



ETA-Danmark A/S  
Göteborg Plads 1  
DK-2150 Nordhavn  
Tel. +45 72 24 59 00  
Internet [www.etadanmark.dk](http://www.etadanmark.dk)

Authorised and notified according  
to Article 29 of the Regulation (EU)  
No 305/2011 of the European  
Parliament and of the Council of 9  
March 2011

MEMBER OF EOTA



## European Technical Assessment ETA-20/1307 of 2025/03/31

### I General Part

**Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S**

**Trade name of the construction product:**

HENSOTHERM® System für Schachtwand

**Product family to which the above construction product belongs:**

Fire Stopping and Fire Sealing Products, Penetration Seals

**Manufacturer:**

Rudolf Hensel GmbH  
Lauenburger Landstraße 11  
DE-21039 Börnsen  
Telephone: +49 40 72106210  
[www.rudolf-hensel.de](http://www.rudolf-hensel.de)

**Manufacturing plant:**

Rudolf Hensel GmbH  
Lauenburger Landstraße 11  
DE-21039 Börnsen

**This European Technical Assessment contains:**

33 pages including 5 annexes which form an integral part of the document

**This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:**

EAD 350454-00-1104 Firestopping and Fire Sealing Products, Penetration Seals

**This version replaces:**

The ETA with the same number, issued on 2021/01/01

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

## **II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of the product**

The HENSOTHERM® System für Schachtwand is used to form a fire penetration seal around single combustible, non-combustible, multilayer composite pipes and conduits, to reinstate the fire resistance performance of shaftwall constructions, where they have been provided with apertures for the penetration of services.

The product system comprises the construction products HENSOTHERM® 7 KS Gewebe endless pipe wraps (ETA 16/0369), HENSOTHERM® 7 KS viskos (ETA 16/0369) intumescent sealant, which is supplied in liquid form in cans, cartridges or tubes, and HENSOTHERM® RM pipe collars (ETA 19/0730) that are incorporated into the penetration seal construction where required.

### **2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)**

The intended use of system HENSOTHERM® System für Schachtwand is to reinstate the fire resistance performance of flexible- and rigid wall constructions where they are penetrated by pipes or conduits.

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

#### **Shaft walls:**

The permissible construction of the shaft wall is described in the annexes.

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

The distance between the aperture edges of penetration seals in a building element shall be a minimum of 100 mm.

The distance between the aperture edge of a penetration seal and any other penetration (e.g. door) in a building element shall be a minimum of 200 mm.

In walls the distance from the surface of the separating element to the nearest support position for services shall be less than 250 mm from the wall.

In case of service support constructions for pipes with insulation the part of the service support directly in contact with the pipe (e.g. clamp) shall in practice be protected by the same insulation as used for the pipe.

The System HENSOTHERM® System für Schachtwand may be used to provide a penetration seal with pipes and conduits (for details see Annex A-E).

The provisions made in this European Technical Assessment are based on an assumed intended working life of the system HENSOTHERM® System für Schachtwand of 10 years, provided that the conditions laid down in the product data sheet for the packaging/transport/storage/installation/use/repair are met.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body but are to be regarded only as a means for selecting the appropriate products in relation to the expected economically reasonable working life of the works.

### 3 Performance of the product and references to the methods used for its assessment.

Characteristic	Assessment of characteristic									
<b>3.2 Safety in case of fire (BWR 2)</b>										
Reaction to fire	The construction products: HENSOTHERM® RM pipe collars HENSOTHERM® 7 KS Gewebe endless pipe wraps HENSOTHERM® 7 KS viskos sealant are classified as <b>E</b> in accordance with EN13501-1, and the EC Delegated regulation 2016/364/EU.									
Resistance to fire	<b>See Annex A-E</b>									
<b>3.3 Hygiene, Health and the Environment (BWR 3)</b>										
Air permeability	<b>No performance assessed</b>									
Water permeability	<b>No performance assessed</b>									
Content, emission and/or release of dangerous Substances <sup>*)</sup>	<b>Release scenario: IA2</b> <table><tr><td></td><td><b>After 3 days</b> [mg/m<sup>3</sup>]</td><td><b>After 28 days</b> [mg/m<sup>3</sup>]</td></tr><tr><td><b>SVOC</b></td><td><b>&lt; 0,005</b></td><td><b>&lt; 0,005</b></td></tr><tr><td><b>VOC</b></td><td><b>&lt; 0,005</b></td><td><b>&lt; 0,005</b></td></tr></table>		<b>After 3 days</b> [mg/m <sup>3</sup> ]	<b>After 28 days</b> [mg/m <sup>3</sup> ]	<b>SVOC</b>	<b>&lt; 0,005</b>	<b>&lt; 0,005</b>	<b>VOC</b>	<b>&lt; 0,005</b>	<b>&lt; 0,005</b>
	<b>After 3 days</b> [mg/m <sup>3</sup> ]	<b>After 28 days</b> [mg/m <sup>3</sup> ]								
<b>SVOC</b>	<b>&lt; 0,005</b>	<b>&lt; 0,005</b>								
<b>VOC</b>	<b>&lt; 0,005</b>	<b>&lt; 0,005</b>								
<b>3.4 Safety and accessibility in use (BWR4)</b>										
Mechanical resistance and stability	<b>No performance assessed</b>									
Resistance to impact/movement	<b>No performance assessed</b>									
Adhesion	<b>No performance assessed</b>									
Durability	Use category: <b>Type X</b>									
<b>3.5 Protection against noise (BWR5)</b>										
Airborne sound insulation	<b>No performance assessed</b>									
<b>3.6 Energy economy and heat retention (BWR6)</b>										
Thermal properties	<b>No performance assessed</b>									
Water vapour permeability	<b>No performance assessed</b>									

See additional information in section 3.8-3.9.

<sup>\*)</sup> In addition to the specific clauses relating to dangerous substances contained in this European technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g., transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

### **3.8 Methods of verification**

The assessment of system HENSOTHERM® System für Schachtwand for the declared intended use has been made in accordance with EAD 350454-00-1104 Firestopping and fire sealing products, Penetration Seals, assessed as a combination of products according to table 1.1 of the EAD.

### **3.9 General aspects related to the fitness for use of the product.**

The verification of durability is part of testing the essential characteristics. HENSOTHERM® System für Schachtwand may be used in end-use applications according to the provisions for use category X (intended for use conditions exposed to weathering) without expecting significant changes of the characteristics relevant for fire protection. Products that meet the requirements for type X meet the requirements for all other types.

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The HENSOTHERM® System für Schachtwand are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

**4 Attestation and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base.**

**4.1 AVCP system**

According to the decision 1999/454/EC of the European Commission, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is: **1.**

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD.**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2025-03-31 by



Thomas Bruun  
Managing Director, ETA-Danmark

## ANNEX A – Resistance to Fire Classification – HENSOTHERM® System für Schachtwand

### A.1. One-sided flexible wall constructions with a minimum wall thickness of 90 mm

#### A.1.1. Permissible construction elements

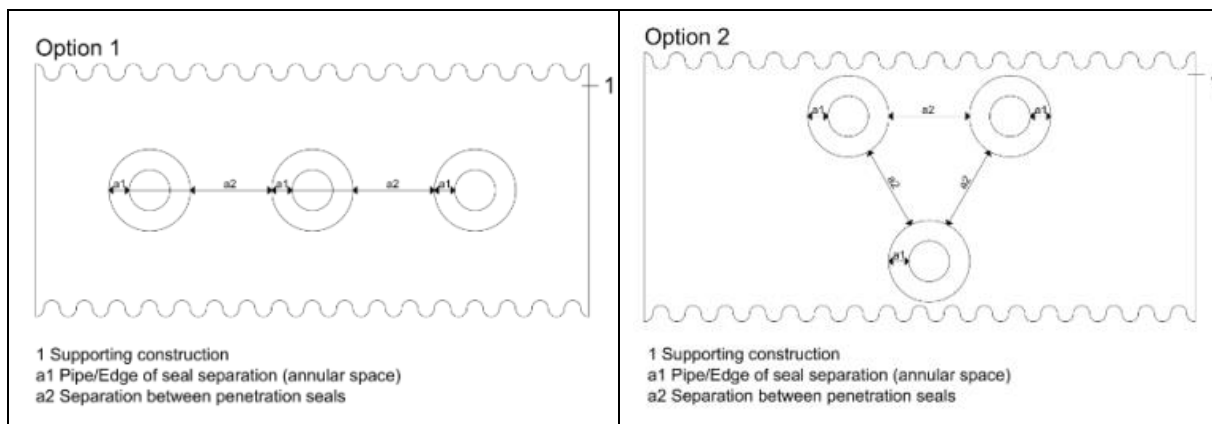
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The specific elements of construction that the HENSOTHERM® System für Schachtwand may be used to provide a penetration seal in, are as follows:

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

#### A.1.2. Minimum spacing and distance of the first support

a<sub>1</sub>: annular space nominally 0 mm and any remaining space filled with plaster

a<sub>2</sub>: separation between seals  $\geq 100$  mm



Distance of first support of penetrating services  $\leq 250$  mm from the face of the wall, or mounted directly on the floor.

