



HENSSEL

FIRE PROTECTION SYSTEMS



HENSOTHERM® | HENSOMASTIK®

Fire protection penetration seal systems



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RUDOLF HENSEL GMBH – THE COMPANY

Founded in 1922 as a varnish and paint factory, Rudolf Hensel GmbH has today evolved into an independent world market leader in the manufacture of fire protection systems for passive constructional fire protection. Company headquarters is Börnsen near Hamburg.

Decades of experience in the development and production of fire protection coatings have culminated in a high quality standard and the outstanding working properties of HENSOTHERM® and HENSOMASTIK® products.

The product range encompasses coating systems both for the fire protection of steel, wood, concrete, cabling and for the production of wall and floor penetration seals and fire-resistant joints. This portfolio finds its perfect complement in special-purpose fire protection solutions for industrial applications. For each of these applications, the Green Product line offers sustainably environmentally friendly products that have qualified as ecological building materials.

Hensel fire protection systems have been assessed in compliance with European standards (EN), awarded the general type approval (aBG) in Germany, and certified in addition according to international VKF, BSI, UL, and GOST criteria.

A century of creativity, high quality standards, and intensive interaction with its customers have made Rudolf Hensel GmbH one of the leading manufacturers of systems for passive structural fire protection made in Germany.

FIRE PROTECTION – OUR PASSION



Member of
DGNB
Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council



FIRE RESISTANCE CLASSES UNDER EUROPEAN STANDARDS (EN)

DIN EN 13501 classification of building materials

The DIN EN 13501 classification system for Europe defines the fire resistance class for building materials, e.g. EI90 refers to the physical sealing of an opening preventing of the passage of fire (Etanchéité, E) and a thermal insulation (Isolation, I) for minimum 90 minutes. For other properties see table below.

Code	Meaning	Property
R	Résistance	Load-bearing capacity
E	Etanchéité	Physical sealing
I	Isolation	Thermal insulation (under effects of fire)
W	Watt	Heat transition limit
M	Mechanical	Mechanical effects – resistance to impact
S	Smoke	Smoke permeability limit, e.g. in smoke control doors
C	Closing	Normally closed, e.g. smoke control doors, fire protection finishes
I ← 0 I → 0 I ↔ 0	in ← out in → out in ↔ out	Direction of classified fire resistance time, e.g. for nonbearing outside walls, shaft walls, installation shafts/ducts, ventilation systems/dampers
a ← b a → b a ↔ b	above ← below above → below above ↔ below	Direction of classified fire resistance time for suspended ceilings
Additional DIN EN 13501-1 classification details on the fire behaviour of building materials		
s	Smoke	Smoke development
d	Drop	Falling/dripping burning material

FIRE RESISTANCE TESTING VIA UNIFIED TEMPERATURE / TIME GRAPHS (UTTGS)

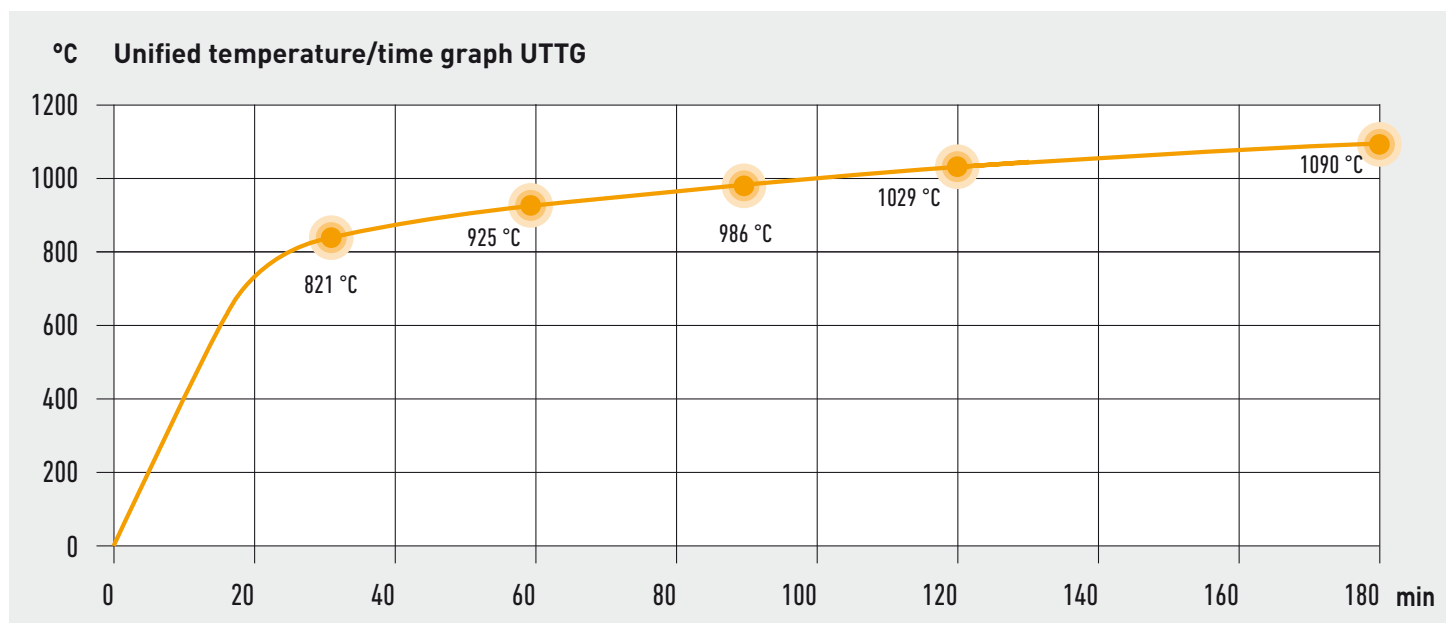
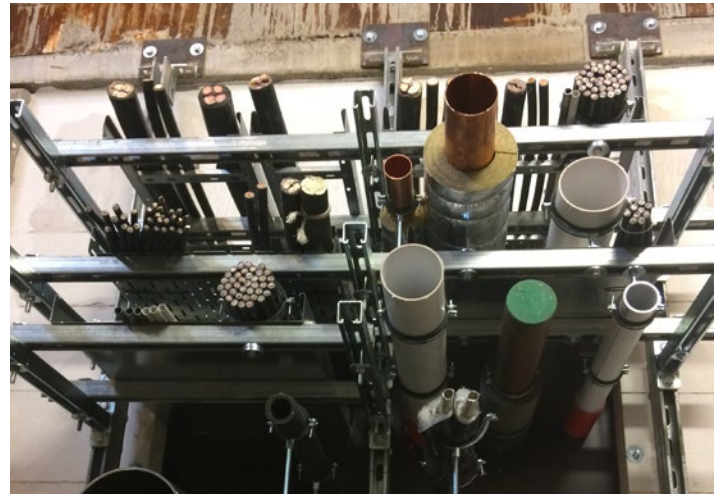
Basically, fire resistance tests on cable and pipe seals must verify their fulfilment of two crucial requirements/criteria:

Physical sealing (E)


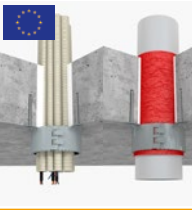
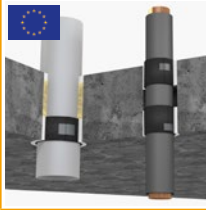




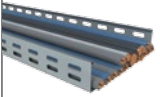

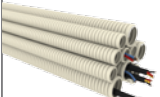

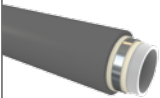


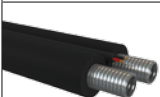
Fire and smoke must be prevented from passing to the far side.

