS) PE insulation (any manufacturer) that penetrate a flexible wall planked on one side

The penetrating ducts may be laid at a distance of 0 mm from the floor.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around the insulation with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm on both sides of the wall.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboard according to EN 520 (3) Annular gap filled with gypsum filler (4) HENSOTHERM® 7 KS Gewebe 100, fixed with steel hose clamps, metal straps or wires ≥ 0.6 mm (5) Insulation (6) Aluminium composite pipe (7) Solid floor

C.-E.
3 x DF ≥ 15 mm

C.3.1. KE KELIT KE06 KELEN with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
KE KELIT KE06 KELEN	20.0	2.8	PE	≤ 6.0	CS	2	EI 90 U/C	-
	25.0	3.5						
	32.0	4.4						
	40.0	5.5						

C.3.2. Viega Raxofix with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
Viega Raxofix	16.0	2.2	PE	≤ 6.0	CS	2	EI 90 U/C	-
	20.0	2.8						
	25.0	2.7						
	32.0	3.2						

C.3.3. Viega Sanfix Fosta with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Stud on fire side	Stud on cold side
Viega Sanfix Fosta	16.0	2.2	PE	≤ 6.0	CS	2	EI 90 U/C	-
	20.0	2.8						
	25.0	2.7						
	32.0	3.2						

D

Flexible wall constructions planked on one side,
with a minimum wall thickness of **95 mm**

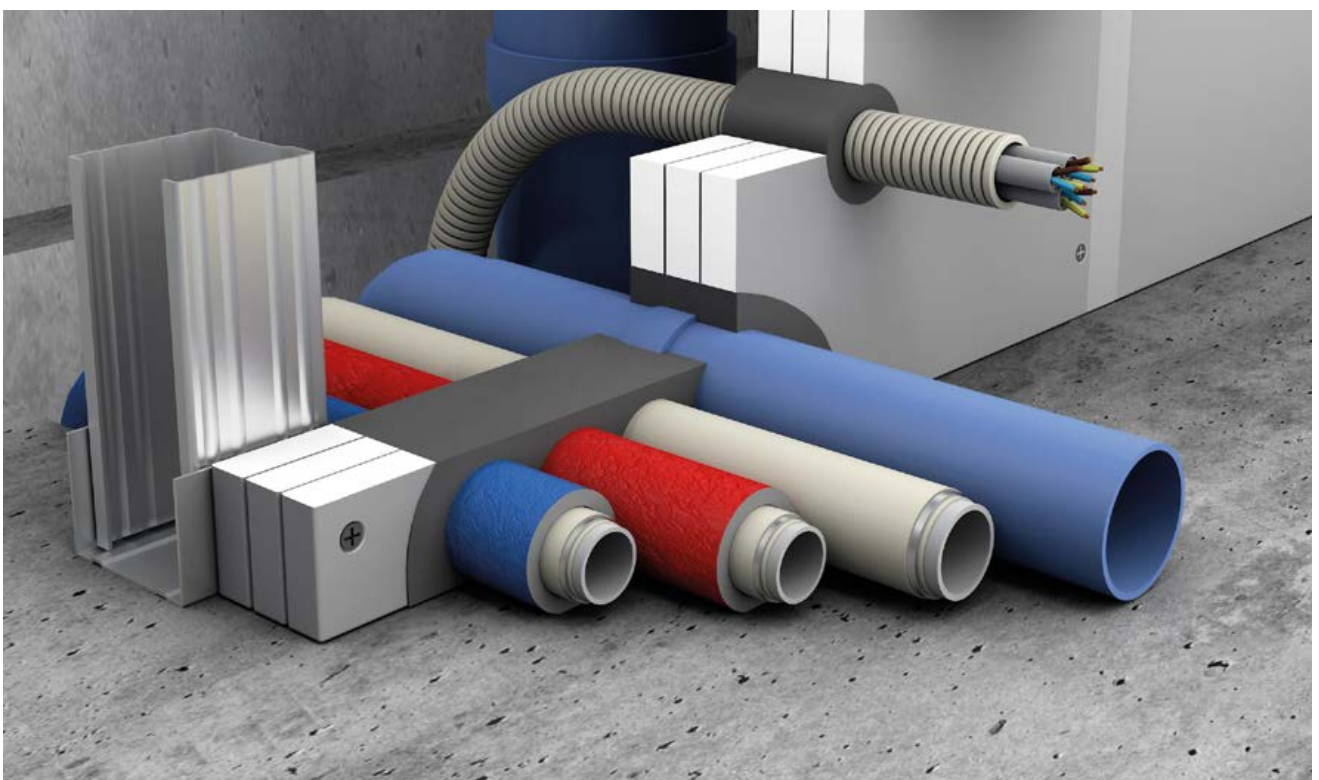
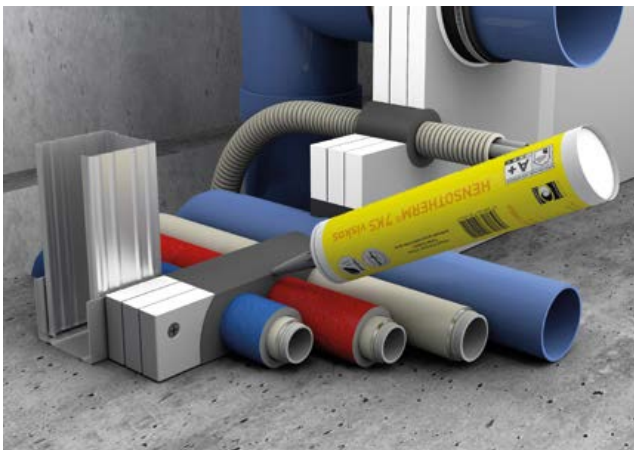
HENSOTHERM® 7 KS viskos

D. Flexible wall construction planked on one side ≥ 95 mm | HENSOTHERM® 7 KS viskos

D.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	44
2.		Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos	45
3.		Combustible plastic pipes without insulation with HENSOTHERM® 7 KS viskos	46 - 47
4.		Aluminium composite pipes without insulation with HENSOTHERM® 7 KS viskos	48 - 49
5.		Aluminium composite pipes with PE or FEF insulation with HENSOTHERM® 7 KS viskos	50 - 51

Installation steps for penetration seals with HENSOTHERM® 7 KS viskos

The annular gap is completely filled with **HENSOTHERM® 7 KS viskos**. The ducts can be laid directly on the floor with zero clearance. It can also be used on sockets or with angled feedthroughs where this is specified in the application. Further information can be found in the design details for the respective application on the following pages.