Pipe / conduit	Max. diameter single cable conduit [mm]	Max. diameter single cable [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Studs on fire side	Studs on cold side
Single polyolefin flexible or pliable combustible cable conduits, with cables type A1, A2 or A3, single or in a bundle	32	10	2	EI 90	EI 90

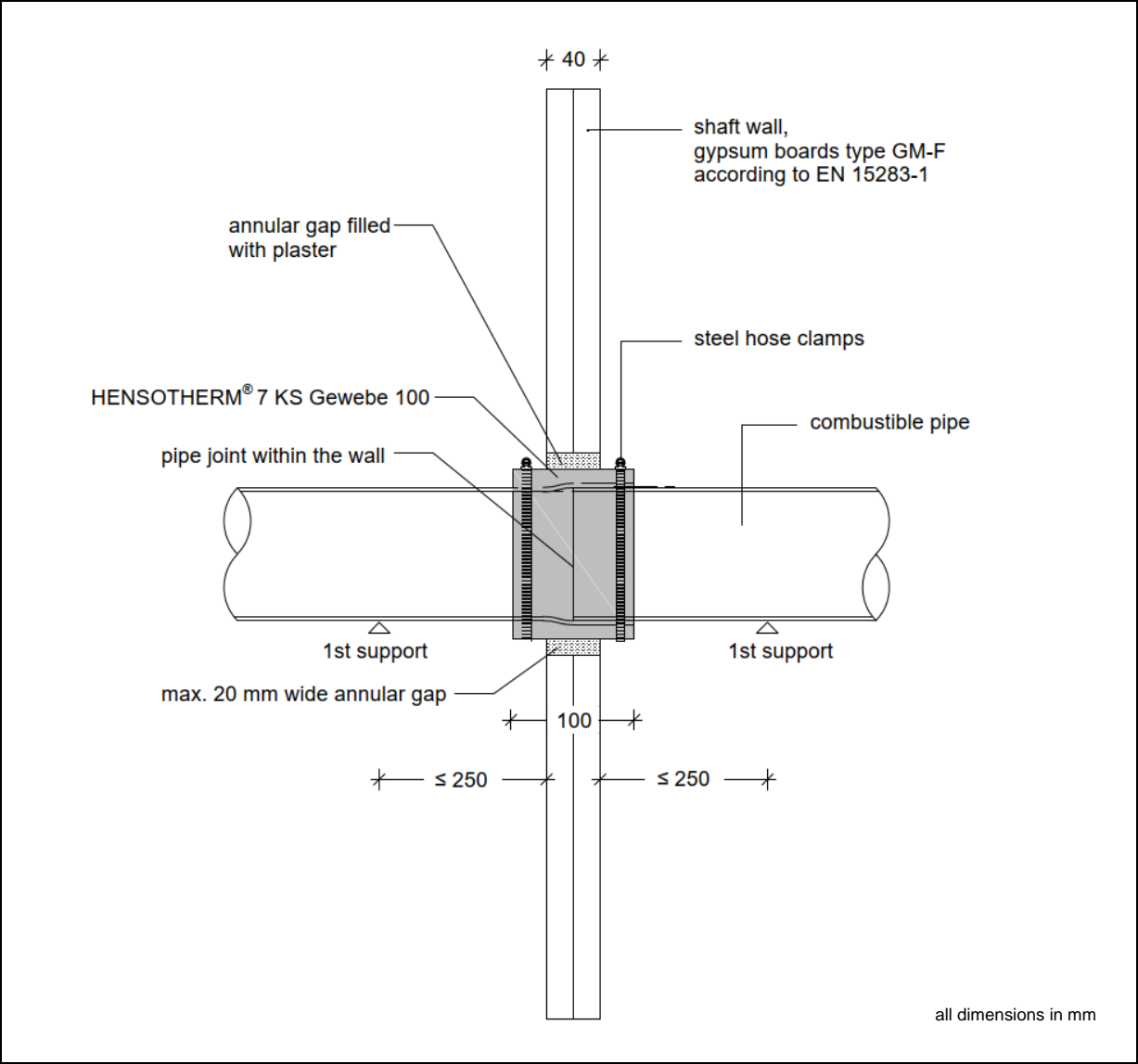


**A.3. Combustible plastic pipes without insulation with HENSOTHERM® 7 KS Gewebe 100**

**Construction details:** Combustible pipes without insulation penetrating a one-sided flexible wall, installed with or without a pipe coupling within the wall. Penetrating services may be installed at a distance of 0 mm from the floor.

One length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is fitted around the pipe with the specified number of layers according to the table, positioned centre to the wall boards and secured with steel hose clamps on both sides of the wall.

The remaining max. 20 mm wide annular gap between wall boards and HENSOTHERM® 7 KS Gewebe 100 is filled with gypsum plaster in full depth.



**A.3.1. Geberit Silent-PP**

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

**A.3.3. POLO-KAL NG**

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

**A.3.4. POLO-KAL XS**

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

**A.3.5. Rehau RAUPIANO PLUS**

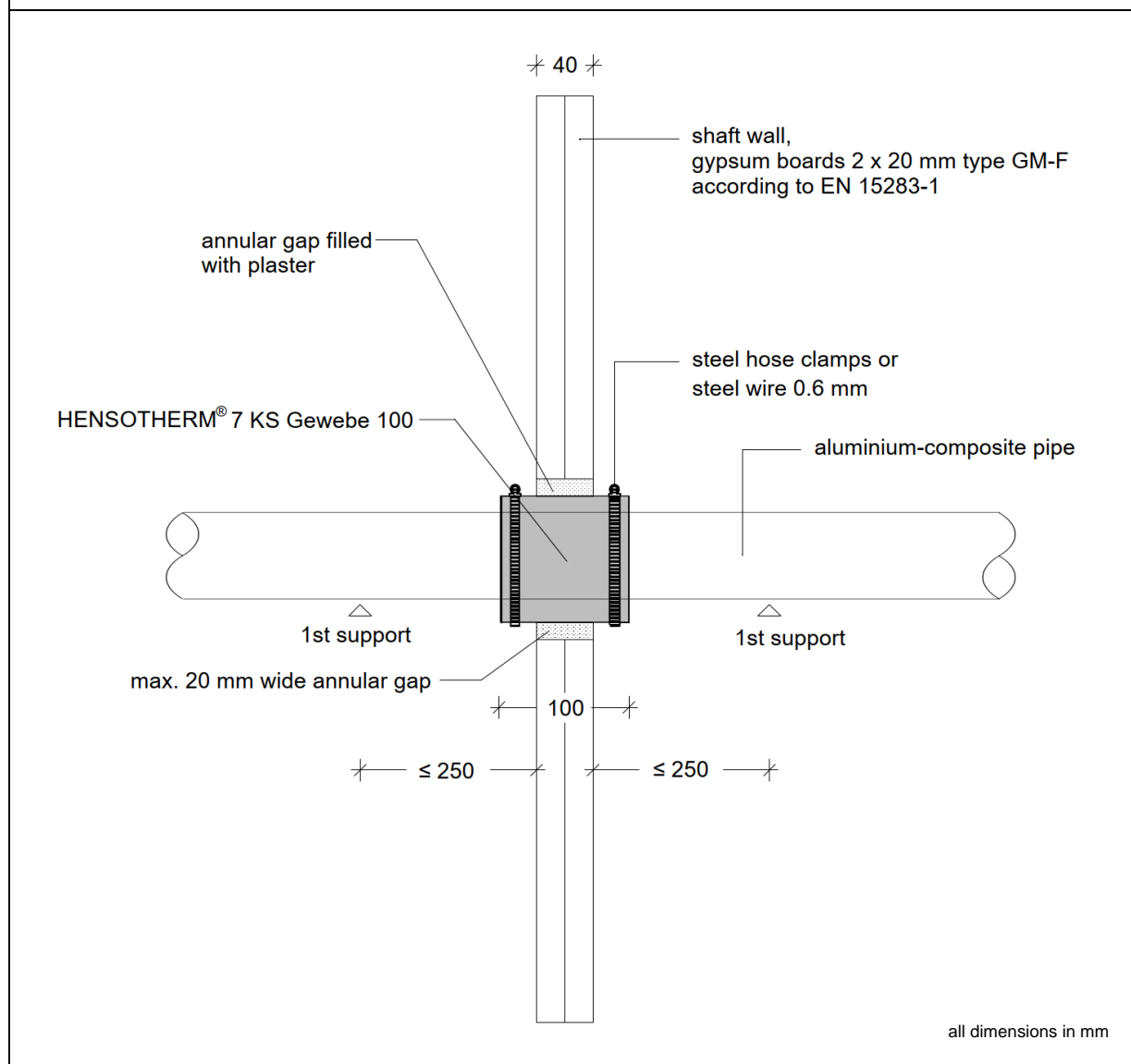
Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Studs on fire side	Studs on cold side
Rehau RAUPIANO PLUS	32	1.8	3	-	EI 90 U/U
	40				
	50				
	75	1.9	4	EI 90 U/U	
	90	2.2	6	-	
	110	2.7			