Thermal insulation (I)

A fire penetration seal must provide a thermal insulation (Isolation, I) and ensure that the surface temperature on the seal side facing away from the fire will not rise by more than 140 K in general and by not more than 180 K at any point over the stated period of time.



OVERVIEW OF PENETRATION SEALING SYSTEMS ACCORDING TO EUROPEAN TECHNICAL ASSESSMENTS (ETA)

					
Penetration seals	HENSOTHERM® 7 KS viskos	HENSOTHERM® RM 30 / RM 50 / RM 100	HENSOTHERM® System für Einzelleitung	HENSOMASTIK® 5 KS Vorschott- System	HENSOMASTIK® Kombischott EI 60
Fire resistance class	up to EI 240	up to EI 180	up to EI 240	EI 90	EI 60
Details on page	8	9	10	11	12 – 13
Installation site	flexible wall, rigid wall, rigid floor	flexible wall, rigid wall, rigid floor	flexible wall, rigid wall, rigid floor	rigid wall, rigid floor	flexible wall, rigid wall, rigid floor
Technical assessment document	ETA 20/1306	ETA 20/1308 application for general type approval (aBG) issued	ETA 20/1306 approval (aBG) issued	ETA 20/1311 application for general type approval (aBG) submitted	ETA 20/1310 various VKF approvals
 Cables	✓	–	–	✓	✓
 Cable bundles	✓	–	–	✓	✓
 Cable trays	–	–	–	✓	✓
 Electrical Installation Pipe (EIP) / single	✓	–	–	–	–
 Electrical Installation Pipes (EIP) / bundled	✓ side by side	✓	–	–	✓
 Combustible pipes	✓	✓	✓	–	✓
 Multiple-layer composite pipes	✓	✓	✓	–	✓
 Non combustible metal pipes with mineral fibre insulation	–	–	–	–	✓
 Non combustible metal pipes with synthetic rubber insulation	✓	–	✓	–	✓
 Air-conditioning split line	–	–	–	–	–

HENSOMASTIK® Kombischott EI 90 / EI 120	HENSOTHERM® M 2000 Mörtelschott	HENSOTHERM® System für Schachtwand	HENSOTHERM® FLI-VE	HENSOTHERM® FLI90 HENSOTHERM® KRS	HENSOTHERM® Service Transit	HENSOTHERM® HENSOMASTIK® solutions for wood
EI 90 / EI 120	EI 90	EI 90	FLI-VE _(ho+ve) 90	FLI _(ho) 90	up to EI 120	up to EI 60
14 – 15	16	17	18	19	20	21
flexible wall, rigid wall, rigid floor	rigid wall, rigid floor	shaft walls (one-sided flexible wall constructions)	flexible wall, rigid wall, rigid floor	shaft walls (one-sided flexible wall constructions)	flexible wall, rigid wall, rigid floor	floor structures of CLT, rigid wood, DiagonalDübelholz® acc. to DIN EN 13986
ETA 20/1309 various VKF approvals	ETA 20/1325 application for general type approval [aBG] submitted	ETA 20/1307 application for general type approval [aBG] submitted	WIEN-ZERT OIB 095.4-001/06-008	WIEN-ZERT OIB 095.4-002/05-012	ETA 16/0369	Testing successful, ETA applied for
✓	✓	–	–	–	✓	✓
✓	✓	–	–	–	✓	✓
✓	✓	–	–	–	–	–
✓	✓	✓	–	–	✓	–
✓	✓	–	–	–	✓	–
✓	✓	✓	–	–	–	✓
✓	✓	✓	–	–	–	✓
✓	✓	–	–	–	–	–
✓	✓	–	–	–	–	✓
✓	–	–	–	–	–	–

HENSOTHERM® 7 KS VISKOS


FIRE PROTECTION COMPOUND FOR PIPING AND CABLING







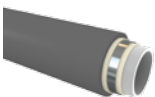
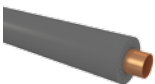
HENSOTHERM® 7 KS viskos is an intumescent fire protection compound designed to seal annular gaps.

Fire protection solution for penetrations of single flexible pipes with and without cabling; combustible pipes; single cables or cable bundles; and non combustible pipes with synthetic rubber.

Advantages:

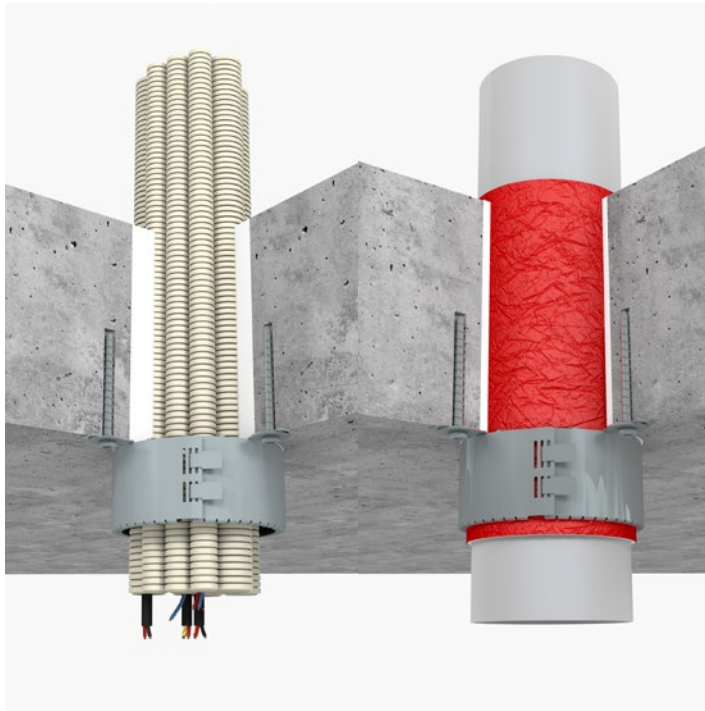
- Custom installations, also without mineral wool
- Side-by-side, zero-gap flexible pipes
- Wide range of applications (piping/cabling)
- Economic solution
- EIP / flexible pipes with and without cabling
- Penetration seals for single pipes
- With combustible and non combustible pipes
- Single and small penetration seals for cables, EIP / flexible pipes
- Fire resistance classification up to EI 240
-  Various synthetic rubber insulations approved for fire index number D-s3,d0