HENSOTHERM® 7 KS viskos product properties

Density:	approx. 1.3 g/cm ³
Application temperature range:	+ 5 °C to + 40 °C
Temperature resistance:	- 40 °C to + 140 °C
Curing time:	1 mm / day
First foaming:	approx. + 150 °C
Max. total deformation:	10 %
Building material class in accordance with DIN 4102. T.1:	B2
Shelf life (at + 20 °C and dry storage):	12 months
Storage and transport:	+ 5 °C to + 30 °C
VOC according to LEED:	< 1 g / l
Application temperature range:	+ 5 °C to + 40 °C
Paintability:	Yes

C - E:
3 x DF ≥ 15 mm

D. Shaft wall ≥ 95 mm, $3 \times DF \geq 15$ mm (EN 520) | HENSOTHERM® 7 KS viskos

Permitted construction elements and supporting structures

D.1. Flexible wall construction planked on one side ≥ 95 mm

D.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire-resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 95 mm and be comprised of a steel stud frame lined on one face with a minimum of three layers of plasterboards at least 15 mm thick, Type DF according to EN 520.

Maximum seal size

D.1.2. The maximum permitted annular gap width is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct and the duct assembly and any insulation present.

Permitted minimum spacings and distance of the first support

D.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter D.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **250 mm** on both sides of the wall or must lie on the floor!

Key:

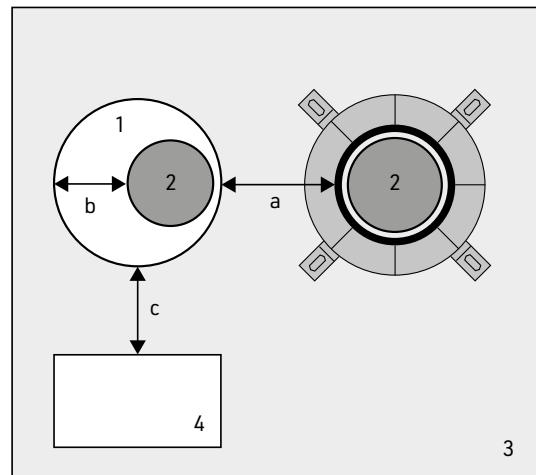
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations

Minimum spacings between penetrating supply ducts:

- a_{1-1} : between EIC/cables ≥ 0 mm
- a_{1-2} : between plastic pipes ≥ 0 mm
- a_{1-3} : between aluminium composite pipes ≥ 0 mm

Annular gap:

- b_{1-1} : Annular gap width 10 – 20 mm, completely filled with HENSOTHERM® 7 KS viskos



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations:

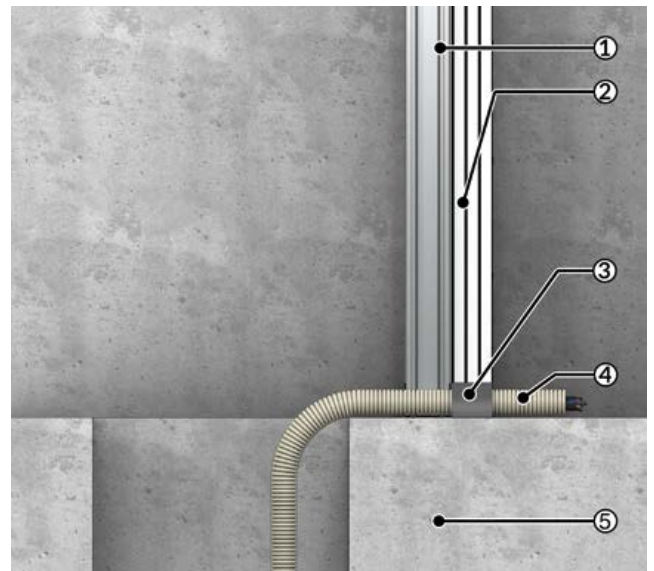
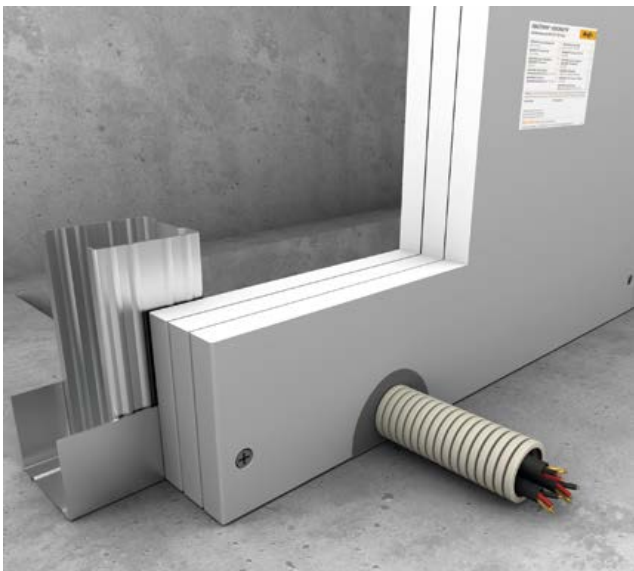
≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

D.2. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos

Construction details: Polyolefin flexible or bendable combustible electrical installation conduits (EIC), laid individually or in series with zero spacing on the floor, with electrical cables penetrating a flexible wall planked on one side.

The penetrating ducts may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



C: - E:
3 x DF ≥ 15 mm

(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboard according to EN 520 (3) Annular gap filled with HENSOTHERM® 7 KS viskos (4) Electrical installation duct with cables (5) Solid floor

D.2.1. Flexible electrical installation conduits (EIC) with cables with HENSOTHERM® 7 KS viskos