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

**Construction details:** Multilayer aluminium-composite pipes without insulation penetrating a one-sided flexible wall. Penetrating services may be installed at a distance of 0 mm from the floor.

One length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is fitted around the pipe with the specified number of layers according to the table, positioned centre to the wall boards and secured with steel hose clamps or steel wire 0.6 mm on both sides of the wall.

The remaining max. 20 mm wide annular gap between wall boards and HENSOTHERM® 7 KS Gewebe 100 is filled with gypsum plaster in full depth.

**A.4.1. Rehau RAUTITAN**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
				Studs on fire side	Studs 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

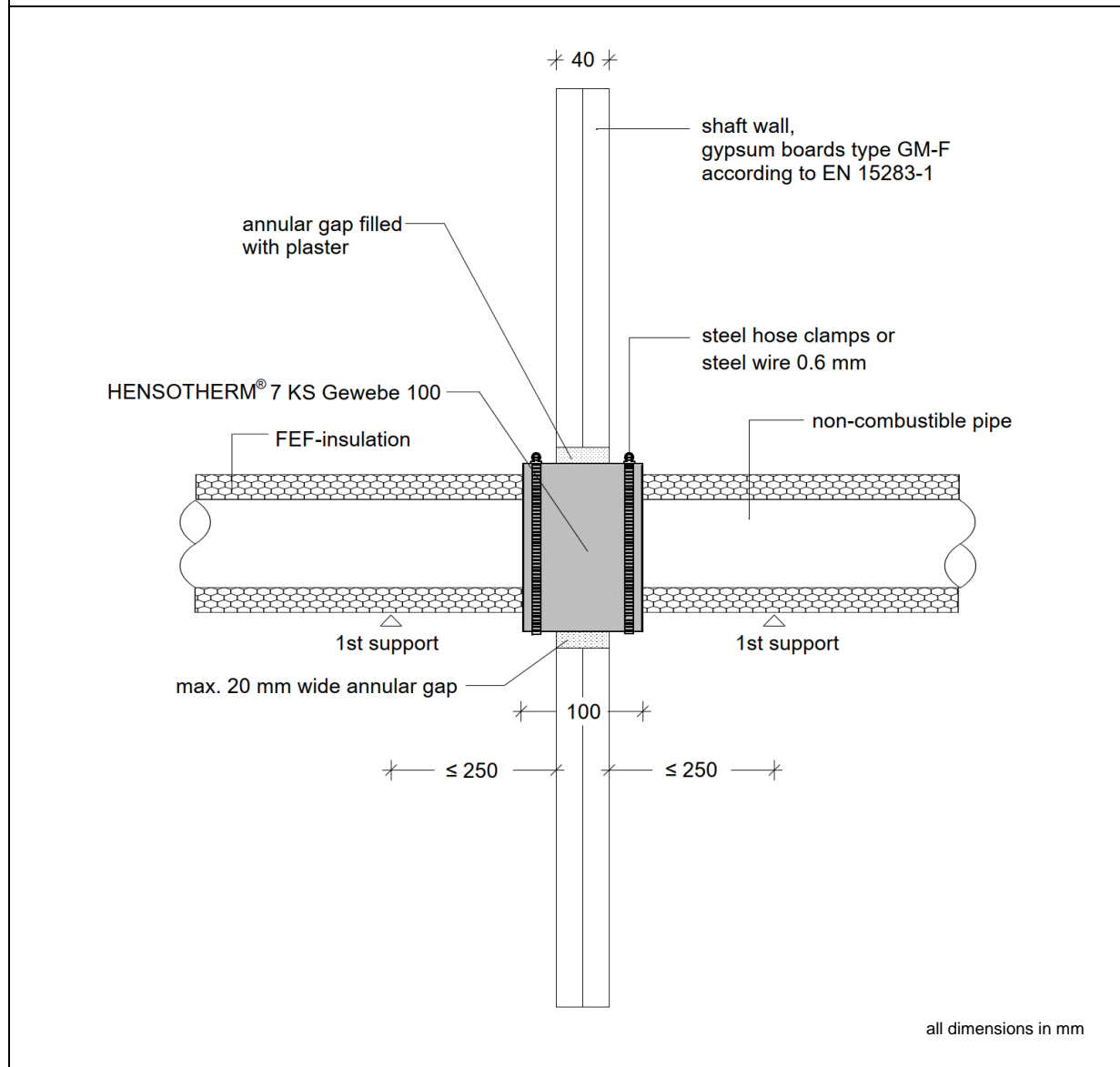


**A.6. Metal pipes with FEF-insulation (CS) with HENSOTHERM® 7 KS Gewebe 100**

**Construction details:** Non-combustible metal pipes with continuous sustained flexible elastomeric foam (FEF) or synthetic rubber insulation penetrating a one-sided flexible wall. Penetrating services may be installed at a distance of 0 mm from the floor.

One length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is fitted around the insulation with the specified number of layers according to the table, positioned centre to the wall boards and secured with steel hose clamps or steel wire 0.6 mm on both sides of the wall.

The remaining max. 20 mm wide annular gap between wall boards and HENSOTHERM® 7 KS Gewebe 100 is filled with gypsum plaster in full depth.

**A.6.1. Metal pipes with FEF-insulation (CS)**

Pipe / material	Diameter [mm]	Wall thickn. [mm]	Insulation	Insul. thickn. [mm]	Insul. length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Studs on fire side	Studs on cold side
Steel, cast iron	21.3 – 33.4	2.0 – 2.6	ArmaFlex XG, ≤ B-s3,d0	13.0	CS	2	EI 90 C/U	EI 90 C/U

## ANNEX B – Resistance to Fire Classification – HENSOTHERM® System für Schachtwand

### B.1. One-sided flexible wall constructions with a minimum wall thickness of 90 mm

#### B.1.1. Permissible construction elements

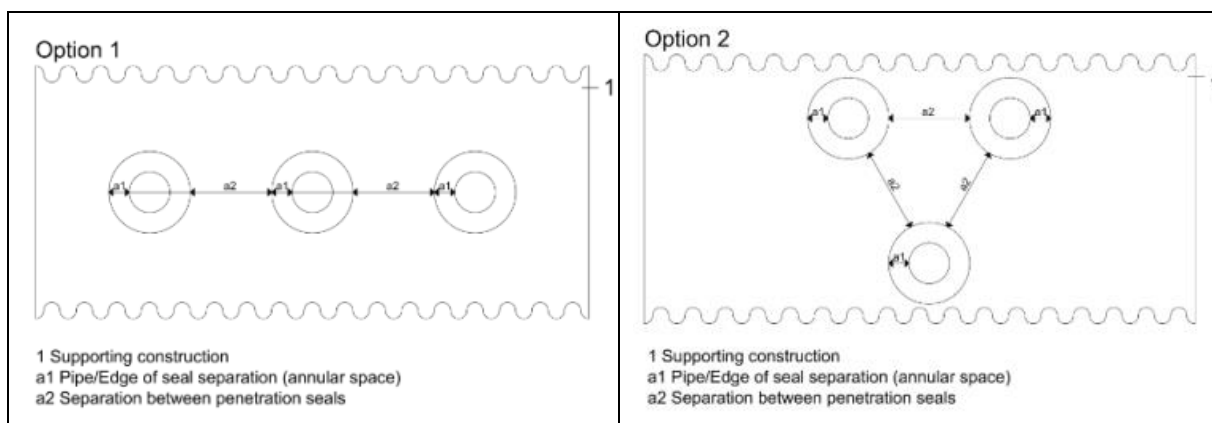
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The specific elements of construction that the HENSOTHERM® System für Schachtwand may be used to provide a penetration seal in, are as follows:

