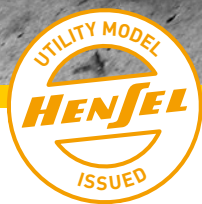


**Heating
Air conditioning
Sanitary facilities
Electrical systems**

HENSJEL

FIRE PROTECTION SYSTEMS



HENSOTHERM® System für Schachtwand Fire protection solution for dry walls of single planks ≥ 90 mm

TECHNICAL DATA SHEET / ASSEMBLY INSTRUCTIONS

Penetration seals for combustibile, incombustible, and composite aluminium piping, vent stacks, and electric wiring in flexible wiring pipes (EIR).

- Complete system for heating, air conditioning, and sanitary and electrical installations
- Simple, economical solution
- Fire resistance class up to EI 120 tested in accordance with EN 1366-3
- OIB 095.4-001/06-012 vent stacks with HENSOTHERM® FLI-VE, FLI90, and KRS
- Registered design in Austria (AT16156U1) and other countries

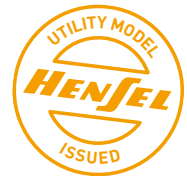
TECHNICAL INFORMATION

Applications

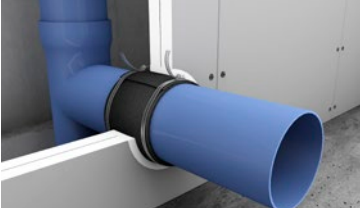
Fitting	Cables	max Ø [mm]
	Cables	≤11.0
	Bundled cables	≤25.0
	EIR / flexible pipes single	≤40.0
	Combustible pipes	≤ 110.0
	Incombustible pipes with synthetic rubber insulation (FEF)	≤ 33.4 mm [steel]
	Composite aluminium pipes with PE or synthetic rubber insulation (FEF)	≤ 26.0 [PE] ≤ 32.0 [FEF]
	Vent stacks (folded spiral-seam tubing)	≤ 160.0

Advantages

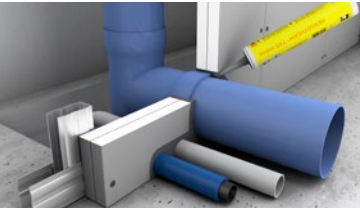
- Fire resistance EN 1366-3 tested up to EI 120 in various drywall shaft designs
- Endless pipe collar of HENSOTHERM® 7 KS Gewebe 100, simple trimming with blade/shears
- HENSOTHERM® 7 KS viskos from cartridge
- Suitable for most customary paint coatings when fully cured
- Suitable for installations in restricted spaces and with restricted access on one side
- Zero-gap pipe routing directly on the floor
- Fulfills eco-bau 1 and Minergie-eco requirements
- Contains no solvents, silicone, halogens, or plasticisers
- Thermal activation as low as approx 150 °C
- Simple installation and assembly
- Green Product, VOC Emissions Class A+
- Registered design




Piping with HENSOTHERM® 7 KS Gewebe 100

	Combustible pipes of plastic	Shaft wall 90 mm (2 x 20 mm)	Page 6
		Shaft wall 95 mm (3 x 15 mm)	Page 8
	Composite aluminium pipes	Shaft wall 90 mm (2 x 20 mm)	Page 9
	Incombustible pipes of metal	Shaft wall 95 mm (3 x 15 mm)	Page 10


Piping with HENSOTHERM® 7 KS viskos

	Combustible pipes of plastic	Shaft wall 90 mm (2 x 20 mm)	Page 12
		Shaft wall 95 mm (3 x 15 mm)	Page 13
	Composite aluminium pipes	Shaft wall 90 mm (2 x 20 mm)	Page 14
		Shaft wall 95 mm (3 x 15 mm)	Page 15
	Composite aluminium pipes (up to 45°)	Shaft wall 95 mm (3 x 15 mm)	Page 16

Cabling and EIR / flexible piping with HENSOTHERM® 7 KS viskos

	Electrical piping, EIR	Shaft wall 90 mm (2 x 20 mm)	Page 17
		Shaft wall 95 mm (3 x 15 mm)	Page 18

Vent stacks with HENSOTHERM® Gewebe 100 and BSK or HENSOTHERM® FLI90, KRS, and FLI-VE

	Vent stacks (folded spiral-seam tubing) with synthetic rubber insulation	Shaft wall 90 mm (2 x 20 mm)	Page 19
	Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI90 and KRS	Shaft wall 95 mm (3 x 15 mm)	Page 21
	Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI-VE		Page 22






TECHNICAL INFORMATION

Overview of applications and design variants

Shaft wall 90 mm (2 x 20 mm)	Shaft wall 95 mm (3 x 15 mm)	Piping / application	HENSOTHERM® 7 KS Gewebe 100	HENSOTHERM® 7 KS viskos	Page
X	—	1. Combustible pipes of plastic	X	—	6
—	X	2. Combustible pipes of plastic	X	—	8
X	—	3. Composite aluminium pipes	X	—	9
—	X	4. Incombustible pipes of metal	X	—	10
X	—	5. Combustible pipes of plastic	—	X	12
—	X	6. Combustible pipes of plastic	—	X	13
X	—	7. Composite aluminium pipes	—	X	14
—	X	8. Composite aluminium pipes	—	X	15
—	X	9. Composite aluminium pipes (inclined installations)	—	X	16
X	—	10. Electrical piping, EIR	—	X	17
—	X	11. Electrical piping, EIR	—	X	18
X	—	12. Vent stacks (folded spiral-seam tubing) with synthetic rubber and BSK insulation	X	—	19
—	X	13. Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI90 and KRS	—	—	21
—	X	14. Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI-VE	—	—	22

TECHNICAL INFORMATION

System products listed separately

	Product	EAN	Packaging
	HENSOTHERM® 7 KS viskos	4250153511014	310 ml cartridge 20 x cartridge/carton
	HENSOTHERM® 7 KS viskos	4250153511038	600 ml tubular bag 12 x tube/carton
	HENSOTHERM® 7 KS Gewebe 100	4250153511090	Roll 10 m, width 100 mm, thickness 1 mm
	HENSOTHERM® FLI90-80	4250153545002	50 x
	HENSOTHERM® FLI90-100	4250153545019	50 x
	HENSOTHERM® FLI90-125	4250153545026	25 x
	HENSOTHERM® FLI90-160	4250153545033	25 x
	HENSOTHERM® KRS-80	4250153545200	50 x
	HENSOTHERM® KRS-100	4250153545217	50 x
	HENSOTHERM® KRS-125	4250153545224	25 x
	HENSOTHERM® KRS-160	4250153545231	25 x
	HENSOTHERM® FLI-VE-100	4250153545804	50 x
	HENSOTHERM® FLI-VE-125	4250153545811	25 x
	HENSOTHERM® FLI-VE-160	4250153545828	25 x

TECHNICAL INFORMATION

Intended use

HENSOTHERM® System für Schachtwand (ETA 20/1307) presents fire protection solutions for indoor drywall shafts of single planks ≥ 90 mm and is designed for the penetration sealing of combustible, incombustible, and composite aluminium pipes and electrical piping with **HENSOTHERM® 7 KS viskos** from cartridges or **HENSOTHERM® 7 KS Gewebe 100** with plaster-filled annular gap [EN 1366-3].