Assessment / ETA	ETA 20/1306, application for general type approval (aBG) submitted
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 240
Construction elements	Flexible wall, rigid wall, rigid floor
Minimum construction element thickness	In rigid walls: ≥10 cm In floors: ≥15 cm
Max aperture size	Wide range of applications. See technical data sheet for details
Annular gap filling	HENSOTHERM® 7 KS viskos

Fitting	Conduits	Max diameter [mm]
	Cables	≤80.0
	Cable bundles	≤50.0
	EIP / flexible pipes, single and side by side	≤40.0
	Combustible pipes	≤110.0
	Multiple-layer composite pipes	≤63.0
	Non combustible pipes with synthetic rubber insulation	≤139.7 [steel] ≤42.0 [copper]



Products	EAN / order number	Packaging
HENSOTHERM® 7 KS viskos	4250153511014	Cartridge 310 ml 20 cartridges = 1 carton
HENSOTHERM® 7 KS viskos	4250153511038	Tubular bag 600 ml 12 bags = 1 carton

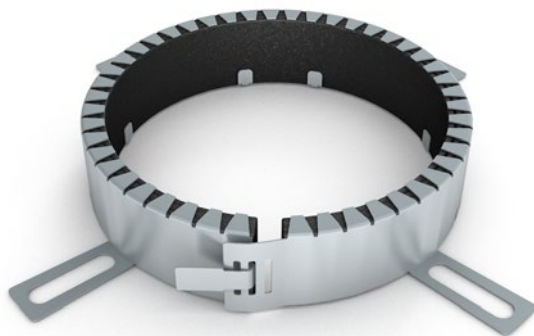


Fire protection solution for single-pipe penetrations

HENSOTHERM® RM 30 / RM 50 / RM 100 fire protection collar, tested in accordance with EN 1366-3, for sealing single-pipe penetrations in flexible walls, rigid walls and rigid floors. All combustible pipes, with and without socket, tested in U/U configuration. Suitable for both indoor and protected outdoor installations.



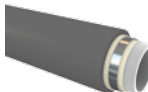

Advantages:

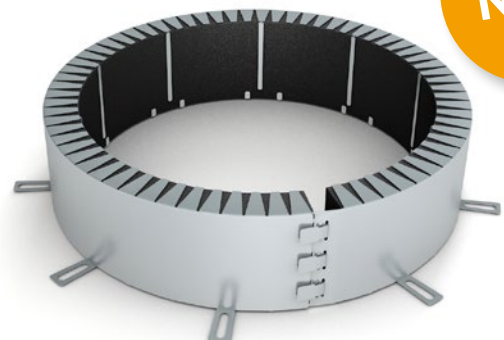
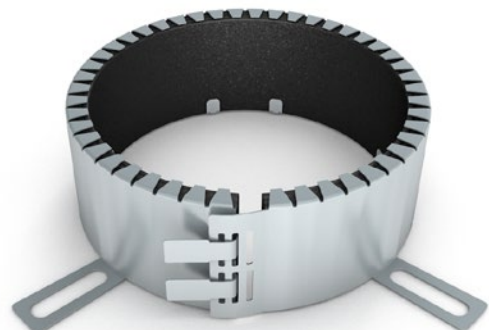
- Penetration seals for EIP / flexible pipes with and without cabling
- Double zero-gap applications on composite aluminium pipes
- Extra long fastening lugs for flexible alignment
- Combustible pipes up to DN 560 covered by the ETA
- Tested with 5 mm PE sound-decoupling insulation
- Plugless installation possible



Pipe collar HENSOTHERM® RM30 / RM50 / RM100

Assessment / ETA	ETA 20/1308, approval (aBG) issued
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 240
Construction elements	Flexible wall, rigid wall, rigid floor
Minimum construction element thickness	In rigid walls: ≥ 10 cm In flexible walls: ≥ 10 cm In floors: ≥ 15 cm
Annular gap filling	≤ 10 mm with A1 construction material, e.g. gypsum filler

Fitting	Conduits	Max diameter [mm]
	EIP / flexible pipes bundle	≤ 125.0
	Combustible pipes	sockets up to DN 125 mm
	Multiple-layer composite pipes	≤ 56.0 Multiple-layer composite pipes 2 x 26 mm tested (ETA A.3.)
	Pellet tubes	≤ 63.0



NEW

HENSOTHERM® SYSTEM FÜR EINZELLEITUNG


FIRE PROTECTION SOLUTION FOR SINGLE-PIPE PENETRATIONS



HENSOTHERM® 7 KS Gewebe 50 is designed as an end-less pipe collar for sealing single-pipe penetrations. It can be used to seal combustible and non combustible pipes insulated with synthetic rubber in rigid floors > 150 mm and in rigid and flexible walls > 100 mm up to a fire resistance class of EI 240.

The pipes' component seal (annular gap) is filled with HENSOTHERM® 7 KS Gewebe 50 or HENSOMASTIK® 5 KS SP (cartridge filler), depending on the pipe type. Alternatively, the annular gap can be filled with plaster or mortar (A1).

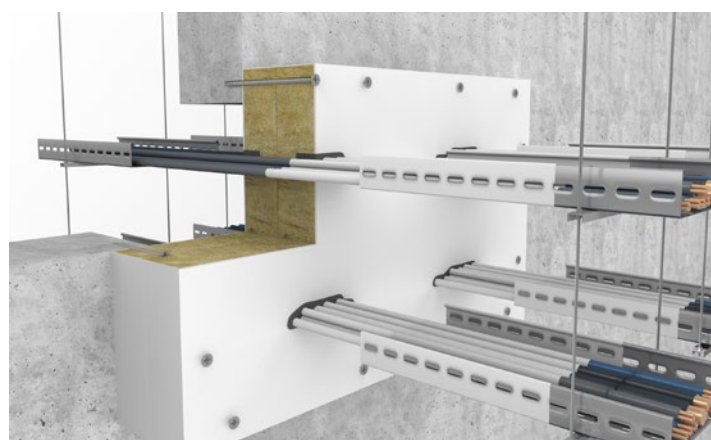
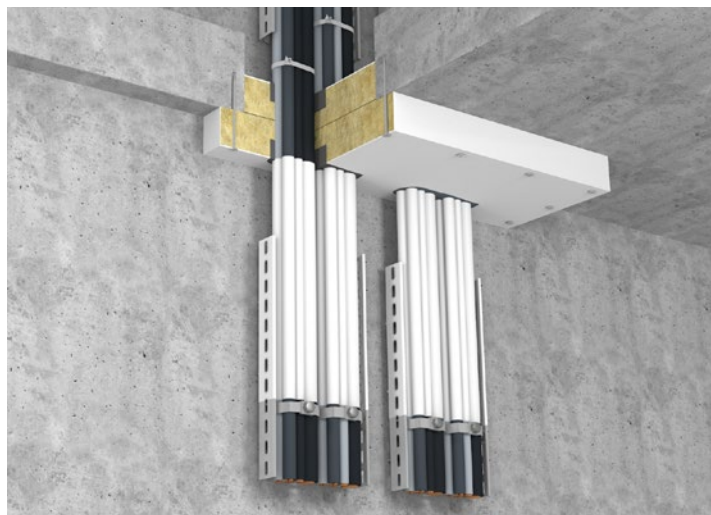
Advantages:

- Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 50
- Steel pipes with synthetic rubber up to 219.1 mm in diameter covered
- PIR shell tested
- Contains no solvents, halogens, or plasticisers
-  Various insulations [synthetic rubber] approved for fire index number D-s3,d0

Assessment / ETA	ETA 20/1306, application for general type approval (aBG) submitted
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 240
Construction elements	Flexible wall, rigid wall, rigid floor
Minimum construction element thickness	In rigid walls: ≥10 cm In flexible walls: ≥10 cm In floors: ≥15 cm
Annular gap filling	HENSOMASTIK® 5 KS SP, gypsum plaster or mortar (A1) 0 – 20 mm
Further installation details can be taken from the technical data sheets and ETA.	

Fitting	Conduits	Max diameter [mm]
	Combustible pipes with synthetic rubber	≤160.0 ≤110.0
	EIP / flexible pipes I bundle	≤125.0
	Multiple-layer composite pipes	≤63.0
	Non combustible metal pipes with synthetic rubber insulation	≤219.1 [steel] ≤88.9 [copper]
	Combined split AC ducts	≤16
	Solar pipes	≤25
	PIR shell with and without PVC lamination	≤139.7

Products	EAN / order number	Packaging
		
HENSOMASTIK® 5 KS Spachtel	4250153505242	Cartridge 310 ml 20 cartridges = 1 carton
HENSOMASTIK® 5 KS Spachtel	4250153505235	12.5 kg
HENSOMASTIK® 5 KS Spachtel	4250153505228	6.0 kg
		
HENSOTHERM® 7 KS Gewebe 50	4250153511052	Roll 15 m width 50 mm, thickness 2 mm


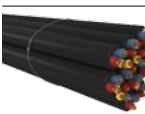
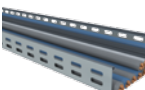


HENSOMASTIK® 5 KS Vorschott-System is a single-sided penetration seal for electrical wiring and is designed to restore the fire safety of wall and floor structures. In the event of fire, it prevents fire and smoke spreading through these openings for a fire-resistance time of up to 120 minutes. HENSOMASTIK® 5 KS Vorschott-System is an installation consisting of 2 x ≥50 mm (walls) or 2 x ≥60 mm (floors) thick mineral fibre board whose outer sides have been coated with HENSOMASTIK® 5 KS Farbe or HENSOMASTIK® 5 KS. The annular gap around the cables is sealed with the product HENSOTHERM® 7 KS viskos.

Advantages:

- Multiple variants in walls and floors
- Solution for excessive cable occupation [> 60 %]
- No additional reveal frame needed
- Suitable for irregular aperture geometries
- Suitable for single sided access
- Variant for restricted spaces
- Installation requires screws and mineral fibre boards
- Fire resistance classification up to EI 120

Assessment / ETA	ETA 20/1311, application for general type approval (aBG) submitted	
Tested in accordance with	DIN EN 1366-3	
Fire resistance classification	Up to 120 minutes	
Construction elements	Rigid wall, rigid floor	
Minimum construction element thickness	In walls:	≥ 10 cm
	In floors:	≥ 15 cm
Max aperture size	One fitted board	800 mm x 600 mm
	Two fitted boards:	600 mm x 400 mm
Mineral fibre boards [≥ 150 kg/m³]	Installed in walls	2 x 50 mm
	Installed in floors:	2 x 60 mm
Annular gap filling	HENSOTHERM® 7 KS viskos	
Mineral fibre boards secured with concrete screws		

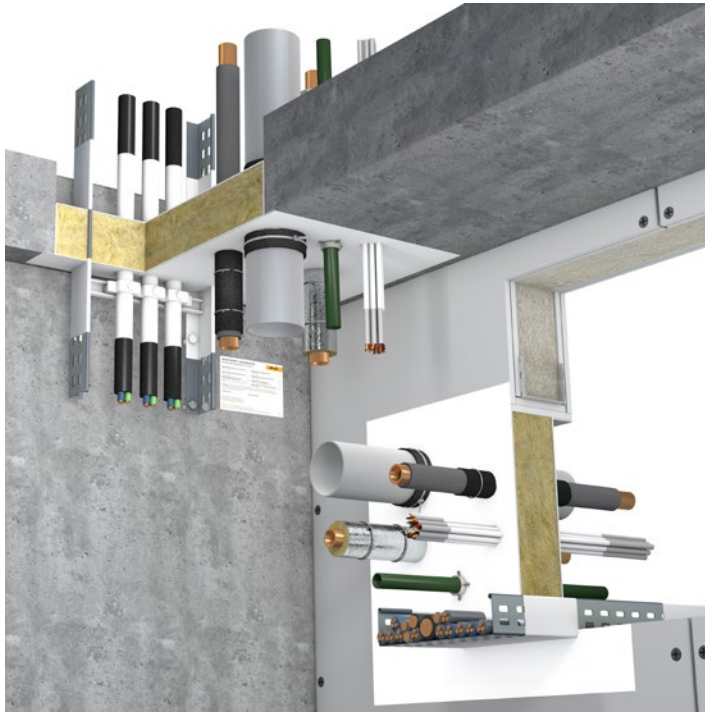
Fitting	Conduits	Max diameter [mm]
	Cables	≤ 50.0
	Cable bundles	≤ 51.0 each cable ≤ 21.0
	Cable trays	No penetration



Products	EAN / order number	Packaging
HENSOMASTIK® 5 KS Farbe	4250153504917	12.5 kg
HENSOMASTIK® 5 KS Farbe	4250153504900	6 kg
HENSOMASTIK® 5 KS viskos	4250153505129	12.5 kg
HENSOMASTIK® 5 KS viskos	4250153505136	6 kg
HENSOMASTIK® 5 KS Spachtel	4250153505235	12.5 kg
HENSOMASTIK® 5 KS Spachtel	4250153505228	6 kg
HENSOMASTIK® 5 KS Spachtel	4250153505242	Cartridge 310 ml 20 cartridges = 1 carton
Mineral fibre board 150 kg/m³ Coated on one side		Board 600 x 1,000 x 50 mm
Mineral fibre board 150 kg/m³ Coated on one side		Board 600 x 1,000 x 60 mm
HENSOTHERM® 7 KS viskos	4250153511014	Cartridge 310 ml 20 cartridges = 1 carton