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

#### B.1.2. Minimum spacing and distance of the first support

a<sub>1</sub>: annular space 10 – 20 mm, filled with HENSOTHERM® 7 KS viskos in full depth

a<sub>2</sub>: separation between seals  $\geq 0$  mm



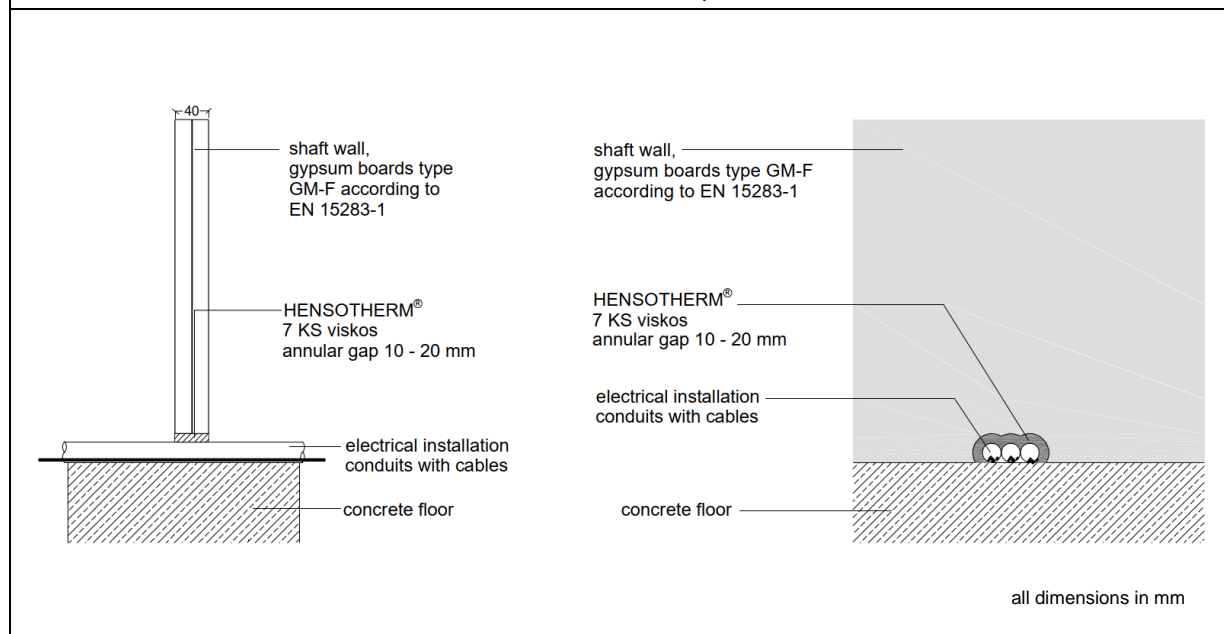
Distance of first support of penetrating services  $\leq 250$  mm from the face of the wall, or mounted directly on the floor.

**B.2. Polyolefin flexible cable conduits with cables with HENSOTHERM® 7 KS viskos**

**Construction details:** Polyolefin flexible or pliable combustible cable conduits, single or in linear arrangement at zero distance, with cables penetrating a one-sided flexible wall, mounted directly on the floor.

Penetrating services may be installed at a distance of 0 mm from the floor.

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

**B.2.1. Polyolefin flexible cable conduits with cables with HENSOTHERM® 7 KS viskos**

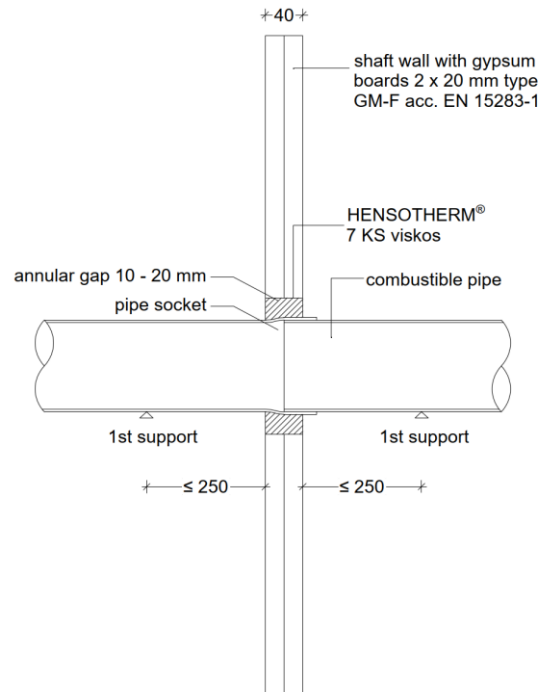
Pipe / conduit	Max. diameter single cable conduit [mm]	Max. diameter single cable [mm]	Classification	
			Studs on fire side	Studs on cold side
Polyolefin flexible or pliable combustible cable conduits, single or in linear arrangement, with sheathed cables type A1, A2 or A3	32	10	EI 90 C/C	EI 90 C/C
Polyolefin flexible or pliable combustible cable conduits, single or in linear arrangement, with sheathed cables type A3	63	14	EI 90	-



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

**Construction details:** Combustible pipes without insulation penetrating a one-sided flexible wall, installed with or without a pipe coupling within the wall. Penetrating services may be installed at a distance of 0 mm from the floor.

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



all dimensions in mm

**B.3.1. Geberit Silent-PP**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs 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 / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs 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**

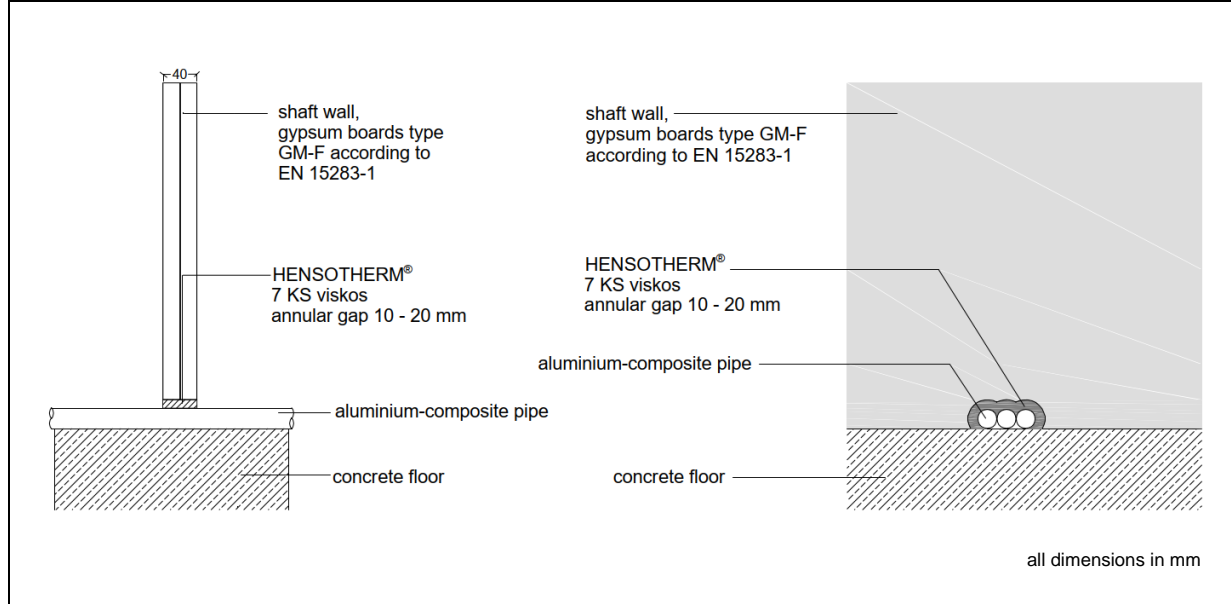
Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs on cold side
POLO-KAL XS	32	1.8	EI 90 U/U	EI 90 U/U
	40			
	50	2.0		

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

**Construction details:** Multilayer aluminium-composite pipes without insulation penetrating a one-sided flexible wall, single or in linear arrangement at zero distance, mounted directly on the floor.

Penetrating services may be installed at a distance of 0 mm from the floor.