According to OIB usage guideline no. 095.4-001/06-012, vent stacks (folded spiral-seam tubing) up to 160 mm in diameter may also be sealed with the intumescent fire-protection finish **HENSOTHERM® FLI90 and KRS** (cold smoke seal); and according to 095.4-001/06-008, with **HENSOTHERM® FLI-VE** and a physical sealing element. See detailed applications on the following pages.

Approved structural elements

The specific elements of construction that **HENSOTHERM® System für Schachtwand** may be used to provide a penetration seal in, are as follows:

drywall (shafts) of single planks. This also applies to a number of design variants: see detailed applications on the following pages.

Variant 1: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick.

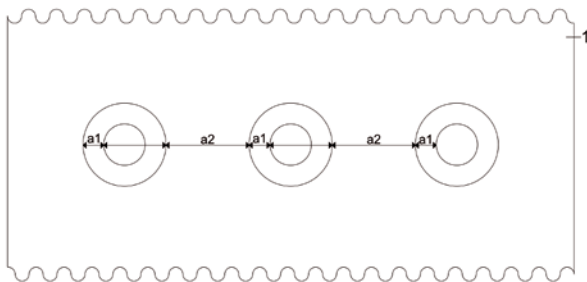
Variant 2: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick.



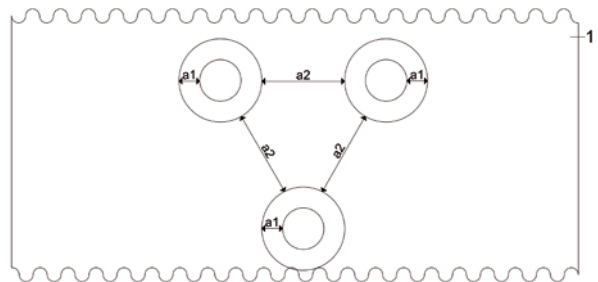
IMPORTANT The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Permitted distances

Option 1



Option 2



1: Bearing structure, a1: Annular gap, a2: Distance between piping/seals

The minimum distance between the piping (a2) varies from application to application. The nominal width of the annular gap (a1) is 0 or 20 mm, with the remaining space filled as described for the application. In some applications, the piping may be routed at zero distance (0 mm) from the floor, or inclined through the structural element. The piping must be supported from both sides of the wall at a maximum spacing of 250 mm (or 200 mm: see application).

Permitted distances between the penetration seals and other apertures or installations:

Other seals:

Minimum distance ≥ 20 cm when one or both adjoining apertures are larger than 40 x 40 cm, otherwise ≥ 10 cm.

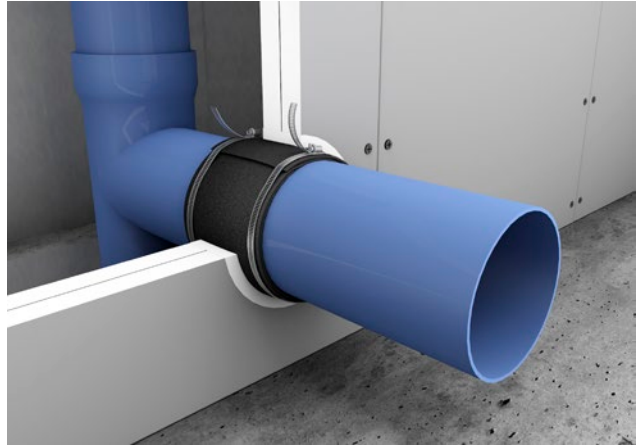
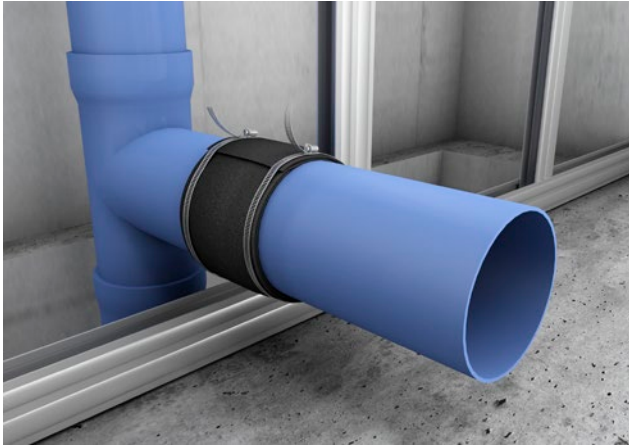
Other apertures or installations:

Minimum distance ≥ 20 cm when one or both adjoining apertures are larger than 40 x 40 cm, otherwise ≥ 10 cm.

TECHNICAL INFORMATION

Penetration seals with HENSOTHERM® 7 KS Gewebe 100

The specified number of plies (see table) of **HENSOTHERM® 7 KS Gewebe 100** is wound around the pipe or the insulation, cut to length with shears or a blade, aligned to the centre of the drywall boards, and secured in place with steel hose clips or wires (min 0.6 mm diameter) applied to both sides. The remaining annular gap is filled completely with plaster. **HENSOTHERM® 7 KS Gewebe 100** may be wound on a coupler when the application specifies this. Further details can be taken from the affected application's specifications given on the following pages.



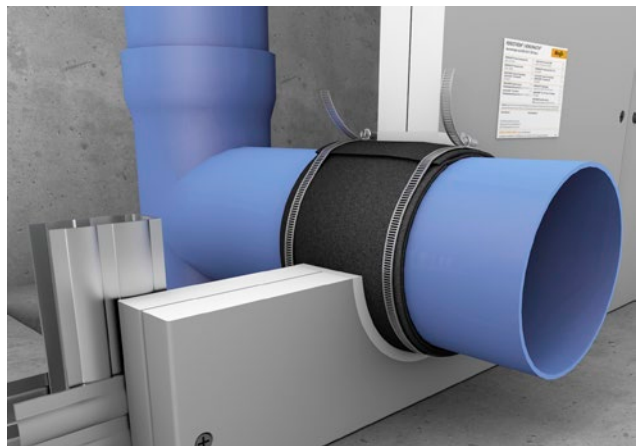
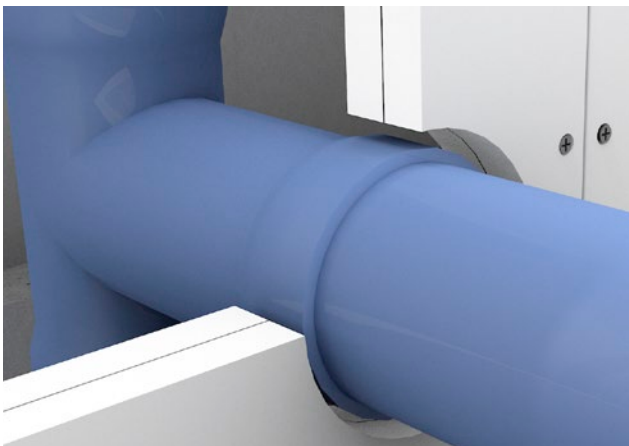
Penetration seals with HENSOTHERM® 7 KS Gewebe 100

1. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Combustible pipes of plastic, also in conjunction with an in-wall coupler, wound with a length of HENSOTHERM® 7 KS Gewebe 100, centred in the wall, and secured at both ends with steel hose clips. Minimum distance between the seals (a2) = 0 mm, annular gap (a1) nominally 0 mm, and any remaining space filled completely with plaster. Piping may be installed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



TECHNICAL INFORMATION

1.1. Combustible piping with HENSOTHERM® 7 KS Gewebe 100

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	HENSOTHERM® 7 KS Gewebe 100 plies	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Geberit Silent-PP	≤ 50	2.0	10 – 20	3	EI 90 U/U **	EI 90 U/U **
Geberit Silent-PP	≤ 75	2.6	10 – 20	4	—	EI 90 U/U
Geberit Silent-PP	≤ 110	3.6	10 – 20	6	EI 90 U/U	EI 90 U/U
Pipelife MASTER 3 PLUS	≤ 50	2.0	10 – 20	3	—	EI 90 U/U **
Pipelife MASTER 3 PLUS	≤ 75	2.1	10 – 20	4	—	EI 90 U/U **
Pipelife MASTER 3 PLUS	≤ 110	3.0	10 – 20	6	—	EI 90 U/U **
POLO-KAL NG	≤ 50	2.0	10 – 20	3	EI 90 U/U **	EI 90 U/U **
POLO-KAL NG	≤ 75	2.6	10 – 20	4	EI 90 U/U	EI 90 U/U
POLO-KAL NG	≤ 110	3.4	10 – 20	6	—	EI 90 U/U
POLO-KAL XS	≤ 50	2.0	10 – 20	3	EI 90 U/U **	EI 90 U/U **
POLO-KAL XS	≤ 75	2.6	10 – 20	4	EI 90 U/U	EI 90 U/U
POLO-KAL XS	≤ 110	3.4	10 – 20	6	EI 90 U/U	EI 90 U/U
Rehau RAUPIANO PLUS	≤ 50	1.8	10 – 20	3	—	EI 90 U/U **
Rehau RAUPIANO PLUS	≤ 75	1.9	10 – 20	4	EI 90 U/U **	EI 90 U/U **
Rehau RAUPIANO PLUS	≤ 110	2.7	10 – 20	6	—	EI 90 U/U **

1: Bearing structure, a1: Annular gap, a2: Distance between piping/seals

TECHNICAL INFORMATION

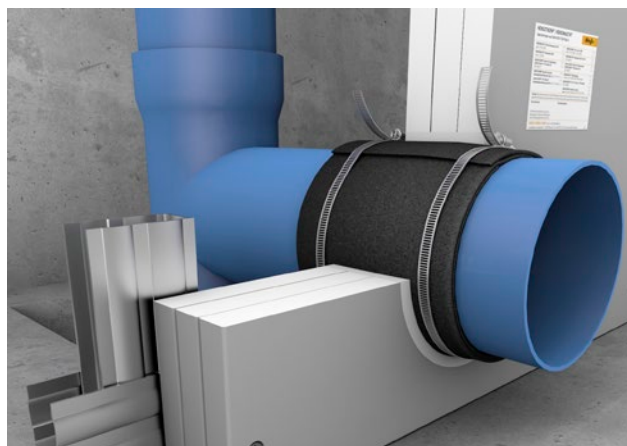
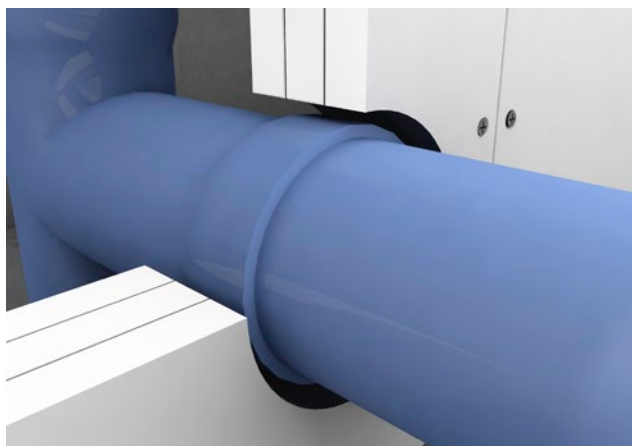
Shaft wall 3 x 15 mm / Combustible piping with HENSOTHERM® 7 KS Gewebe 100

2. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Combustible pipes of plastic, also in conjunction with an in-wall coupler, wound with a length of HENSOTHERM® 7 KS Gewebe 100, centred in the wall, and secured at both ends with steel hose clips. Minimum distance between the seals (a2) = 0 mm, annular gap (a1) nominally 0 mm, and any remaining space filled completely with plaster. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



2.1. Combustible piping with HENSOTHERM® 7 KS Gewebe 100

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	HENSOTHERM® 7 KS Gewebe 100 plies	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Geberit Silent-PP	≤ 50	2.0	0–20	3	EI 90 U/U	EI 90 U/U
Geberit Silent-PP	≤ 75	2.0	0–20	4	—	EI 90 U/U
Geberit Silent-PP	≤ 110	3.6	0–20	6	EI 120 U/U	EI 90 U/U
POLO-KAL NG	≤ 50	2.0	0–20	3	EI 120 U/U	EI 120 U/U
POLO-KAL NG	≤ 75	2.6	0–20	4	EI 120 U/U	EI 90 U/U
POLO-KAL NG	≤ 110	3.4	0–20	6	EI 90 U/U	EI 90 U/U



IMPORTANT Test report no. MA39-VFA2020-0239.01 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

Shaft wall 90 mm, 2 x 20 mm / Composite aluminium pipes with HENSOTHERM® 7 KS Gewebe 100

3. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Composite aluminium pipes with or without unbroken PE insulation, also in conjunction with an in-wall coupler, wound with a length of HENSOTHERM® 7 KS Gewebe 100, centred in the wall, and secured at both ends with steel hose clips. Minimum distance between the seals (a2) = 0 mm, annular gap (a1) nominally 0 mm, and any remaining space filled completely with plaster. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



3.1. Composite aluminium pipes with HENSOTHERM® 7 KS Gewebe 100

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Insulation (CS)	HENSOTHERM® 7 KS Gewebe 100 plies	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Frauenthal ALVA ACTA SIS	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C
HakaGerodur HAKATHEN	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C
HERZ composite pipe PE-RT	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C
HERZ R+F PLANO	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C
Pipelife RADOPRESS	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C
Rehau RAUTITAN	≤ 25	3.7	—	2	EI 90 U/C	EI 90 U/C
Rehau RAUTITAN	≤ 32	4.7	—	2	EI 90 U/C	EI 90 U/C
Winkler MT composite pipe	≤ 26	3.0	9 mm PE	2	EI 90 U/C	EI 90 U/C