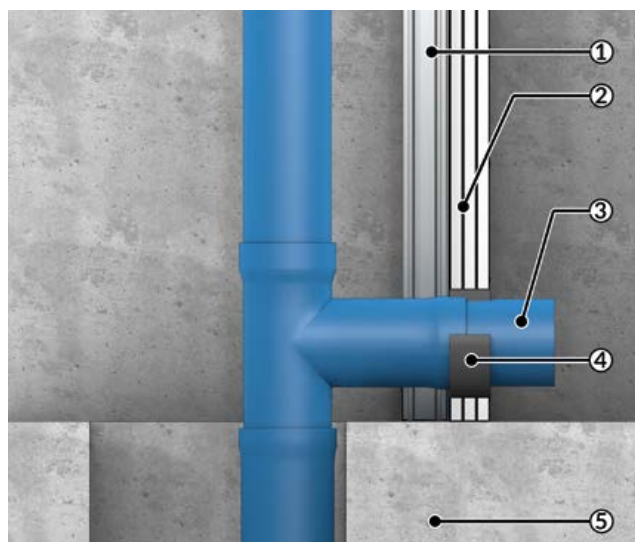
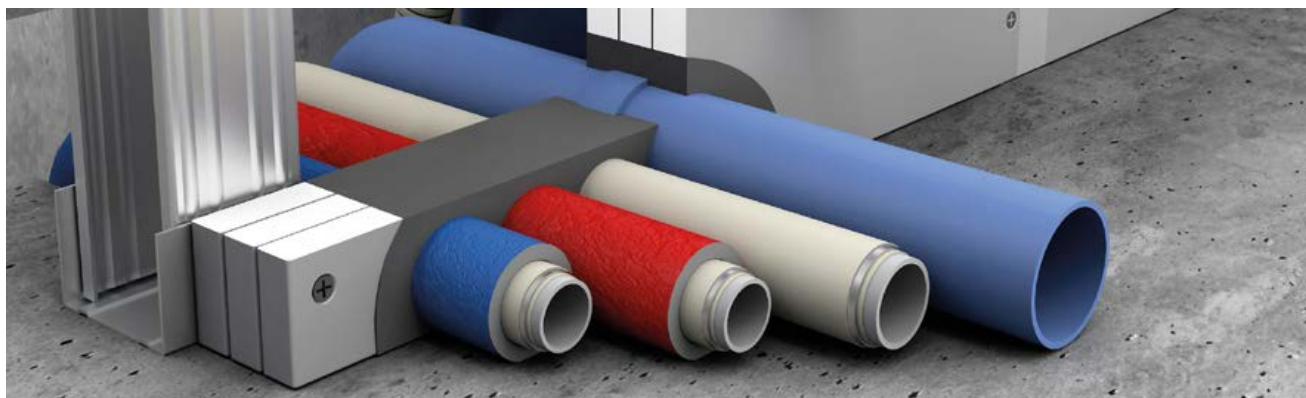
Pipe / cable	Max. diameter single EIR [mm]	Max. diameter single cable [mm]	Classification	
			Stud on fire side	Stud on cold side
Flexible combustible electrical installation conduits (EIC) made of polyolefin, individually or in series, with type A1, A2 or A3 cables, individually or in bundles	40	14	EI 90	EI 90

D.3. Combustible plastic pipes without insulation with HENSOTHERM® 7 KS viskos

Construction details: Combustible plastic pipes without insulation that penetrate a flexible wall planked on one side, installed with or without a pipe connection inside the wall.

The penetrating ducts may be laid at a distance of 0 mm from the floor. Angled penetrations with horizontal penetration angles of between 90° and 45° are permitted.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboards according to EN 15283-1 (3) Combustible pipe with or without pipe connection inside the wall (4) Annular gap filled with HENSOTHERM® 7 KS viskos (5) Solid floor

D.3.1. Geberit Silent-PP

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Geberit Silent-PP	32	2.0	EI 90 U/U	EI 90 U/U
	40			
	50			

D.3.2. Pipelife MASTER 3 PLUS

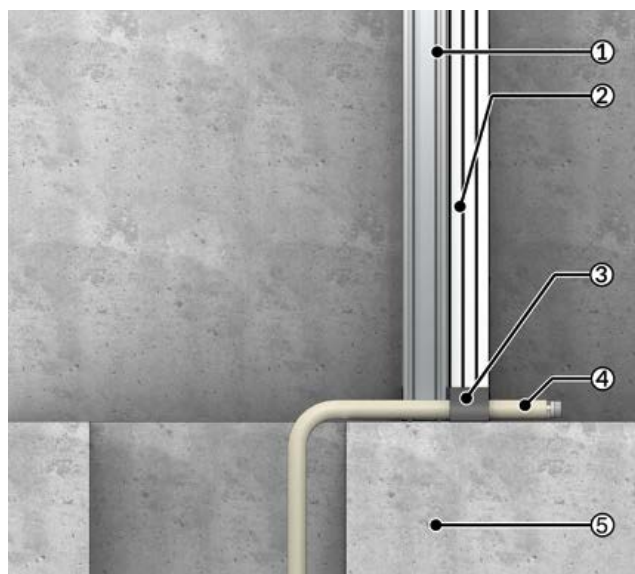
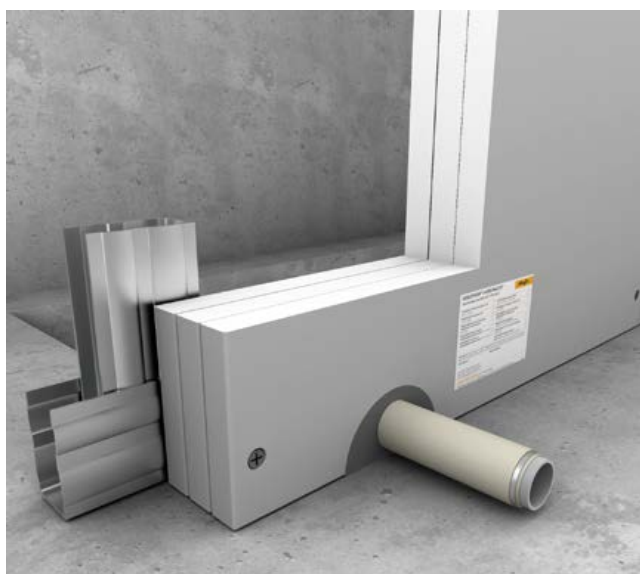
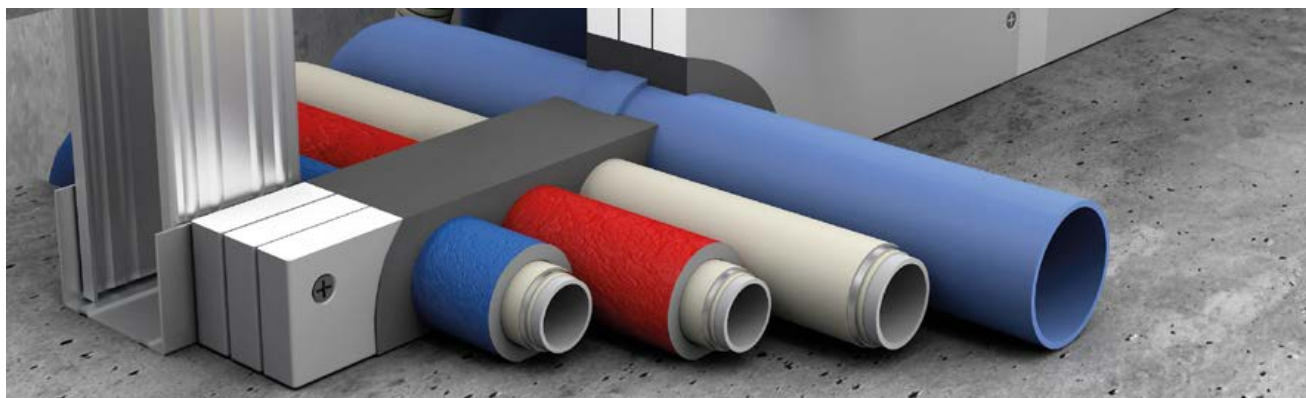
Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Pipelife MASTER 3 PLUS	32	1.8	EI 90 U/U	EI 90 U/U
	40			
	50	2.0		

D.4. Aluminium composite pipes without insulation with HENSOTHERM® 7 KS viskos

Construction details: Multi-layer aluminium composite pipes without insulation, laid individually or in series with zero spacing on the floor, penetrating a flexible wall planked on one side.