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



##### B.4.1. Geberit Mepla

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs 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	3.0		

##### B.4.2. KE KELIT KELOX

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs 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

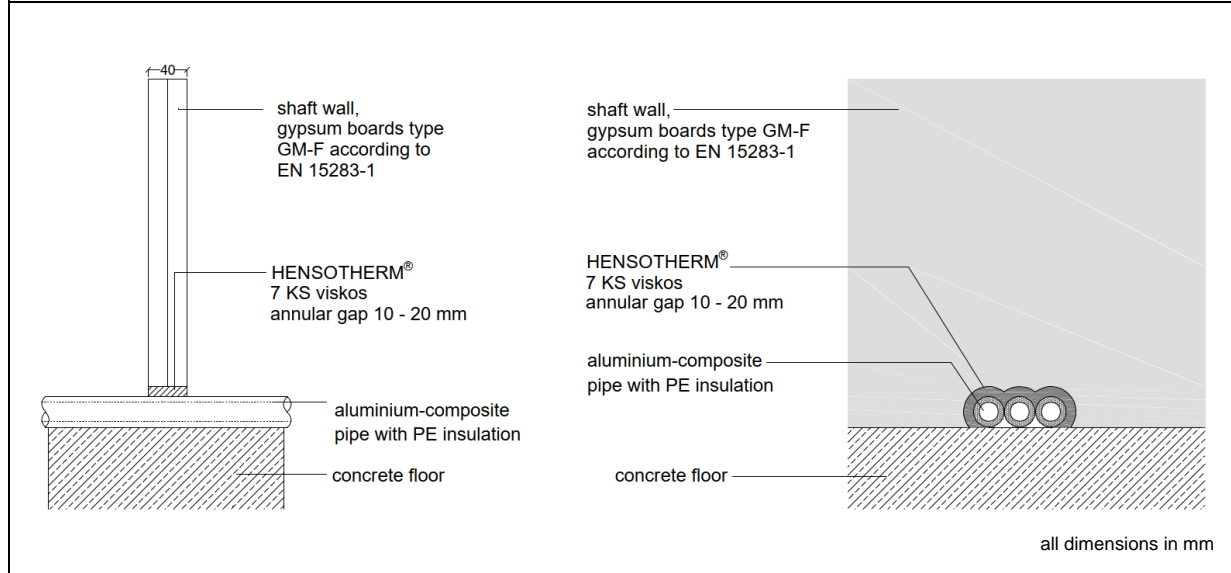
Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs on cold side
TECEflex	17.0	2.75	EI 90 U/C	EI 90 U/C
	21.0	3.45		
	26.0	4.0		

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

**Construction details:** Multilayer aluminium-composite pipes with continuous sustained (CS) PE-insulation (manufacturer independent) penetrating a one-sided flexible wall, single or in linear arrangement at zero distance, mounted directly on the floor.

Penetrating services may be installed at a distance of 0 mm from the floor.

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

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

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs 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 / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs 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 / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs 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					

## ANNEX C – Resistance to Fire Classification – HENSOTHERM® System für Schachtwand

### C.1. One-sided flexible wall constructions with a minimum wall thickness of 95 mm

#### C.1.1. Permissible construction elements

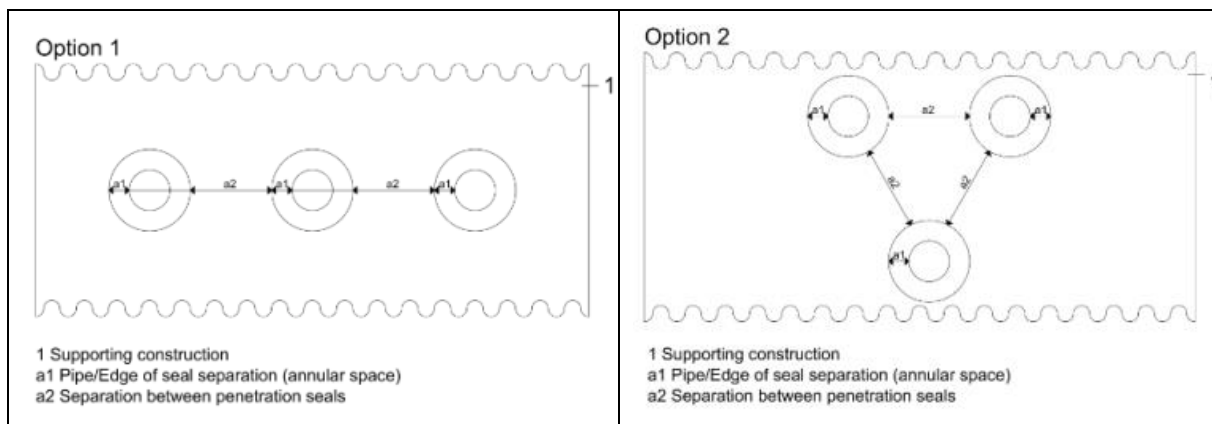
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The specific elements of construction that the HENSOTHERM® System für Schachtwand may be used to provide a penetration seal in, are as follows:

Shaft walls: The wall must have a minimum thickness of 95 mm and consist of a steel stud structure lined on one face with at least three layers of minimum 15 mm thick gypsum boards type DF according to EN 520.

#### C.1.2. Minimum spacing and distance of the first support

a<sub>1</sub>: annular space nominally 0 mm and any remaining space filled with plaster

a<sub>2</sub>: separation between seals  $\geq 100$  mm



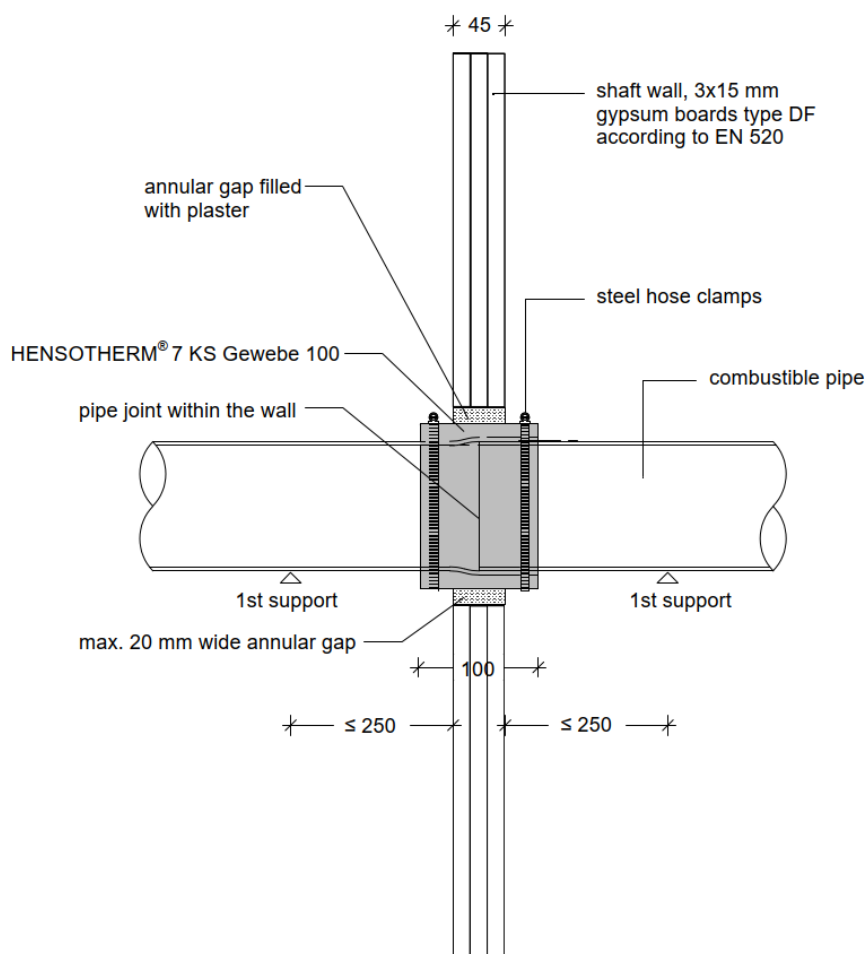
Distance of first support of penetrating services  $\leq 250$  mm from the face of the wall, or mounted directly on the floor.

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

**Construction details:** Combustible pipes without insulation penetrating a one-sided flexible wall, installed with or without a pipe coupling within the wall. Penetrating services may be installed at a distance of 0 mm from the floor.

One length of HENSOTHERM® 7 KS Gewebe 100 (width 100 mm, thickness 1 mm) is fitted around the pipe with the specified number of layers according to the table, positioned centre to the wall boards and secured with steel hose clamps on both sides of the wall.