IMPORTANT Test report no. 2018-Efectis-R001960 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

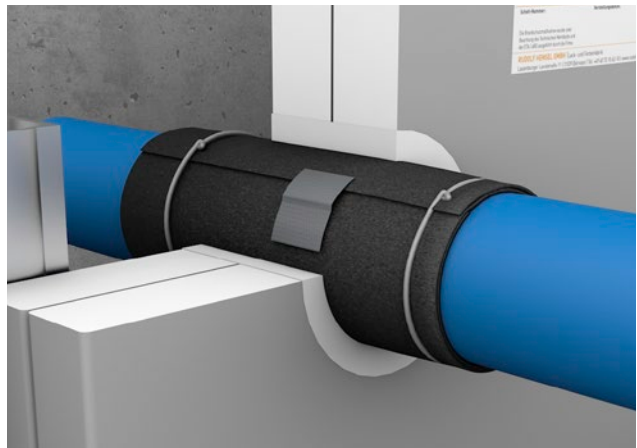
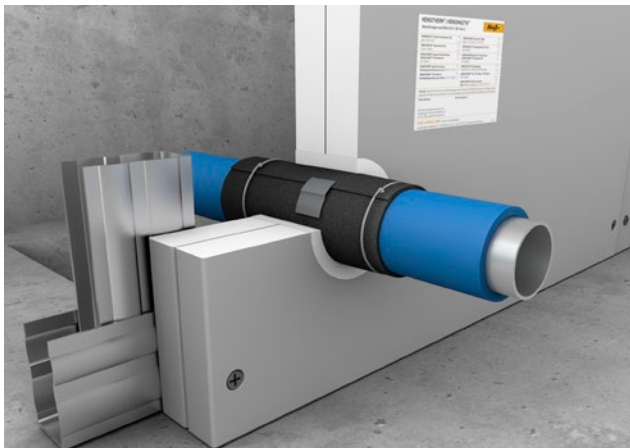
Shaft wall 90 mm, 2 x 20 mm / Incombustible pipes of metal with HENSOTHERM® 7 KS Gewebe 100

4. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Incombustible metal pipes with unbroken synthetic-rubber insulation (FEF), wound with a length of HENSOTHERM® 7 KS Gewebe 100, centred in the wall, and secured with adhesive tape. The 30 mm length of HENSOTHERM® 7 KS Gewebe 100 projecting beyond both sides of the wall is secured with wire (min 0.6 mm diameter). Minimum distance between the seals (a2) = 0 mm, annular gap (a1) nominally 0 mm, and any remaining space filled completely with plaster. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



4.1. Incombustible piping of metal with HENSOTHERM® 7 KS Gewebe 100

Piping/ ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	HENSOTHERM® 7 KS Gewebe 100 plies	Classification	
						Fire-side steel strut frame	Cold-side steel strut frame
Steel	21.3–33.4	2.0–2.6	0–20	13 mm ArmaFlex XG	2	EI90 C/U	EI90 C/U

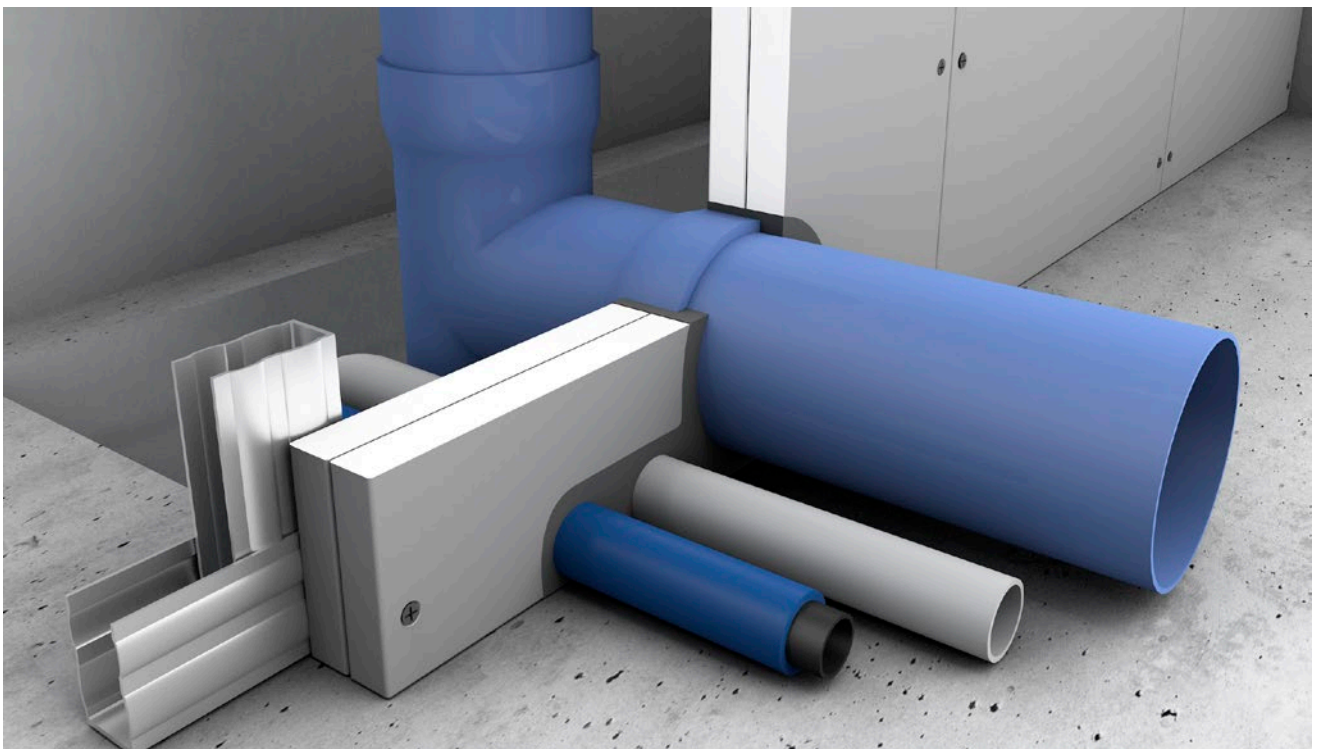
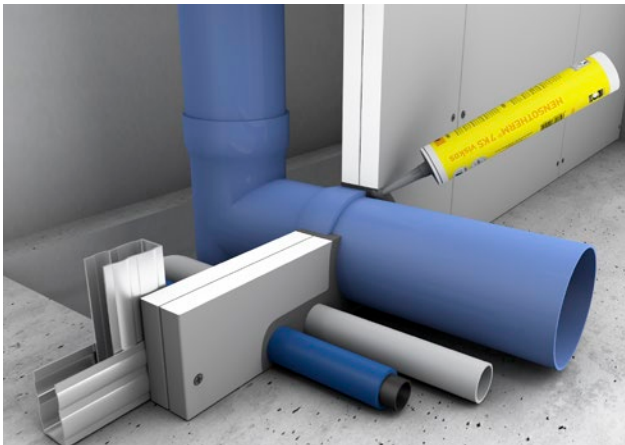
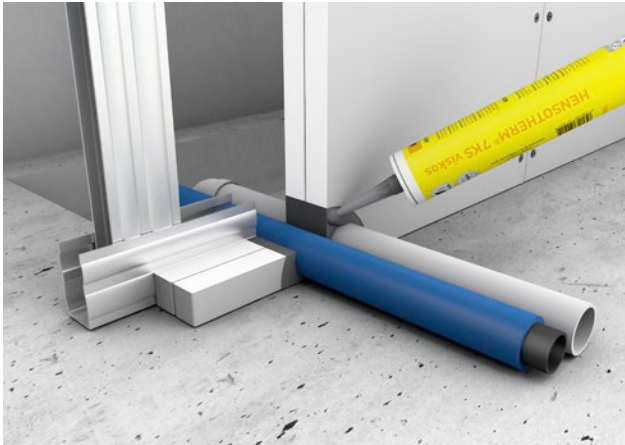