HENSOMASTIK® KOMBISCHOTT EI 60

MIXED SOFT PENETRATION SEAL SYSTEM FOR CABLING AND PIPING IN WALLS AND FLOORS




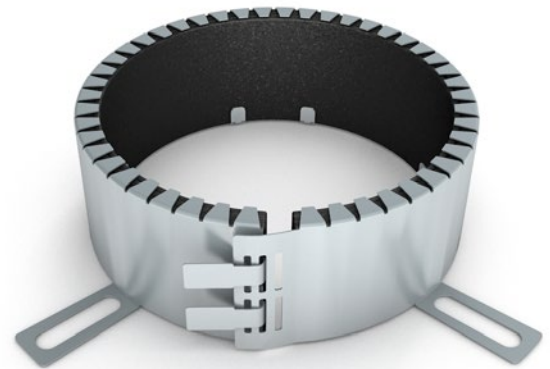
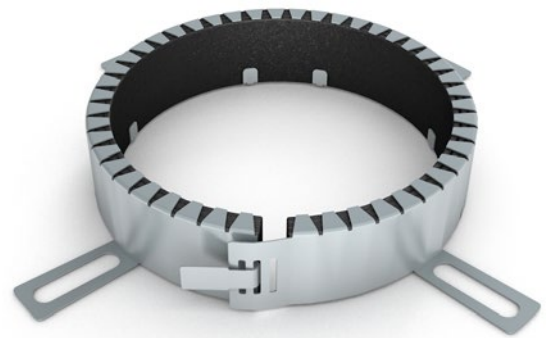
Assessment / ETA	ETA 20/1310	
Tested in accordance with	DIN EN 1366-3	
Fire resistance classification	Up to EI 90	
Construction elements	Flexible wall, rigid wall, rigid floor	
Minimum construction element thickness	In rigid walls:	≥ 10 cm
	In flexible walls:	≥ 10 cm
	In floors:	≥ 15 cm
Max aperture size W x H	In rigid walls:	120 cm x 180 cm
	In flexible walls:	120 cm x 180 cm
	In floors:	100 cm x 180 cm
Max usable seal area	60 %	

HENSOMASTIK® Kombischott EI 60 is used to seal penetrations of metal pipes, combustible pipes, and electrical cables, thereby restoring the fire safety of wall and floor structures which contain openings for supply lines. In the event of fire, it prevents fire and smoke spreading through these openings for a fire-resistance time of up to 90 minutes.

HENSOMASTIK® Kombischott EI 60 consists of 1 x mineral fibre board ≥ 60 mm thick, e.g. Hardrock 040 or equivalent, coated on both outer sides with HENSOMASTIK® 5 KS Farbe or HENSOMASTIK® 5 KS viskos.

Advantages:

- Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 50 / 100 / 125
- Diverse line insulations like e.g. RS800, also suitable for Klimarock and synthetic rubber
- Bundled flexible EIP pipes covered
- Contains no solvents, halogens, or plasticisers
- Oil and petrol resistant
- Weatherproof / UV resistant in accordance with DIN 53384
- Ageing resistant
- Sound absorbent
- No coating needed inside the penetration seal
- Once fully dried, resistant up to -20 °C
-  Various insulations [synthetic rubber] approved for fire index number D-s3,d0



Pipe collar HENSOTHERM® RM 30 / RM 50

Fitting	Conduits	Max diameter [mm]
	Cables	≤ 80.0
	Cable bundles	≤ 100.0 each cable ≤ 21.0
	EIP / flexible pipes single	≤ 63.0
	EIP / flexible pipes bundle	≤ 125.0 with HENSOTHERM® 7 KS Gewebe 100 / RM 50
	Cable trays	No restrictions
	Combustible pipes	≤ 125.0 with HENSOTHERM® RM30 / RM 50 ≤ 110.0 with HENSOTHERM® 7 KS Gewebe 100
	Multiple-layer composite pipes	≤ 63.0
	Non combustible metal pipes with mineral fibre insulation	≤ 139.7 [steel] ≤ 88.9 [copper]
	Non combustible metal pipes with synthetic rubber insulation	≤ 114.0 [steel] ≤ 88.9 [copper]
	Air-conditioning split line	
	Combustible pipes	≤ 110 with soundproofing [Sonimass / IsolFlex] ≤ 125 with Eurobatex [25 mm] / PE [4–5 mm]



Products

EAN / order number

Packaging

HENSOMASTIK® 5 KS Farbe	4250153504917	12.5 kg
HENSOMASTIK® 5 KS Farbe	4250153504900	6.0 kg
HENSOMASTIK® 5 KS viskos	4250153505129	12.5 kg
HENSOMASTIK® 5 KS viskos	4250153505136	6.0 kg
HENSOMASTIK® 5 KS Spachtel	4250153505235	12.5 kg
HENSOMASTIK® 5 KS Spachtel	4250153505228	6.0 kg
HENSOMASTIK® 5 KS Spachtel	4250153505242	Cartridge 310 ml 20 cartridges = 1 carton
Mineral fibre board 150 kg/m³ Coated on both sides		Board 600 x 1,000 x 60 mm
HENSOTHERM® 7 KS Gewebe 50	4250153511052	Roll 15 m width 50 mm, thickness 2 mm
HENSOTHERM® 7 KS Gewebe 100	4250153511090	Roll 10 m width 100 mm, thickness 1 mm
HENSOTHERM® 7 KS Gewebe 125	4250153511069	Roll 10 m width 125 mm, thickness 1 mm