The penetrating ducts may be laid at a distance of 0 mm from the floor. Angled penetrations with horizontal penetration angles of between 90° and 45° are permitted.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboards according to EN 520 (3) Annular gap filled with HENSOTHERM® 7 KS viskos (4) Aluminium composite pipe (5) Solid floor

D.4.1. ALVA ACTA SIS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
ALVA ACTA SIS	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

D.4.2. HakaGerodur HAKAthen

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
HakaGerodur HAKAthen	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

D.4.3. HERZ composite pipe PE-RT

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
HERZ composite pipe PE-RT	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

D.4.4. Pipelife RADOPRESS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Pipelife RADOPRESS	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

D.4.5. Winkler MT composite pipe

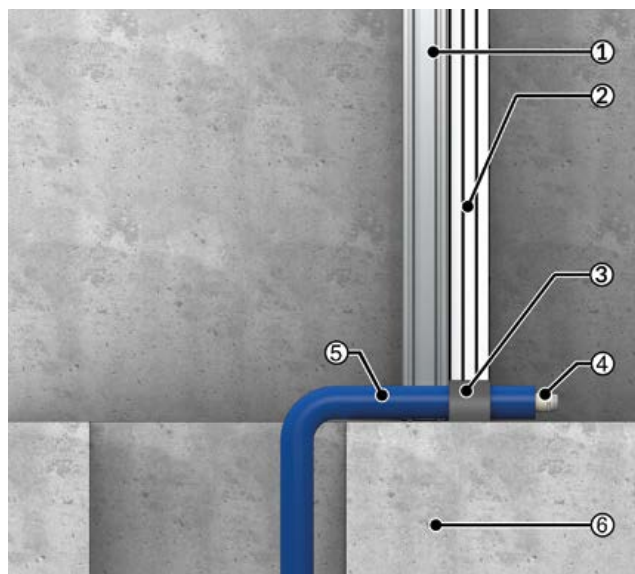
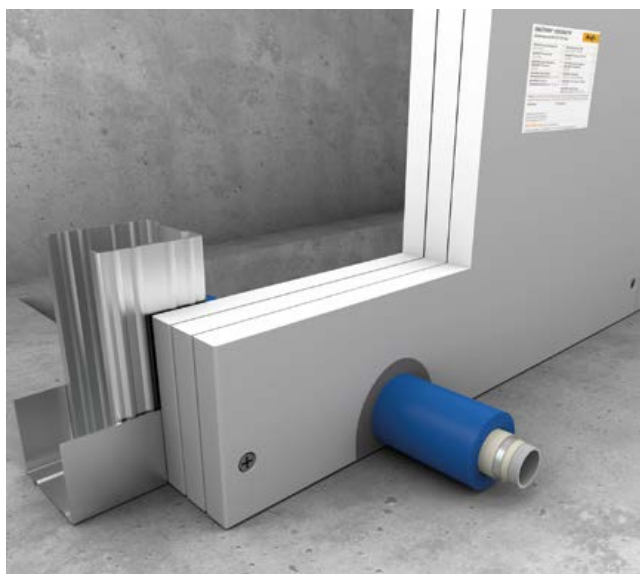
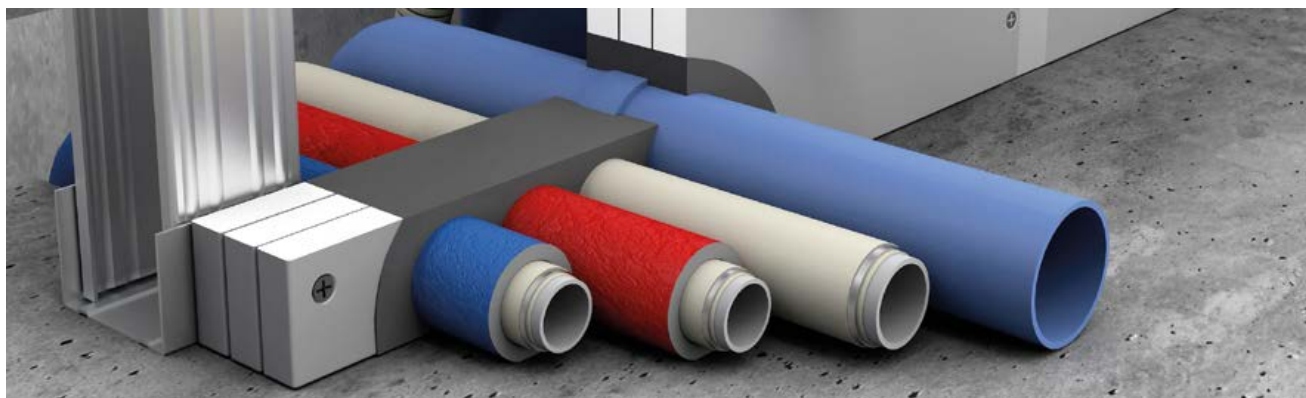
Pipe / cable	Diameter [mm]	Wall thickness [mm]	Classification	
			Stud on fire side	Stud on cold side
Winkler MT composite pipe	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

D.5. Aluminium composite pipes with PE or FEF insulation with HENSOTHERM® 7 KS viskos

Construction details: Multi-layer aluminium composite pipes with continuous sustained (CS) flexible elastzomer foam (FEF) insulation, synthetic rubber or PE (any manufacturer), laid individually or in series with zero spacing on the floor, penetrating a flexible wall planked on one side.

The penetrating ducts may be laid at a distance of 0 mm from the floor.