IMPORTANT Test report no. 2018-Efectis-R001960 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

Penetration seal with HENSOTHERM® 7 KS viskos

The annular gap is filled completely with **HENSOTHERM® 7 KS viskos**. The piping may be routed with zero spacing and directly on the floor. The design is also suitable for couplers and inclined installations when the application specifies this. Further details can be taken from the affected application's specifications given on the following pages.



Product characteristics of HENSOTHERM® 7 KS viskos

Density:	approx 1.3g/cm ³
Application temperature:	+5 °C to +40 °C
Temperature resistance:	-40 °C to +140 °C
Drying time:	1 mm/day
Initial foaming:	approx +150 °C
Max total deformation:	10%
DIN 4102 P1 building material class:	B2
Shelf life (at + 20 °C in dry environment):	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
Overcoatability:	Yes

TECHNICAL INFORMATION

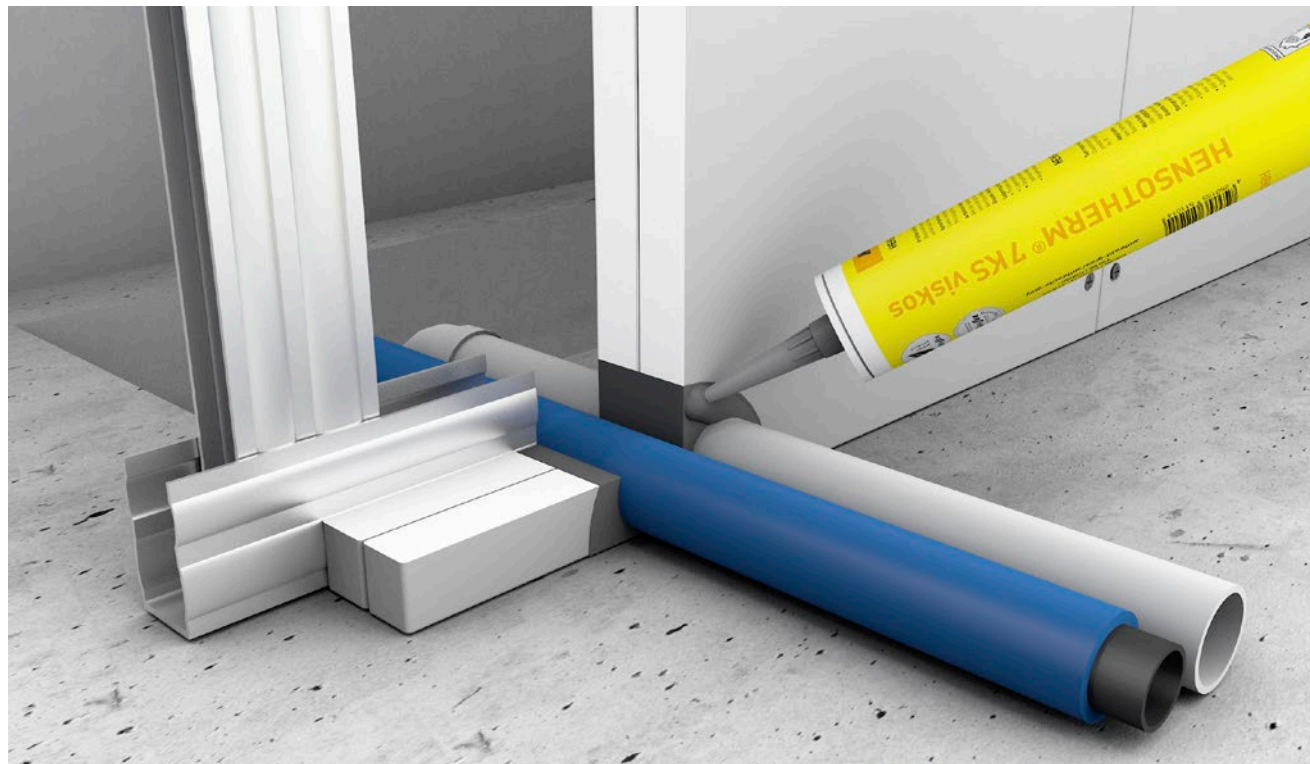
Shaft wall 90 mm, 2 x 20 mm / Combustible piping with HENSOTHERM® 7 KS viskos

5. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Combustible pipes of plastic, also in conjunction with in-wall coupler. Minimum distance between seals (a2) = 0 mm; the annular gap filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



5.1. Combustible pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Classification	
				Fire-side steel strut frame	Cold-side steel strut frame
Geberit Silent-PP	≤ 50	2.0	15	EI 90 U/U	EI 90 U/U
POLO-KAL NG	≤ 50	2.0	15	EI 90 U/U	EI 90 U/U
POLO-KAL XS	≤ 50	2.0	15	EI 90 U/U	EI 90 U/U

TECHNICAL INFORMATION

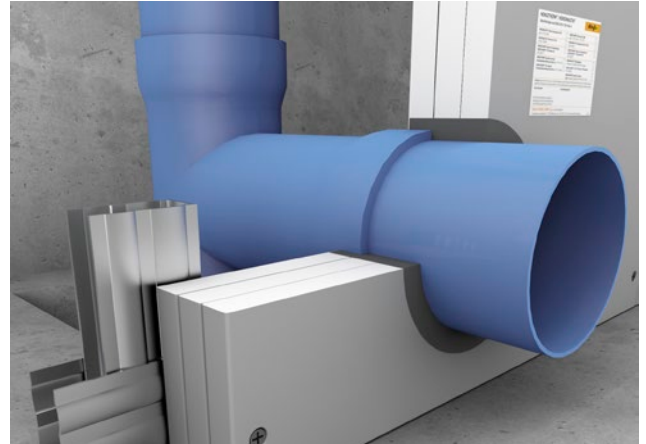
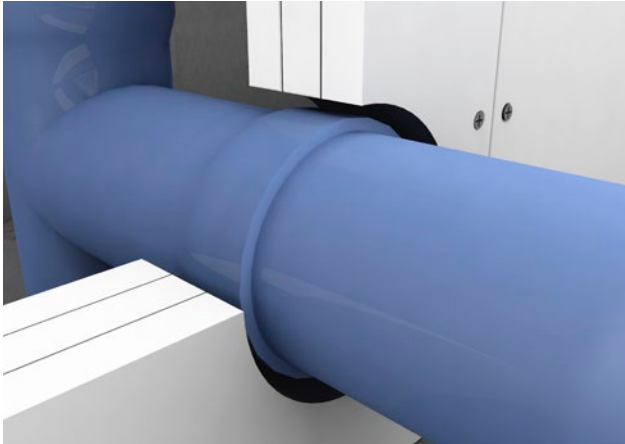
Shaft wall 95 mm, 3 x 15 mm / Combustible piping with HENSOTHERM® 7 KS viskos

6. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Combustible pipes of plastic, with or without unbroken PE insulation, also in conjunction with in-wall coupler. Minimum distance between seals (a2) = 0 mm; the annular gap filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



6.1. Combustible pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Geberit Silent-PP	≤ 50	2.0	10	—	EI 90 U/U	EI 90 U/U
Pipelife MASTER 3 PLUS	≤ 50	2.0	10	—	EI 90 U/U **	EI 90 U/U **

** Inclined routing up to 45° permitted



IMPORTANT Test report nos. MA39-20-05524 and MA39-VFA2020-0239.01 list positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

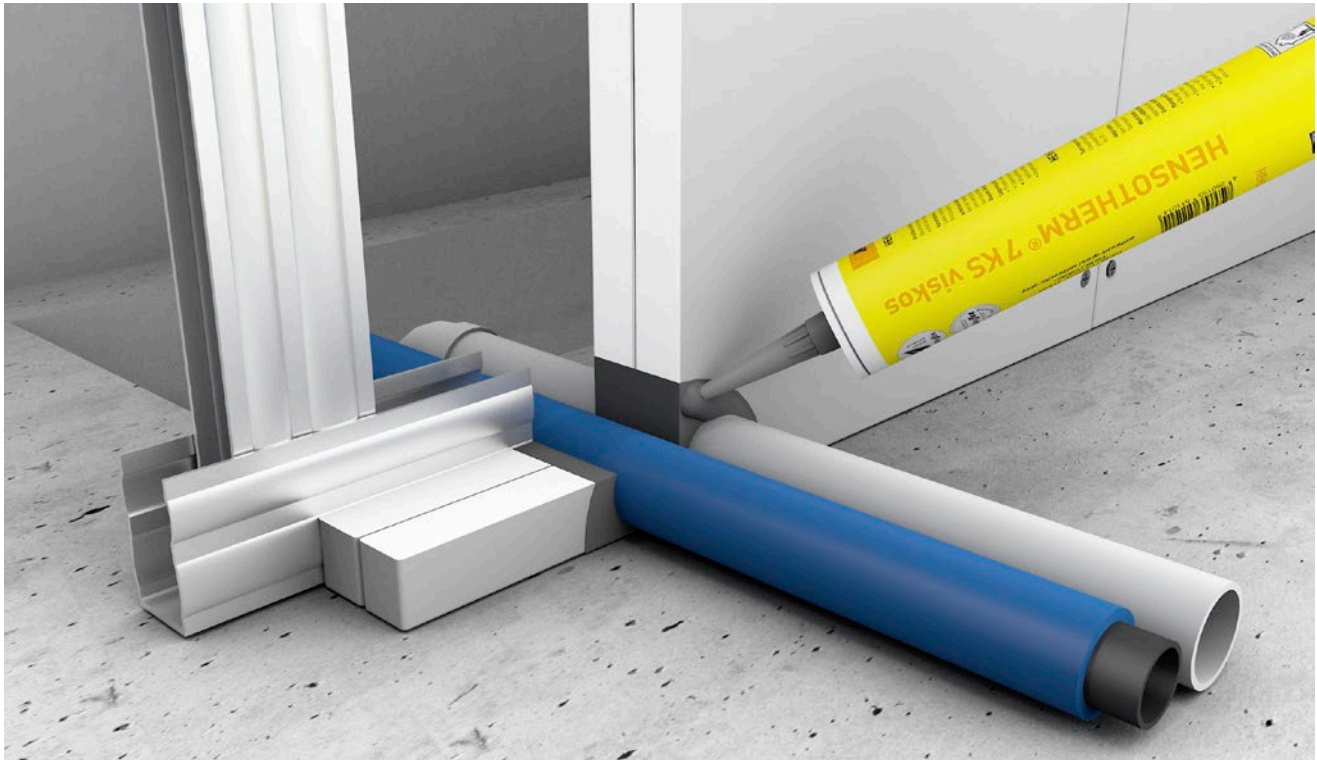
Shaft wall 90 mm, 2 x 20 mm / Composite aluminium pipes with HENSOTHERM® 7 KS Gewebe 100

7. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Composite aluminium pipes with or without unbroken PE insulation, also in conjunction with in-wall coupler. Minimum distance between seals (a2) = 0 mm; the annular gap filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



7.1. Composite aluminium pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Geberit Mepla	≤ 26	3.0	15	9 mm PE	EI90 U/C	EI90 U/C
Geberit Mepla	≤ 26	3.0	15	—	EI90 U/C	EI90 U/C
Geberit Mepla	≤ 32	3.0	15	—	EI90 U/C	EI90 U/C
KE KELIT KELOX	≤ 25	2.5	15	9 mm PE	EI90 U/C	EI90 U/C
KE KELIT KELOX	≤ 25	2.5	10–20	—	EI90 U/C	EI90 U/C
KE KELIT KELOX	≤ 32	3.0	10–20	—	EI90 U/C	EI90 U/C
TECEflex	≤ 17	2.75	10–20	—	EI90 U/C **	EI90 U/C **
TECEflex	≤ 17	2.75	10–20	6 mm PE	EI90 U/C **	EI90 U/C **
TECEflex	≤ 21	3.45	10–20	—	EI90 U/C **	EI90 U/C **
TECEflex	≤ 21	3.45	10–20	6 mm PE	EI90 U/C **	EI90 U/C **
TECEflex	≤ 26	4.0	10–20	—	EI90 U/C **	EI90 U/C **
TECEflex	≤ 26	4.0	10–20	6 mm PE	EI90 U/C **	EI90 U/C **

** Test report no. 2018-Efectis-R001960 lists positive findings, and an application has been filed for the supplement to ETA 20-1307

TECHNICAL INFORMATION

Shaft wall 95 mm, 3 x 15 mm / Composite aluminium pipes with HENSOTHERM® 7 KS viskos

8. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Composite aluminium pipes with unbroken synthetic-rubber insulation (FEF). Minimum distance between seals (a2) = 0 mm; the annular gap (a1) = 10 mm filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor.