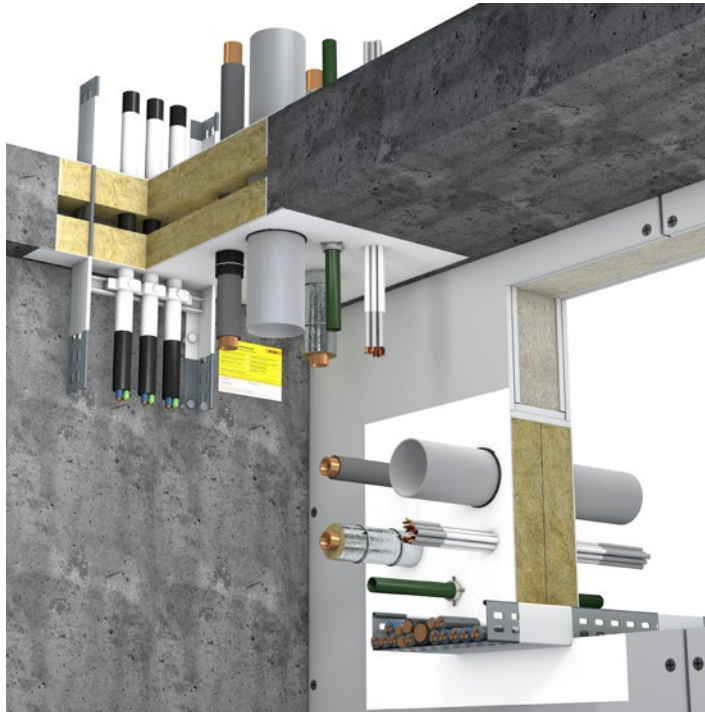
NEW



Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 50 / 100 / 125

HENSOMASTIK® KOMBISCHOTT EI 90 / EI 120

MIXED SOFT PENETRATION SEAL SYSTEM FOR CABLING AND PIPING IN WALLS AND FLOORS




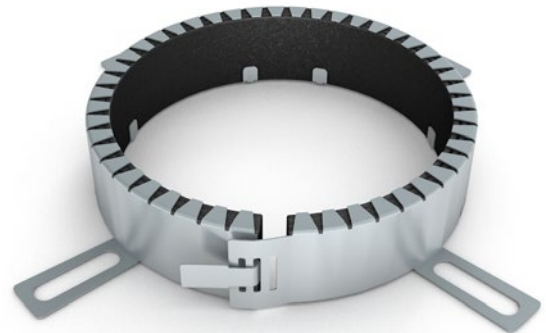
Assessment / ETA	ETA 20/1309
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 120
Construction elements	Flexible wall, rigid wall, rigid floor
Minimum construction element thickness	In rigid walls: ≥ 10 cm In flexible walls: ≥ 10 cm In floors: ≥ 15 cm
Max aperture size W x H	In rigid walls: 120 cm x 200 cm In flexible walls: 120 cm x 200 cm In floors: 120 cm x 200 cm
Max usable seal area	60 %
Annular gap filling	HENSOMASTIK® 5 KS SP (Spachtel)

HENSOMASTIK® Kombischott EI 90 / EI 120 is used to seal penetrations for metal pipes, combustible pipes, and electrical cables, thereby restoring the fire safety of wall and floor structures which contain openings for supply lines. In the event of fire, it prevents fire and smoke spreading through these openings for a fire-resistance time of up to 120 minutes.

HENSOMASTIK® Kombischott EI 90 / EI 120 consists of 2 x mineral fibre board ≥ 50 mm thick, e.g. Hardrock 040 or equivalent, coated on their outer sides with HENSOMASTIK® 5 KS Farbe or HENSOMASTIK® 5 KS viskos.

Advantages:

- Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 50 / 125
- Installed with HENSOTHERM® pipe collar RM 30 / RM 50
- Diverse line insulations like e.g. RS800, also suitable for Klimarock and synthetic rubber
- Bundled flexible EIP pipes covered
- Contains no solvents, halogens, or plasticisers
- Oil and petrol resistant
- Weatherproof / UV resistant in accordance with DIN 53384
- Ageing resistant
- Sound absorbent, R_w [dB] 44
- No coating needed inside the penetration seal
- Once fully dried, temperature resistant up to -20 °C
-  Various insulations (synthetic rubber) approved for fire index number D-s3,d0



Pipe collar HENSOTHERM® RM 30 / RM 50



Fitting	Conduits	Max diameter [mm]
	Cables	≤80.0
	Cable bundles	≤100.0 each cable ≤21.0
	Cable trays	No restrictions
	EIP / flexible pipes single	≤50.0 with HENSOTHERM® 7 KS Gewebe 50 ≤63.0 with HENSOTHERM® RM 50
	EIP / flexible pipes bundle	≤125.0 with HENSOTHERM® 7 KS Gewebe 50 / with HENSOTHERM® RM 50
	Combustible pipes	≤160.0 with HENSOTHERM® 7 KS Gewebe 50 / HENSOTHERM® RM 30 / RM 50
	Combustible pipes with soundproofing	≤125.0 with Geberit Isol / Sonimass and HENSOTHERM® 7 KS Gewebe 50
	Multiple-layer composite pipes	≤63.0
	Non combustible metal pipes with mineral fibre insulation	≤139.7
	Non combustible metal pipes with synthetic rubber insulation	≤88.9
	Air-conditioning split line	≤16.0
	Non combustible metal pipes with PIR shell and PVC lamination	≤140.0 with HENSOTHERM® 7 KS Gewebe 50
	Combustible pipes with PR shell and HENSOTHERM® RM 50	≤125.0
	Micro tubes for glass fibres with HENSOTHERM® 7 KS Gewebe 50	≤50.0 bundled ≤14.0 single



Products



EAN /
order number



Packaging

HENSOMASTIK® 5 KS FARBE	4250153504917	12.5 kg
HENSOMASTIK® 5 KS FARBE	4250153504900	6.0 kg
HENSOMASTIK® 5 KS viskos	4250153505129	12.5 kg
HENSOMASTIK® 5 KS viskos	4250153505136	6.0 kg
HENSOMASTIK® 5 KS Spachtel	4250153505235	12.5 kg
HENSOMASTIK® 5 KS Spachtel	4250153505228	6.0 kg
HENSOMASTIK® 5 KS Spachtel	4250153505241	Cartridge 300 ml 20 cartridges = 1 carton
Mineral fibre boards 150 kg/m³		Board 600 x 1,000 x 60 mm
HENSOTHERM® RM 30 / RM 50	See technical data sheet	
HENSOTHERM® 7 KS Gewebe 50	4250153511052	15 m Width: 50 mm, thickness: 2 mm
HENSOTHERM® 7 KS Gewebe 125	4250153511069	10 m Width: 125 mm, thickness: 1 mm



Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 50 / 125


HENSOTHERM® M 2000 MÖRTELSCHOTT

MIXED HARD PENETRATION SEAL SYSTEM FOR CABLING AND PIPING IN WALLS AND FLOORS




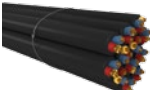

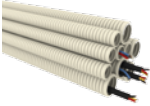
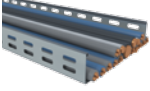

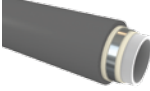




The mixed hard penetration seal system HENSOTHERM® M 2000 Mörtelschott is used to seal penetrations for metal pipes, combustible pipes, and electrical cables, thereby restoring the fire safety of wall and floor structures which contain openings for supply lines. In the event of fire, it prevents fire and smoke spreading through these openings for a fire-resistance time of up to 180 minutes. HENSOTHERM® M 2000 Mörtelschott is a system consisting of suitable lime cement mortar (MG2 cable mortar).