The 10 to max. 20 mm-wide annular gap between plasterboards and penetrating conduits is filled with HENSOTHERM® 7 KS viskos from one side of the wall to the full depth.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboards according to EN 520 (3) Annular gap filled with HENSOTHERM® 7 KS viskos (4) Aluminium composite pipe (5) Insulation (6) Solid floor

D.5.1. Geberit Mepla with FEF insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
Geberit Mepla	16.0	2.25	ArmaFlex XG, $\leq B-s3,d0$	13.0	CS	EI 90 U/C	EI 90 U/C
	20.0	2.5					
	26.0	3.0					
	32.0						

D.5.2. KE KELIT STEELOX with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
KE KELIT STEELOX	16.0	2.0	PE	≤ 6.0	CS	EI 90 U/C	EI 90 U/C
	20.0	2.25					
	25.0	2.5					

D.5.3. Uponor Uni Pipe PLUS with PE insulation (CS)

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Stud on fire side	Stud on cold side
Uponor Uni Pipe PLUS	16.0	2.0	PE	≤ 6.0	CS	EI 90 U/C	EI 90 U/C
	20.0	2.25					

PRODUCT SELECTOR



FIRE PROTECTION SYSTEMS



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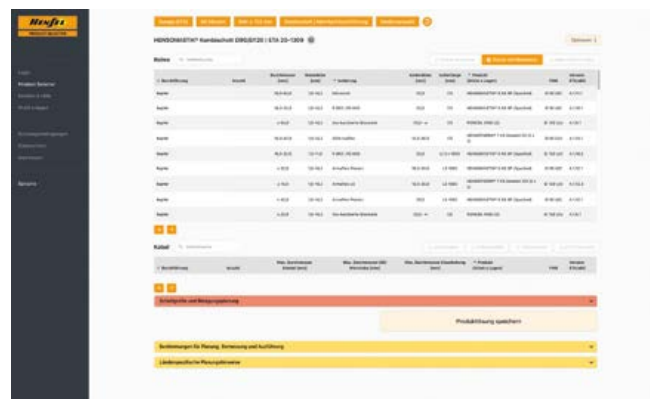
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Select the product system, and you can consult the innovative table of all tested conduits, featuring a full text search and quick filter for media types, to verify quickly and easily whether the planned fire protection penetration seal conforms with the technical requirements. After selecting the product system, the innovative tabular display of all tested conduits, full-text search and quick filters for media types enable quick and easy configuration of the planned fire protection seal and to check conformity with the technical assessment document.

Important provisions for planning, sizing, and implementing the penetration seal can be consulted in an overview. The complete documentation, including approvals, ETAs, technical data sheets, and assembly instructions, can be retrieved via additional links. Various export options and print functions simplify collaboration with other project participants.



Networking made easy: Once registered as a user, you can assign the configured product systems and penetration seals to a specific project and construction phase and commit these to a file under "Save Product Solution". You can then manage this solutions, add additional details, and print them at your convenience in a private user area.

Use the Product Selector to configure your first penetration seal solution. The Product Selector will open in a browser window using an encrypted connection. You can immediately start configuring an approved penetration seal solution without registering.



Let's go!

See for yourself!



E

Flexible wall constructions planked on one side,
with a minimum wall thickness of **95 mm**

HENSOTHERM® RM

Overview of the applications and design details

E. Flexible wall construction planked on one side ≥ 95 mm | HENSOTHERM® RM

E.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	54
2.		Combustible plastic pipes without insulation with HENSOTHERM® RM	55 - 56

E. Shaft wall ≥ 95 mm, $3 \times DF \geq 15$ mm (EN 520) | HENSOTHERM® RM

Permitted construction elements and supporting structures

E.1. Flexible wall construction planked on one side ≥ 95 mm

E.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 95 mm and be comprised of a steel stud frame lined on one face with a minimum of three layers of plasterboards at least 15 mm thick, Type DF according to EN 520.

Maximum seal size

E.1.2. The maximum permitted annular gap width between plasterboards and HENSOTHERM® RM is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct.

Permitted minimum spacings and distance of the first support

E.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter E.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **250 mm** on both sides of the wall.

Key:

- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations

Minimum distances between the penetrating supply ducts:

a_{1-1} : between plastic pipes ≥ 100 mm

Annular gap:

b_{1-1} : Annular gap width max. 20 mm, completely filled with gypsum filler

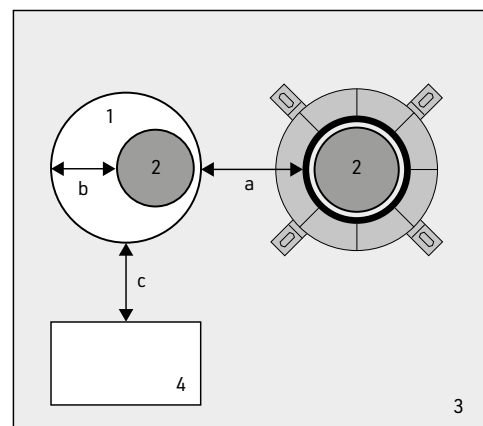
Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations::

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

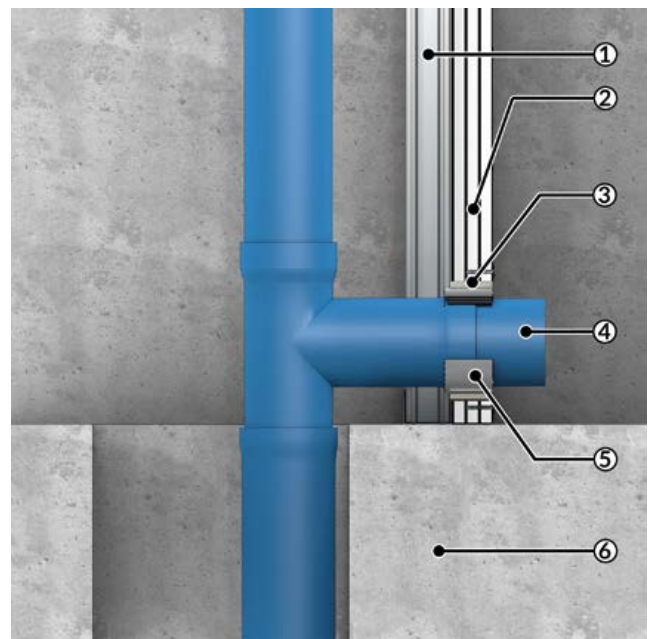
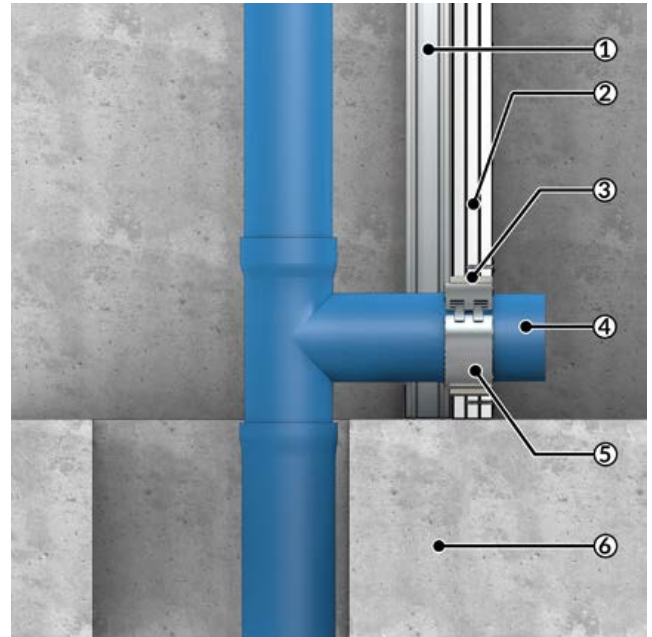


E.2. Combustible plastic pipes without insulation with HENSOTHERM® RM

Construction details: Combustible plastic pipes without insulation that penetrate a flexible wall planked on one side, installed with or without a pipe connection inside the wall.