The remaining max. 20 mm wide annular gap between wall boards and HENSOTHERM® 7 KS Gewebe 100 is filled with gypsum plaster in full depth.



all dimensions in mm

**C.2.1. Geberit Silent-PP**

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

**C.2.5. Wavin AS+**

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

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insul. thickn. [mm]	Insul. length	Layers of HENSOTHERM® 7 KS Gewebe 100 (1 mm)	Classification	
							Studs on fire side	Studs 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						





## ANNEX D – Resistance to Fire Classification – HENSOTHERM® System für Schachtwand

### D.1. One-sided flexible wall constructions with a minimum wall thickness of 95 mm

#### D.1.1. Permissible construction elements

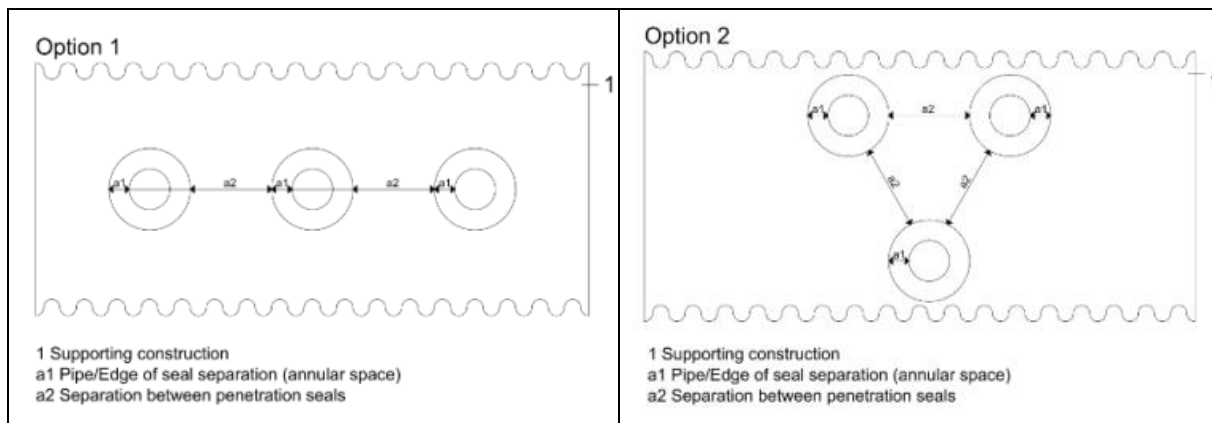
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The specific elements of construction that the HENSOTHERM® System für Schachtwand may be used to provide a penetration seal in, are as follows:

Shaft walls: The wall must have a minimum thickness of 95 mm and consist of a steel stud structure lined on one face with at least three layers of minimum 15 mm thick gypsum boards type DF, EN 520.

#### D.1.2. Minimum spacing and distance of the first support

a<sub>1</sub>: annular space 10 – 20 mm, filled with HENSOTHERM® 7 KS viskos in full depth

a<sub>2</sub>: separation between seals  $\geq 0$  mm

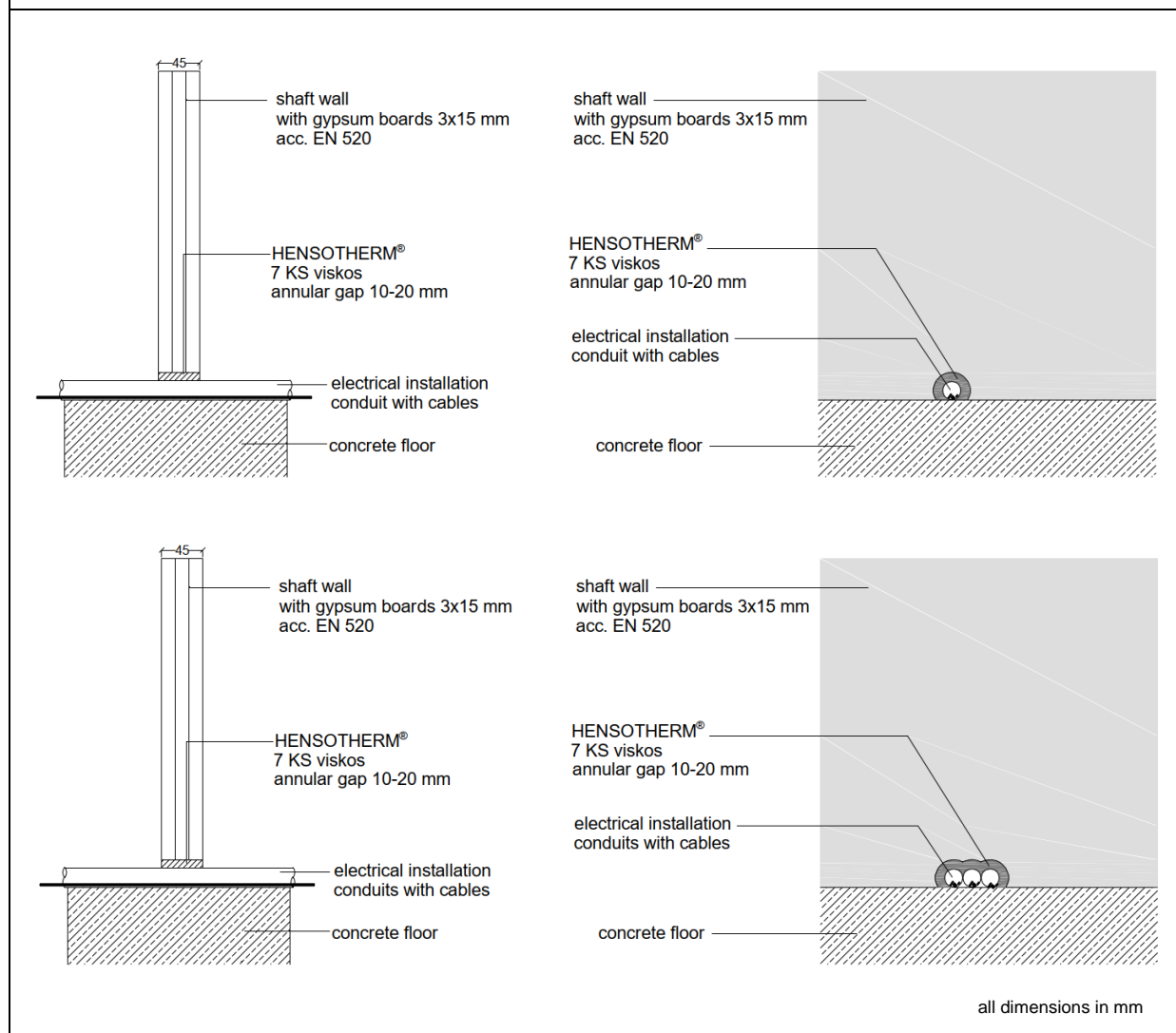


Distance of first support of penetrating services  $\leq 250$  mm from the face of the wall, or mounted directly on the floor.

**D.2. Combustible cable conduits with cables with HENSOTHERM® 7 KS viskos**

**Construction details:** Polyolefin flexible or pliable combustible cable conduits, single or in linear arrangement, with cables penetrating a one-sided flexible wall, mounted directly on the floor.