Advantages:

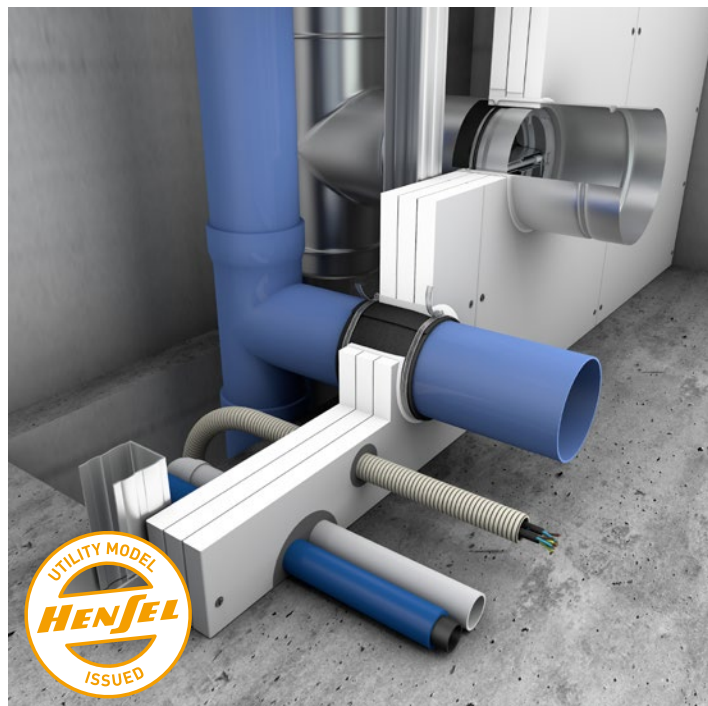
- Ideal properties for manual and machine applications
- Mineral fibre board formwork can remain in the penetration seal
- Installed with HENSOTHERM® pipe collar RM 30 / RM 50
- Internal endless pipe collar with HENSOTHERM® 7 KS Gewebe 125
- Diverse line insulations like e.g. RS800, also suitable for Klimarock and synthetic rubber
- Hydraulic hosing and solar piping covered
-  Various insulations [synthetic rubber] approved for fire index number



Assessment / ETA	ETA 20/1325, application for general type approval (aBG) submitted	
Tested in accordance with	DIN EN 1366-3	
Fire resistance classification	Up to EI 180	
Construction elements	Rigid wall, rigid floor	
Minimum construction element thickness	In rigid walls:	≥ 10 cm
	In rigid floors:	≥ 15 cm
Penetration seal thickness / lay-up height	In rigid walls:	≥ 15 cm
	In rigid floors:	≥ 15 cm
Max aperture size W x H	In rigid walls:	120 cm x 200 cm
	In rigid floors:	120 cm x 200 cm
Max cabling volume	60%	

Fitting	Conduits	Max diameter [mm]
	Cables	≤ 80.0
	Cable bundles	≤ 100.0
	EIP flexible pipes of PVC/steel	16.0
	EIP / flexible pipes bundle Single pipe 16 – 63 mm	≤ 125.0 with HENSOTHERM® RM 50
	Cable trays	No restrictions
	Combustible pipes	≤ 200.0 with HENSOTHERM® RM 30 / RM 50
	Multiple-layer composite pipes	≤ 63.0 ≤ 26.0 (2 x) Zero gap
	Non combustible metal pipes with mineral fibre insulation	≤ 168.3 [steel] ≤ 88.9 [copper]
	Non combustible metal pipes with synthetic rubber insulation	≤ 168.3 [steel] ≤ 88.9 [copper] with HENSOTHERM® 7 KS Gewebe 125
	Solar pipes	≤ 25.0
	Hydraulic lines	≤ 55.9

Products	EAN / order number	Packaging
HENSOTHERM® M 2000	4250153505686	20 kg sack
HENSOTHERM® RM 30 / RM 50	See technical data sheet	
HENSOTHERM® 7 KS Gewebe 125	4250153511069	Roll 10 m width 125mm, thickness 1mm



HENSOTHERM® 7 KS Gewebe 100 | HENSOTHERM® 7 KS viskos

Tested in accordance with EN 1366-3 for indoor sealing of single-pipe penetrations in shaft walls consisting of 2 x 20 mm / 3 x 15 mm plaster board or aerated/cellular concrete (≥ 70 mm).

For sealing penetrations with combustible pipes up to 110 mm in diameter and EIP/flexible pipes with and without cabling, thereby restoring the fire safety of standard drywall shafts of single planks ≥ 90 mm / ≥ 95 mm.

HENSOTHERM® System für Schachtwand is a system consisting of two different products:

Depending on the pipe type, the pipes' component seal (annular gap) is filled with HENSOTHERM® 7 KS viskos (cartridge) or, for larger pipe diameters, HENSOTHERM® 7 KS Gewebe 100. The system is suitable for the penetration of vent stacks as described under UL ASSESSMENT REPORT project no. 4788658260 Rev.1.

Advantages:

- Single sided installation
- Simple, reliable, fast, and low-cost solution
- Sewer pipe on coupler tested
- Penetration seals for EIP / flexible pipes with and without cabling
- Zero-gap combustible pipes

Assessment / ETA

ETA 20/1307, application for general type approval (aBG) submitted DIN EN 1366-3

Tested in accordance with

Fire resistance classification

Up to EI 90

Construction elements

Shaft walls of plasterboard or aerated/cellular concrete

Wall installation

Board thickness ≥ 2 x 20 mm / ≥ 3 x 15 mm / ≥ 70 mm cellular concrete

Annular gap filling

HENSOTHERM® 7 KS viskos or HENSOTHERM® 7 KS Gewebe 100 with A1 construction material, e.g. gypsum filler

Fitting

Conduits

Max diameter [mm]



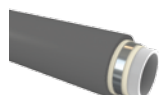
EIP / flexible pipes | single

≤ 32.0



Combustible pipes

≤ 110.0



Multiple-layer composite pipes

≤ 32.0



Vent stacks (folded spiral-seam tubing)
Verify suitability prior to installation.