A HENSOTHERM® RM pipe collar of the appropriate type and size (see table) is fitted around the pipe or pipe collar from one side of the wall so that the stainless steel casing faces inwards into the wall. The HENSOTHERM® RM pipe collar is closed with the locking tabs and the fixing tabs are aligned flush with the wall surface. The HENSOTHERM® RM pipe collar is then secured in place with 6.4 x 30 mm universal fastening screws and 6.5 x 25 mm washers at all mounting brackets.

The remaining max. 20 mm-wide annular gap between the plasterboards and the HENSOTHERM® RM pipe sleeve is filled to its full depth with gypsum filler.



(1) Steel stud frame (2) At least three layers of at least 15 mm-thick type DF plasterboards according to EN 520 (3) Annular gap filled with gypsum filler (4) Combustible pipe with or without pipe connection inside the wall (5) HENSOTHERM® RM pipe sleeve, stainless steel casing facing inwards (6) Solid floor

C: - E:
3 x DF ≥ 15 mm

E.2.1. POLO-KAL NG

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Type HENSOTHERM® RM [height-size, mm]	Classification	
				Stud on fire side	Stud on cold side
POLO-KAL NG	75	2.6	HENSOTHERM® RM 50-75	EI 90 U/U	EI 90 U/U
			HENSOTHERM® RM 50-90*		
	90	3.0	HENSOTHERM® RM 50-90		
			HENSOTHERM® RM 50-110*		
	110	3.4	HENSOTHERM® RM 50-110		
			HENSOTHERM® RM 50-125*		

* HENSOTHERM® RM mounted on sleeve

E.2.2. Rehau RAUPIANO PLUS

Pipe / cable	Diameter [mm]	Wall thickness [mm]	Type HENSOTHERM® RM [height-size, mm]	Classification	
				Stud on fire side	Stud on cold side
Rehau RAUPIANO PLUS	75	1.9	HENSOTHERM® RM 50-75	EI 90 U/U	EI 90 U/U
			HENSOTHERM® RM 50-90*		
	90	2.2	HENSOTHERM® RM 50-90		
			HENSOTHERM® RM 50-110*		
	110	2.7	HENSOTHERM® RM 50-110		
			HENSOTHERM® RM 50-125*		



* HENSOTHERM® RM mounted on sleeve

F

Flexible wall constructions planked on one side,
with a minimum wall thickness of **90 mm**

**Ventilation ducts with fire damper (FD) and
HENSOTHERM® 7 KS Gewebe 100**

F. Ventilation ducts with fire damper (FD) and HENSOTHERM® 7 KS Gewebe 100

F.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	59
2.		Ventilation pipes (spiral ducts) with HENSOTHERM® 7 KS Gewebe 100 and fire damper	60

F. Shaft wall ≥ 90 mm, 2 x GK-F ≥ 20 mm (EN 520) ventilation ducts with fire damper (FD) and HENSOTHERM® 7 KS Gewebe 100

Permitted construction elements and supporting structures

F.1. Flexible wall construction planked on one side ≥ 90 mm

F.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 90 mm and be comprised of a steel stud frame lined on one face with a minimum of two layers of plasterboards at least 20 mm thick, type GK-F according to EN 15283-1.

Maximum seal size

F.1.2. The maximum permitted annular gap width between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct.

Permitted minimum spacings and distance of the first support

F.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter F.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **200 mm** on both sides of the wall.

Key:

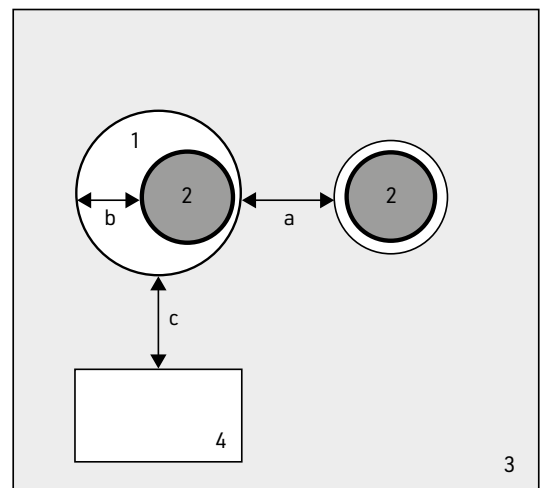
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations

Minimum distances between the penetrating supply ducts:

a_{1-1} : between ventilation pipes ≥ 80 mm

Annular gap:

b_{1-1} : Annular gap width max. 20 mm, completely filled with gypsum filler



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations:

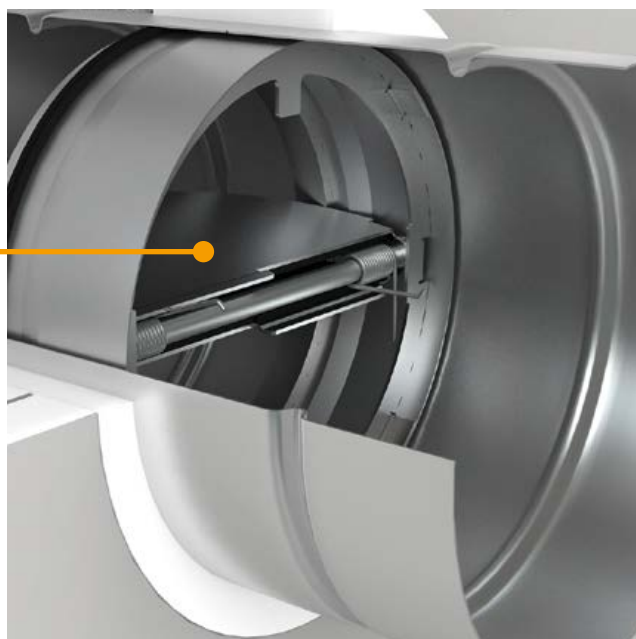
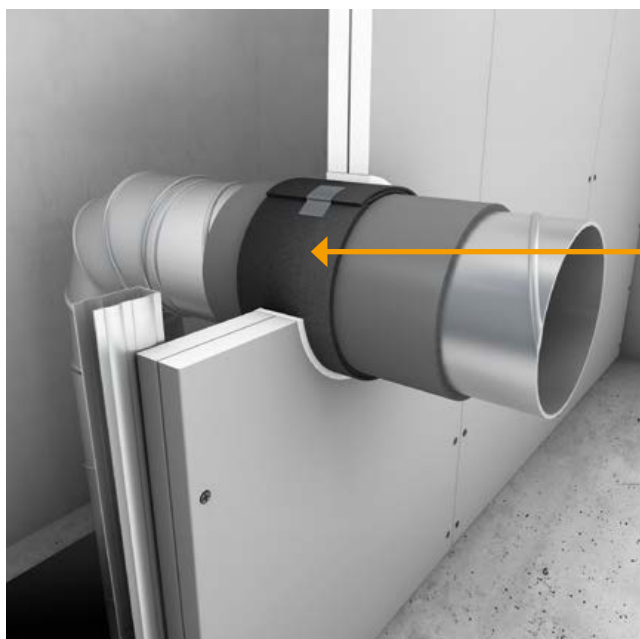
≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