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

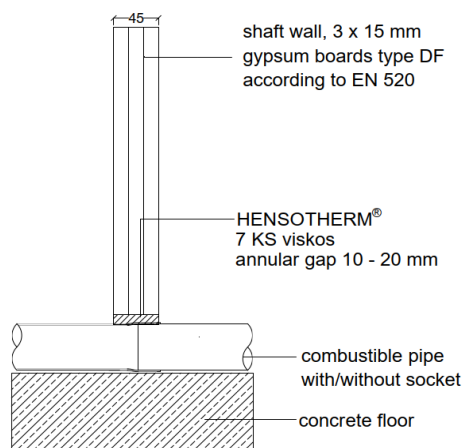
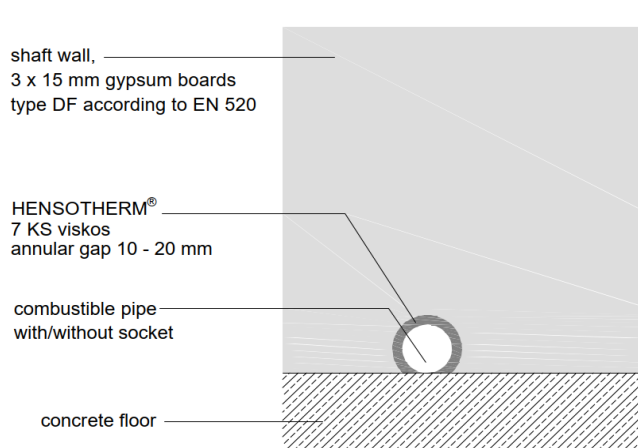
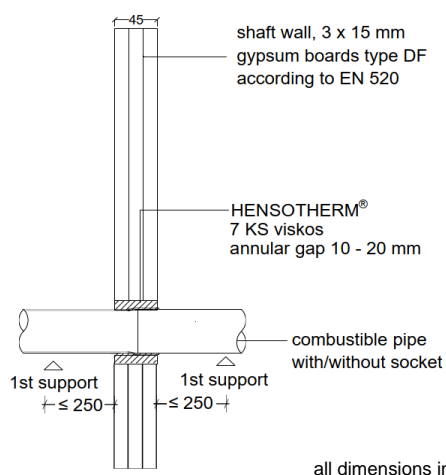
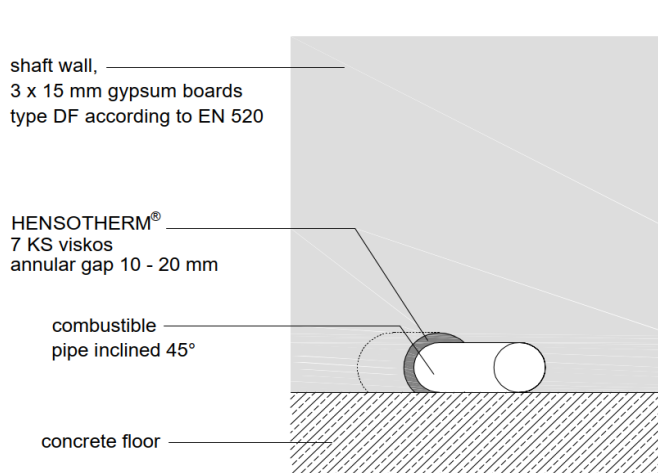
**D.2.1. Combustible cable conduits with cables with HENSOTHERM® 7 KS viskos**

Pipe / conduit	Max. diameter single cable conduit [mm]	Max. diameter single cable [mm]	Classification	
			Studs on fire side	Studs on cold side
Polyolefin flexible or pliable combustible cable conduits, single or in linear arrangement, with sheathed cables type A1, A2 or A3	40	14	EI 90	EI 90

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

**Construction details:** Combustible pipes without insulation penetrating a one-sided flexible wall, installed with or without a pipe coupling within the wall. Penetrating services may be installed at a distance of 0 mm from the floor and all horizontal penetration angles between 90° and 45° are covered.

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

**Installed at a distance of 0 mm from the floor:****Frontal view:****Installed at a distance of ≥ 0 mm from the floor:****Frontal view, pipe inclined 45° and mounted on the floor:**

all dimensions in mm

**D.3.1. Geberit Silent-PP**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs 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**

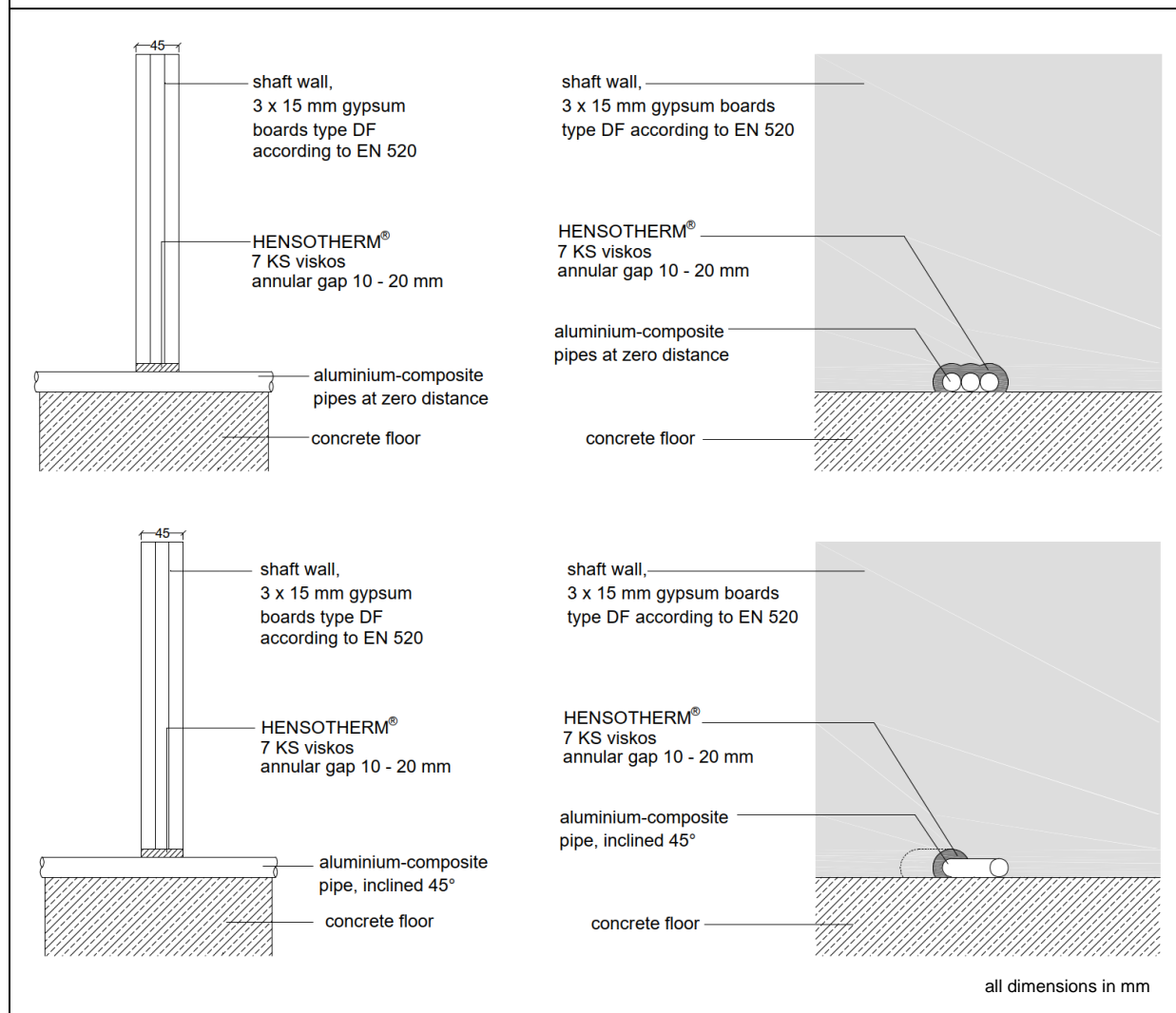
Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs on cold side
Pipelife MASTER 3 PLUS	32	1.8	EI 90 U/U	EI 90 U/U
	40			
	50	2.0		

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

**Construction details:** Multilayer aluminium-composite pipes without insulation penetrating a one-sided flexible wall, single or in linear arrangement at zero distance.

Penetrating services may be installed at a distance of 0 mm from the floor and all horizontal penetration angles between 90° and 45° are covered.

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



##### D.4.1. ALVA ACTA SIS

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

**D.4.3. HERZ Verbundrohr PE-RT**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs on cold side
HERZ Verbundrohr PE-RT	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