The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



8.1. Composite aluminium pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Geberit Mepla	20	2.5	10	13 mm AF/ArmaFlex	EI 90 U/C	EI 90 U/C
Geberit Mepla	20	2.5	10	13 mm ArmaFlex XG	EI 90 U/C	EI 90 U/C
Geberit Mepla	32	3.0	10	13 mm AF/ArmaFlex	EI 90 U/C	EI 90 U/C
Geberit Mepla	32	3.0	10	13 mm ArmaFlex XG	EI 90 U/C	EI 90 U/C



IMPORTANT Test report no. MA39-VFA2020-0239.01 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

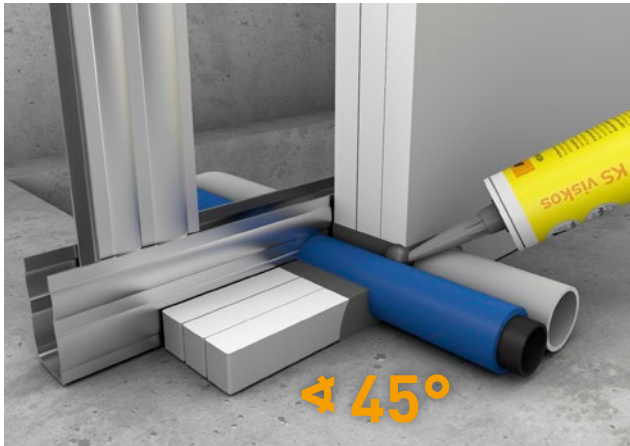
Shaft wall 95 mm, 3 x 15 mm / Composite aluminium pipes with HENSOTHERM® 7 KS viskos

9. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Composite aluminium pipes with or without unbroken polyethylene-foam insulation [PE]. Minimum distance between seals (a2) = 0 mm; annular gap (a1) = 10 mm filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor and up to 45° to the wall.

The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



9.1. Composite aluminium pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Frauenthal ALVA ACTA SIS	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
Frauenthal ALVA ACTA SIS	20	2.0	10	—	EI90 U/C	EI90 U/C
HakaGerodur HAKATHEN	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
HakaGerodur HAKATHEN	20	2.0	10	—	EI90 U/C	EI90 U/C
HERZ R+F PLANO	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
HERZ R+F PLANO	20	2.0	10	—	EI90 U/C	EI90 U/C
HERZ composite pipe PE-RT	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
HERZ composite pipe PE-RT	20	2.0	10	—	EI90 U/C	EI90 U/C
Pipelife RADOPRESS	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
Pipelife RADOPRESS	20	2.0	10	—	EI90 U/C	EI90 U/C
Winkler MT composite pipe	20	2.0	10	9 mm PE	EI90 U/C	EI90 U/C
Winkler MT composite pipe	20	2.0	10	—	EI90 U/C	EI90 U/C



IMPORTANT Test report no. MA39-20-05524 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

Shaft wall 90 mm, 2 x 20 mm / Electrical piping, EIR with HENSOTHERM® 7 KS viskos

10. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Flexible wiring pipes (EIR) with and without single or bundled cables. Minimum distance between seals (a2) = 0 mm; the annular gap (a1) = 15 mm filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor or ceiling.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



10.1. Combustible pipes with HENSOTHERM® 7 KS viskos

Piping/ducting	Maximum diameter of each EIR [mm]	Maximum diameter of bundled cables [mm]	Maximum diameter of single cable [mm]	Annular gap [mm]	Classification	
					Fire-side steel strut frame	Cold-side steel strut frame
Flexible wiring pipe (EIR) with bundled cables 3 x 1.5mm²	32	25	10.0	15	EI 90 C/C	EI 90 C/C

TECHNICAL INFORMATION

Shaft wall 95 mm, 3 x 15 mm / Electrical piping, EIR with HENSOTHERM® 7 KS viskos

11. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Flexible wiring pipes (EIR) with and without single or bundled cables. Minimum distance between seals (a2) = 0 mm; the annular gap filled completely with HENSOTHERM® 7 KS viskos. Piping may be routed at 0 mm distance from the floor or ceiling.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



11.1. Electrical piping, EIR with HENSOTHERM® 7 KS viskos

Piping/ducting	Maximum diameter of each EIR [mm]	Maximum diameter of single cable [mm]	Annular gap [mm]	Classification	
				Fire-side steel strut frame	Cold-side steel strut frame
Flexible wiring pipe (EIR) with cable 5 x 1.5 mm ²	40	11	10	EI90 U/C	EI90 U/C



IMPORTANT Test report no. MA39-20-05524 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

Stacks with HENSOTHERM® 7 KS Gewebe 100 and BSK

The specified number of plies (see table) of **HENSOTHERM® 7 KS Gewebe 100** is wound around the vent stack or the insulation, aligned to the centre of the drywall boards, and secured in place with adhesive tape. Additional securing is unnecessary. The remaining annular gap is filled completely with plaster.



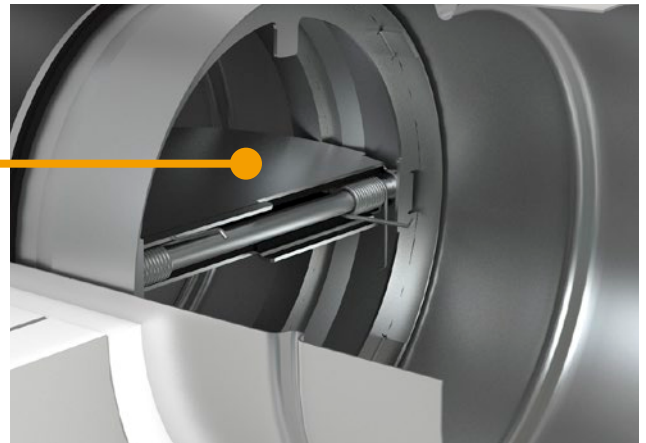
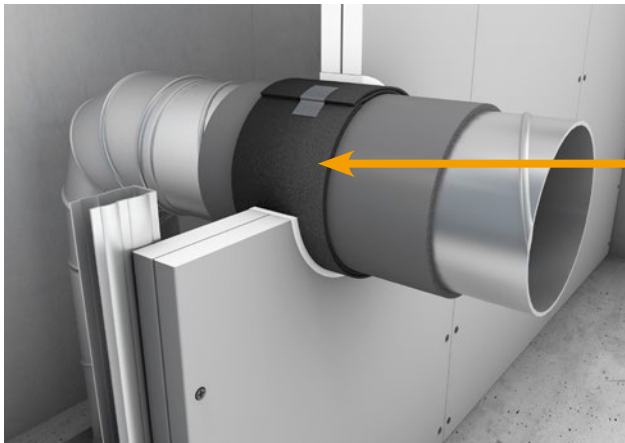
Shaft wall 90 mm, 2 x 20 mm / Vent stacks (folded spiral-seam tubing) with HENSOTHERM® 7 KS Gewebe 100 and BSK

12. Construction details

Structural element: The wall must be at least 90 mm thick and consist of a steel strut frame fitted on at least one side with at least two plies of gypsum fibreboard each at least 20 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Incombustible vent stacks of metal (folded spiral-seam tubing) with unbroken synthetic-rubber insulation (FEF), wound with a length of HENSOTHERM® 7 KS Gewebe 100, centred in the wall, and secured with adhesive tape. Minimum distance between the seals (2) = 80 mm, annular gap (a1) nominally 0 mm, and any remaining space filled completely with plaster.