F.2. Ventilation pipes (spiral ducts) with HENSOTHERM® 7 KS Gewebe 100 and fire damper

Construction details: Non-combustible metal ventilation ducts (spiral ducts) with continuous insulation made of synthetic rubber (FEF) and a fire damper (BSK), which is classified for the required fire resistance period in accordance with EN 15650.

A length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is wrapped around with the specified number of layers (see table), positioned in the centre of the wall panels and fixed with adhesive tape.

The remaining max. 20 mm-wide annular gap between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is filled to its full depth with gypsum filler.



F.2.1. Ventilation pipes (spiral ducts) with HENSOTHERM® 7 KS Gewebe 100 and fire damper




Pipe / cable	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	Layers of HENSOTHERM® 7 KS Gewebe 100	Classification	
						Stud on fire side	Stud on cold side
Ventilation pipe with BSK SYSTEMAIR type PKI-C-EI60S	125	0.8	0 - 20	19 mm AF/ArmaFlex	2	-	EI 90 U/U

G

Flexible wall constructions planked on one side,
with a minimum wall thickness of **95 mm**

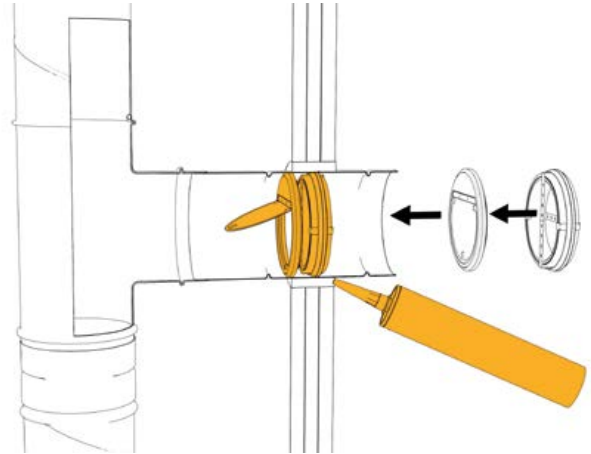
**Ventilation pipes with
HENSOTHERM® FLI-VE, FLI90 and KRS**

G. Ventilation pipes with HENSOTHERM® FLI90, KRS and FLI-VE

G.		Application	Page
1.		Permitted construction elements, maximum penetration seal size and minimum distances	64
2.		Ventilation pipes (spiral ducts) with HENSOTHERM® FLI90 and KRS	65
3.		Ventilation pipes (spiral ducts) with HENSOTHERM® FLI-VE	66

Installation steps, HENSOTHERM® FLI90 und KRS

HENSOTHERM® FLI90 and KRS must be selected to match the pipe diameter. The HENSOTHERM® FLI90 is positioned in the centre of the wall. For correct installation and alignment of the HENSOTHERM® FLI90 and KRS, separate technical data sheets and installation instructions are available and must be observed. The annular gap is completely filled with gypsum mortar or HENSOMASTIK® 5 KS SP (Spachtel). Further information can be found in the design details for the respective application on the following pages.



Installation steps, HENSOTHERM® FLI-VE

The HENSOTHERM® FLI-VE must be selected to match the pipe diameter and positioned in the centre of the wall. The HENSOTHERM® FLI-VE is carefully gripped at the connecting rod of the two damper blades, pushed into the ventilation duct and aligned without touching the thermal cut-out (locking element between the damper blades). The annular gap is completely filled with gypsum mortar or HENSOMASTIK® 5 KS SP (Spachtel). Further information can be found in the design details for the respective application on the following pages.



G. Shaft wall ≥ 95 mm, 3 x DF ≥ 15 mm (EN 520) | HENSOTHERM® RM

Permitted construction elements and supporting structures

G.1. Flexible wall construction planked on one side ≥ 95 mm

G.1.1. Permitted construction elements

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

The construction variants for the HENSOTHERM® System für Schachtwand listed in this chapter may be used in the following components:

Shaft walls: The wall must have a minimum thickness of 95 mm and be comprised of a steel stud frame lined on one face with a minimum of three layers of plasterboards at least 15 mm thick, Type DF according to EN 520.

Maximum seal size

G.1.2. The maximum permitted annular gap width between plasterboards and HENSOTHERM® 7 KS Gewebe 100 is 20 mm and the maximum size of the penetration seal depends on the diameter of the penetrating duct.

Permitted minimum spacings and distance of the first support

G.1.3. The following spacing rules (see drawing) apply to all construction variants/applications in chapter G.

Distance of the first support:

All penetrating ducts must be supported at intervals of no more than **200 mm** on both sides of the wall.