**D.4.4. Pipelife RADOPRESS**

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

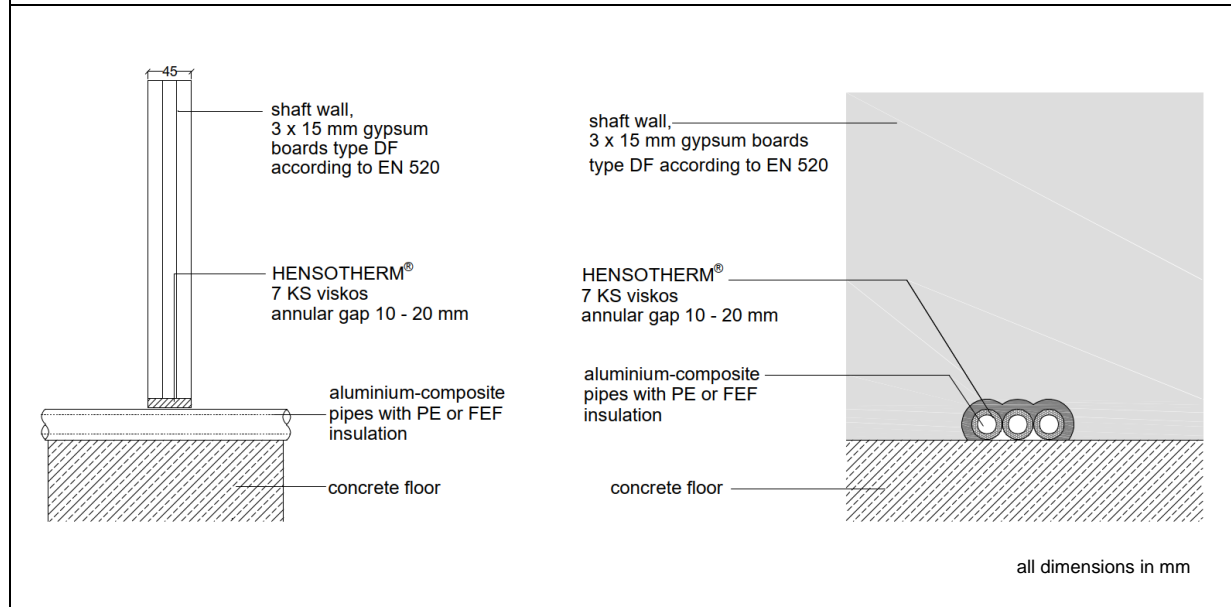
**D.4.5. Winkler MT-Verbundrohr**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Classification	
			Studs on fire side	Studs on cold side
Winkler MT-Verbundrohr	16.0	2.0	EI 90 U/C	EI 90 U/C
	20.0			

**D.5. Aluminium-composite pipes with PE or FEF-insulation (CS) with HENSOTHERM® 7 KS viskos**

**Construction details:** Multilayer aluminium-composite pipes with continuous sustained (CS) flexible elastomeric foam (FEF), synthetic rubber or PE-insulation (manufacturer independent) penetrating a one-sided flexible wall, single or in linear arrangement at zero distance. Penetrating services may be installed at a distance of 0 mm from the floor.

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

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

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs on cold side
Geberit Mepla	16.0	2.25	ArmaFlex XG, ≤ 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 / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs 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 / conduit	Diameter [mm]	Wall thickness [mm]	Insulation	Insulation thickness [mm]	Insulation length	Classification	
						Studs on fire side	Studs on cold side
Uponor Uni Pipe PLUS	16	2.0	PE	≤ 6.0	CS	EI 90 U/C	EI 90 U/C
	20	2.25					

## ANNEX E – Resistance to Fire Classification – HENSOTHERM® System für Schachtwand

### E.1. One-sided flexible wall constructions with a minimum wall thickness of 95 mm

#### E.1.1. Permissible construction elements

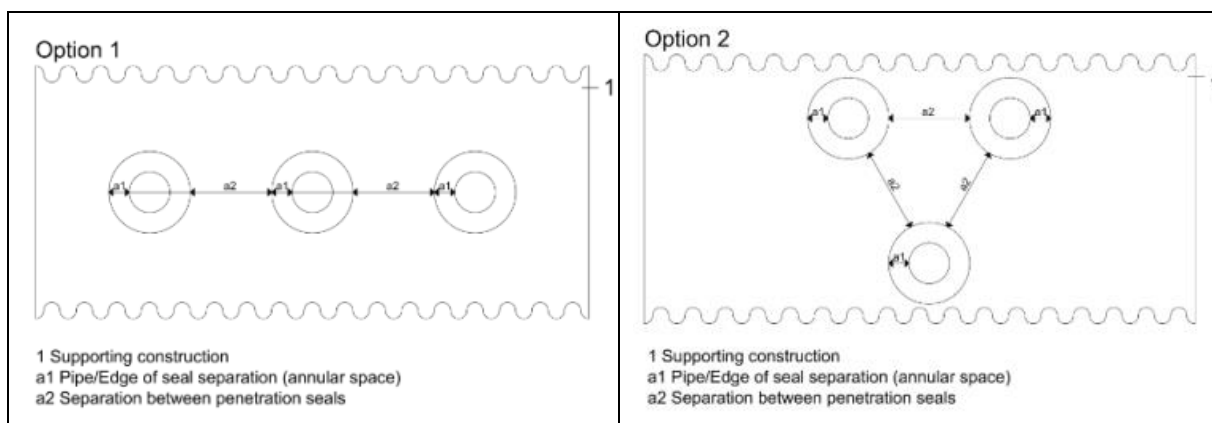
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. The specific elements of construction that the HENSOTHERM® System für Schachtwand may be used to provide a penetration seal in, are as follows:

Shaft walls: The wall must have a minimum thickness of 95 mm and consist of a steel stud structure lined on one face with at least three layers of minimum 15 mm thick gypsum boards type DF according to EN 520.

#### E.1.2. Minimum spacing and distance of the first support

a<sub>1</sub>: annular space nominally 0 mm and any remaining space filled with plaster

a<sub>2</sub>: separation between seals  $\geq 100$  mm

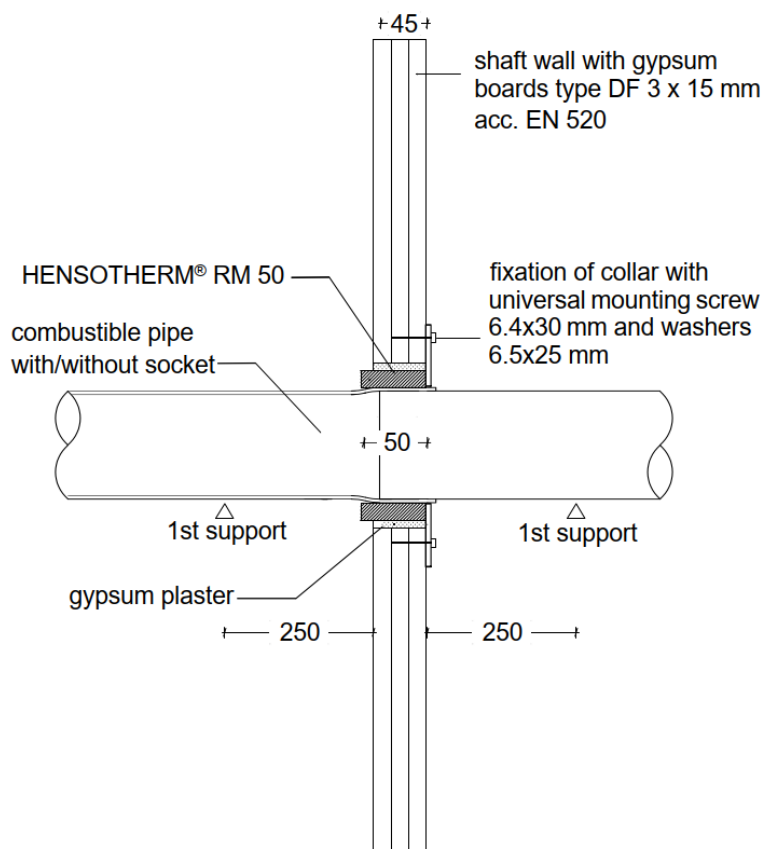


Distance of first support of penetrating services  $\leq 250$  mm from the face of the wall, or mounted directly on the floor.

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

**Construction details:** Combustible pipes without insulation penetrating a one-sided flexible wall, installed with or without a pipe coupling within the wall.

Around the pipe, a HENSOTHERM® RM pipe collar is applied in the appropriate type and size (see table) from one side of the seal, the metal casing facing inwards. The HENSOTHERM® RM pipe collar is closed with the locking lugs and the fastening lugs are aligned flush to the wall board's surface. The HENSOTHERM® RM pipe collar is then secured in place with universal mounting screws 6.4 x 30 mm and washers 6.5 x 25 mm at all fastening lugs. The remaining max. 20 mm wide annular gap between wall boards and HENSOTHERM® RM pipe collar is filled with gypsum plaster in full depth.



all dimensions in mm

**E.2.1. POLO-KAL NG**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Type HENSOTHERM® RM [height-size, mm]	Classification	
				Studs on fire side	Studs 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*		
			HENSOTHERM® RM 50-110		
			HENSOTHERM® RM 50-125*		
	110	3.4			

\* HENSOTHERM® RM mounted on pipe socket



**E.2.2. Rehau RAUPIANO PLUS**

Pipe / conduit	Diameter [mm]	Wall thickness [mm]	Type HENSOTHERM® RM [height-size, mm]	Classification	
				Studs on fire side	Studs 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 pipe socket