The piping must be supported from both sides of the wall at a maximum spacing of 200 mm.



12.1. Vent stacks (folded spiral-seam tubing) with HENSOTHERM® 7 KS Gewebe 100 and fire damper

Piping/ducting	Diameter [mm]	Wall thickness [mm]	Annular gap [mm]	Insulation (CS)	HENSOTHERM® 7 KS Gewebe 100 plies	Classification	
						Fire-side steel strut frame	Cold-side steel strut frame
Vent stack with BSK SYSTEMAIR type PKI-C-EI60S	125	0.8	0 – 20	19 mm AF/ArmaFlex	2	—	EI 90 U/U

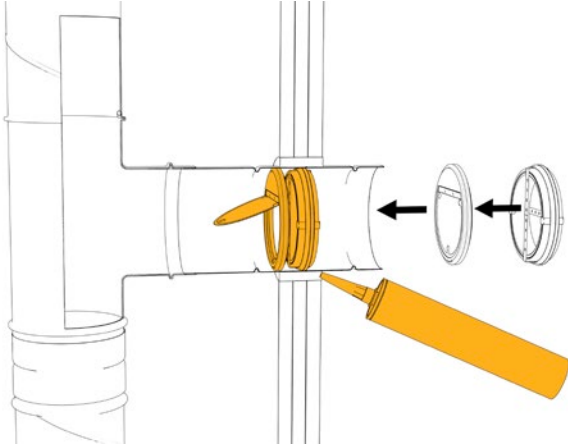


IMPORTANT The vent stack must be protected in addition with an in-duct fire protection element (fire damper). Test report no. 2019-Efectis-R002344 lists positive findings for the design of the fire seal, and an application has been filed for the supplement to ETA 20-1307.

TECHNICAL INFORMATION

Vent stacks with HENSOTHERM® FLI90 and KRS

The selected **HENSOTHERM® FLI90** and **KRS** must correspond to the pipe diameter. **HENSOTHERM® FLI90** is centred in the wall. For the correct installation and alignment of **HENSOTHERM® FLI90** and **KRS**, consult the available, separate technical leaflets and assembly instructions. The annular gap is filled completely with plaster or **HENSOMASTIK® 5 KS SP (Spachtel)**. Further details can be taken from the affected application's specifications given on the following pages.



Vent stacks with HENSOTHERM® FLI-VE

The selected **HENSOTHERM® FLI-VE** must correspond to the pipe diameter and be centred in the wall. The sealing element or the coated grey sides of the valve wings must face away from the shaft. The annular gap is filled completely with plaster or **HENSOMASTIK® 5 KS SP (Spachtel)**. Further details can be taken from the affected application's specifications given on the following pages.



TECHNICAL INFORMATION

Shaft wall 95 mm, 3 x 15 mm / Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI90 and KRS

13. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Incombustible vent stacks of metal (folded spiral-seam tubing) with internal HENSOTHERM® FLI90 centred in the wall and cold smoke seal type HENSOTHERM® KRS on the shaft side, both corresponding to the pipe diameter. Annular gap (a1) nominally 0 mm and remaining space filled completely with plaster or HENSOMASTIK® 5 KS SP (Spachtel). Minimum distance between the penetration seals (a2) = 80 mm.

The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



13.1. Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI90 and KRS

Piping/ducting	Diameter [mm]	Annular gap [mm]	Annular gap filled with	Classification	
				Fire-side steel strut frame	Cold-side steel strut frame
Vent stacks (folded spiral-seam tubing)	80	0 – 10	Plaster	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	80	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	100	0 – 10	Plaster	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	100	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	125	0 – 10	HENSOMASTIK® 5 KS SP	FLI _(ho) 90 **	FLI _(ho) 90 **

** Tested successfully up to FLI_(ho) 120 minutes



IMPORTANT The tests on **HENSOTHERM® FLI90** and **KRS** were conducted on a setup complying with OIB usage guideline no. 095.4-001/06-012. The classifications specified apply only to installations in Austria; DIN EN 1366-2 does not apply. For the correct installation and positioning of **HENSOTHERM® FLI90** and **KRS**, consult the available, separate technical leaflets and assembly instructions.

TECHNICAL INFORMATION

Shaft wall 95 mm, 3 x 15 mm / Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI-VE

14. Construction details

Structural element: The wall must be at least 95 mm thick and consist of a steel strut frame fitted on at least one side with at least three plies of gypsum fibreboard each at least 15 mm thick. The supporting structure must have been classified for the required fire resistance duration as defined in EN 13501-2.

Penetration Seal: Incombustible vent stacks of metal (folded spiral-seam tubing) with internal HENSOTHERM® FLI-VE centred in the wall and corresponding to the pipe diameter. Annular gap (a1) nominally 0 mm and remaining space filled completely with plaster or HENSOMASTIK® 5 KS SP (Spachtel). Minimum distance between the penetration seals (a2) = 80 mm.


The piping must be supported from both sides of the wall at a maximum spacing of 250 mm.



14.1. Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI-VE

Piping/ducting	Diameter [mm]	Annular gap [mm]	Classification	
			Fire-side steel strut frame	Cold-side steel strut frame
Vent stacks (folded spiral-seam tubing)	100	0 – 10	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	125	0 – 10	FLI _(ho) 90 **	FLI _(ho) 90 **
Vent stacks (folded spiral-seam tubing)	100	0 – 10	FLI _(ho) 90 **	FLI _(ho) 90 **

** Tested successfully up to FLI_(ho) 120 minutes



IMPORTANT The tests on HENSOTHERM® FLI-VE were conducted on a setup complying with OIB usage guideline no. 095.4-001/06-008. The classifications specified apply only to installations in Austria; DIN EN 1366-2 does not apply.

TECHNICAL INFORMATION

Notes

Retrofits

Subsequent modifications may be made to piping sealed with **HENSOTHERM® System für Schachtwand**. Following a retrofit, the system must be returned to its intended state. The specifications in the ETA / assembly instructions must be observed.

Use and inspection

The fire protection properties of penetration seals with **HENSOTHERM® System für Schachtwand** products and product systems are safeguarded over their service lives only when the system is maintained in perfect working order. All subsequently damaged or altered fire seals on piping must be reinstated exclusively with **HENSOTHERM® System für Schachtwand** products and systems.

Disposal

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

Work safety

The use category of **HENSOTHERM® System für Schachtwand** in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3 All products must be used in compliance with the pertinent local and national regulations. See the safety data sheet for details!

Our technical advisers will be pleased to assist you with your enquiries!

Complete product portfolios and further details can be downloaded from **www.rudolf-hensel.de**

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