Key:

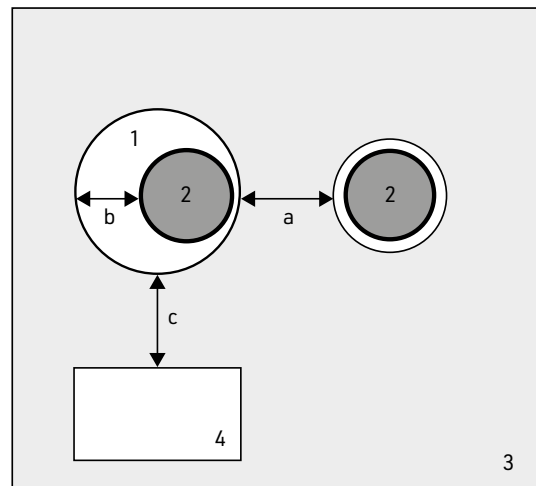
- 1: Component opening / annular gap
- 2: Supply ducts
- 3: Load-bearing component / shaft wall
- 4: Other fire penetration seals, openings or installations:

Minimum distances between the penetrating supply ducts:

a_{1-1} : between ventilation pipes ≥ 80 mm

Annular gap:

b_{1-1} : Annular gap width max. 20 mm, completely filled with gypsum filler



Minimum spacing between other openings or installations:

c_{1-1} Other fire penetration seals:

≥ 20 cm, provided that one or both of the adjacent component openings is larger than 40 x 40 cm, otherwise ≥ 10 cm.

c_{1-2} Other openings or installations::

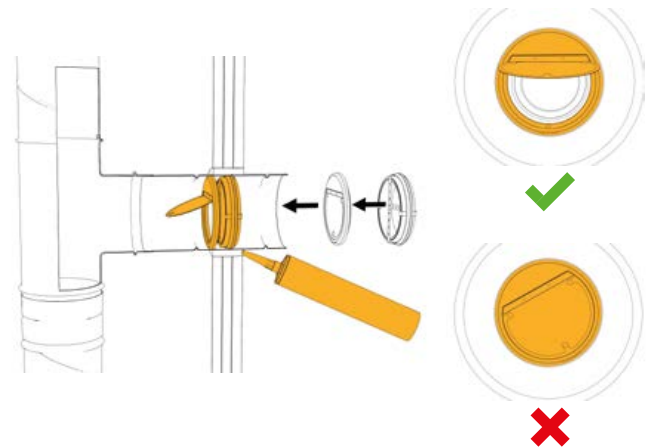
≥ 20 cm, provided that one or both of the adjacent component openings is larger than 20 x 20 cm, otherwise ≥ 10 cm.

G.2. Ventilation pipes (spiral ducts) with HENSOTHERM® FLI90 und KRS

Construction details: Non-combustible metal ventilation ducts (spiral ducts) with internal HENSOTHERM® FLI-VE and type HENSOTHERM® KRS cold smoke barrier on the shaft side.

The HENSOTHERM® FLI90 must be selected to match the duct diameter and positioned in the centre of the wall. The HENSOTHERM® KRS cold smoke barrier, which also matches the pipe diameter, must be positioned upstream of the HENSOTHERM® FLI90 on the shaft side.

The max. 20 mm-wide annular gap is completely filled with gypsum mortar or HENSOMASTIK® 5 KS SP (Spachtel).



G.2.1. Ventilation pipes (spiral ducts) with HENSOTHERM® FLI90 and KRS

Pipe / cable	Diameter [mm]	Annular gap [mm]	Annular gap filled with	Classification	
				Stud on fire side	Stud on cold side
Ventilation pipe (spiral duct)	80	0 – 10	Gypsum mortar	FLI _(ho) 90 *	FLI _(ho) 90 *
Ventilation pipe (spiral duct)	80	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 *	FLI _(ho) 90 *
Ventilation pipe (spiral duct)	100	0 – 10	Gypsum mortar	FLI _(ho) 90 *	FLI _(ho) 90 *
Ventilation pipe (spiral duct)	100	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 *	FLI _(ho) 90 *
Ventilation pipe (spiral duct)	125	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 *	FLI _(ho) 90 *

* Successfully tested to FLI_(ho) 120 minutes



Important: The tests with HENSOTHERM® FLI90 and KRS were conducted with a construction conforming to the standard OIB 095.4-001/06-008. The specified classifications only apply to installations in Austria. DIN EN 1366-2 is not applicable.

For correct installation and positioning of the HENSOTHERM® FLI90 and KRS, separate technical data sheets and installation instructions are available and must be observed.

G.3. Ventilation pipes (spiral ducts) with HENSOTHERM® FLI-VE

Construction details: Non-combustible metal ventilation ducts (spiral ducts) with internal HENSOTHERM® FLI-VE.

The HENSOTHERM® FLI-VE must be selected to match the pipe diameter and positioned in the centre of the wall.

The max. 20 mm-wide annular gap is completely filled with gypsum mortar or HENSOMASTIK® 5 KS SP (Spachtel).



G.3.1. Ventilation pipes (spiral ducts) with HENSOTHERM® FLI-VE

Pipe / cable	Diameter [mm]	Product	Annular gap (mm)	Classification	
				Stud on fire side	Stud on cold side
Ventilation pipe (spiral duct)	80	HENSOTHERM® FLI-VE-80	0 - 10	FLI-VE _(ho) 90	FLI-VE _(ho) 90
	100	HENSOTHERM® FLI-VE-100			
	125	HENSOTHERM® FLI-VE-125			
	160	HENSOTHERM® FLI-VE-160			



Important: The tests with the HENSOTHERM® FLI-VE were conducted with a construction conforming to the standard OIB 095.4-001/06-008. The specified classifications only apply to installations in Austria. DIN EN 1366-2 is not applicable.



Work safety and
maintenance management

Work Safety

Always use all individual products in the **HENSOTHERM® System für Schachtwand** in accordance with applicable local and national regulations. Wear protective clothing and avoid contact with eyes and skin. See Material Safety Data Sheet (MSDS) for further information.

Giscode: M-DF01



Later modifications

Subsequent changes to ducts that have been installed with the **HENSOTHERM® System für Schachtwand** are permitted. The system must be restored to its intended state following the retrofit. The specifications in the ETA / installation instructions must be observed.

Use and inspection

The fire protection properties of a fire penetration seals with **HENSOTHERM® System für Schachtwand** products and product systems are maintained over its entire service life only if the system is kept in a proper condition. All subsequently damaged or modified fire penetration seals on pipes must be maintained exclusively with **HENSOTHERM® System für Schachtwand** products and systems.

Re-use

Some components in the **HENSOTHERM® System für Schachtwand** can be reused after remodelling, refitting or dismantling.

A **HENSOTHERM® RM** pipe sleeve can be reused provided that the metal casing (especially the locking tabs and mounting brackets) and the intumescent lining of **HENSOTHERM® 7 KS Gewebe** are not damaged.

A **HENSOTHERM® FLI-VE, FLI90** and **KRS** can be reused provided that the metal casing, the rubber seals (especially the fusible link) and the intumescent lining of **HENSOTHERM® 7 KS Gewebe** are not damaged.

The fire penetration seal must be returned to its proper state for any re-installation. The specifications in the ETA and installation instructions must be observed.

Disposal

The materials in the **HENSOTHERM® System für Schachtwand** must be handled like waste paints and varnishes. The respective national laws and regulations must be observed.

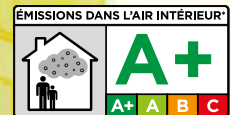
HENSEL

FIRE PROTECTION SYSTEMS

Sustainable product systems
for fire penetration seals



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