≤ 160.0
See following page



Products

EAN / order number

Packaging

HENSOTHERM® 7 viskos

4250153511014

Cartridge 310 ml
20 cartridges = 1 carton

HENSOTHERM® 7 viskos

4250153511038

Tubular bag 600 ml
12 bags = 1 carton

HENSOTHERM® 7 KS Gewebe 100

4250153511052


Roll 10 m
width 100 mm,
thickness 1 mm

HENSOTHERM® FLI-VE

INTUMESCENT FIRE-PROTECTION FINISH FOR VENT STACKS WITH MECHANICAL SEALING ELEMENT



Tested in compliance with	OIB usage guideline 095.4-001/06-008, Austrian compliance no. [ÜA-Kennzeichen Nr.] R-14.3.3-22-17622
Fire resistance classification	FLI-VE _(ho+ve) 90
Construction elements	Flexible wall, rigid wall, rigid floor
Component thickness	In flexible walls: ≥ 10 cm In rigid walls: ≥ 10 cm In rigid floors: ≥ 15 cm In shaft walls: ≥ 95 / 3 x 15 mm In wooden floors: ≥ 12 cm
Annular gap filling	Gypsum filler, HENSOMASTIK® 5 KS Spachtel, HENSOMASTIK® Acrylic (wood)

Fitting	Conduits	Max diameter [mm]
	Vent stacks	≤ 160.0

HENSOTHERM® FLI-VE

The new product HENSOTHERM® FLI-VE has been tested specifically as an auto closing, mechanical shut-off device for use in Austria (OIB usage guideline no. 095.4-001/06-008) and prevents fire and smoke from passing through non combustible vent stacks of metal (folded spiral-seam tubing) up to DN 160 mm. The self-closing HENSOTHERM® FLI-VE is suitable for supply and exhaust air systems in flexible dry- and rigid walls, shaft walls of single planks, and rigid and wooden floors (CLT, solid wood, or DiagonalDübelholz®) and can be installed in a 2 x 50 mm HENSOMASTIK® soft penetration seal.


Advantages:

- Fire resistance classification FLI-VE_(ho+ve) 90
- Also suitable in combination with a cold smoke seal HENSOTHERM® KRS
- Can be introduced into and positioned in the vent stack manually
- Flexibility thanks to small lay-up height
- Flexible annular gap seal with gypsum filler or HENSOMASTIK® 5 KS Spachtel, in wooden floors with HENSOMASTIK® Acrylic
- Easy-to-install, low-cost solution
- Green Product line, VOC Emissions Class A+
- Fulfils the eco-bau 1 requirements
- Tested quality



Products	EAN / order number	Packaging
HENSOTHERM® FLI-VE DN 100 mm	4250153545804	50 x
HENSOTHERM® FLI-VE DN 125 mm	4250153545811	25 x
HENSOTHERM® FLI-VE DN 10 mm	4250153545828	25 x
HENSOTHERM® KRS DN 100 mm	4250153545217	50 x
HENSOTHERM® KRS DN 125 mm	4250153545224	25 x
HENSOTHERM® KRS DN 160 mm	4250153545231	25 x
HENSOMASTIK® 5 KS Spachtel	4250153505241	Cartridge 310 ml 20 cartridges = 1 carton
HENSOMASTIK® Acrylic	4250153545903	Cartridge 310 ml 20 cartridges = 1 carton



Tested in compliance with			OIB usage guideline 095.4-002/05-012, Austrian compliance no. (ÜA-Kennzeichen Nr.) R-14.3.2-20-16920
Fire resistance classification			FLI _{ho} 90
Construction elements			Shaft walls (EN 520) or rigid wall
Component thickness			Shaft walls: Rigid walls ≥ 100 mm Board thickness $\geq 3 \times 15$ mm
Annular gap filling			HENSOMASTIK® 5 KS Spachtel or with A1 construction material, e.g. gypsum filler
Fitting	Conduits	Max diameter [mm]	
	Vent stacks (folded spiral-seam tubing)	≤ 125.0	

Ventilation fire protection for dry shaft walls ≥ 95 mm and rigid walls ≥ 100 mm

HENSOTHERM® FLI90 | HENSOTHERM® KRS tested in accordance with OIB usage guideline 095.4-002/05-012 as a fire protection finish in vent stacks based on intumescent materials without mechanical sealing element in EN 520 (plasterboard / DF type) shaft walls and consisting of $\geq 3 \times 15$ mm plasterboard / DF-type boards or rigid walls (≥ 100 mm). For sealing penetrations with vent stacks up to 160 mm, thereby safeguarding the fire safety of dry shaft walls of single planks $\geq 3 \times 15$ mm or rigid walls ≥ 100 mm. HENSOTHERM® System für Lüftungsleitungen is a system consisting of two different products: The fire protection in the vent stack is provided by HENSOTHERM® FLI90, and its impermeability to cold smoke by the cold smoke seal HENSOTHERM® KRS.

Advantages:

- Simple assembly
- Simple, reliable, fast, and low-cost solution
- No specific direction of insertion
- Sealed with HENSOMASTIK® 5 KS Spachtel or gypsum

NEW



Products	EAN / order number	Packaging
HENSOMASTIK® 5 KS Spachtel	4250153505242	Cartridge 310 ml 20 cartridges = 1 carton
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® SERVICE TRANSIT

INTUMESCENT FIRE PROTECTION TUBE FOR SINGLE PENETRATIONS



HENSOTHERM® Service Transit


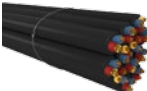


HENSOTHERM® Service Transit is an easy-to-install, pre-assembled fire seal designed to restore the fire resistance of flexible walls, rigid walls, and rigid floors carrying penetrations for cabling and PVC wiring pipes (EIP).

HENSOTHERM® Service Transit consists of a high-density, tearproof plastic pipe in an intumescent jacket of graphite-based HENSOTHERM® 7 KS Gewebe that undergoes thermal expansion to seal cavities around the carried cabling and piping. In addition, a ceramic wool plug placed at the centre of the penetration prevents the passage of cold smoke and gases.

Advantages:

- Easy-to-install, cost-effective solution
- Fast installation – suitable for precision fitting, without additional annular gap seal, in concrete, masonry, or gypsum (DN matching standard core drill bits)
- Temporary sealing in the construction phase
- High soundproofing level R_w , max = 66 dB
- For cabling, plastic piping, and cabling in EIP / flexible pipes
- Easy retrofits
- 100% volume utilisation!

Assessment / ETA	ETA application submitted
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 180
Construction elements	Flexible wall, rigid wall, rigid floor
Minimum construction element thickness	In flexible walls: ≥ 10 cm In rigid walls: ≥ 10 cm In rigid floors: ≥ 15 cm
Annular gap filling	Precision fitting (without annular gap), HENSOMASTIK® Acrylic

Fitting	Conduits	Max diameter [mm]
	All cabling types, including coaxial, OWG, redundant	≤ 21.0
	All bundled cable types, including coaxial, OWG, redundant	≤ 90.0 Each cable ≤ 21.0
	EIP / flexible pipes, single	≤ 32.0 Each cable ≤ 21.0
	EIP / flexible pipes, bundled	≤ 90.0 Each cable ≤ 21.0



Products	EAN / order number	Packaging unit
HENSOTHERM® ST 250-63 length 250 mm, DN 63 mm	4250153545507	24 x
HENSOTHERM® ST 250-90 length 250 mm, DN 90 mm	4250153545514	12 x
HENSOTHERM® ST 250-110 length 250 mm, DN 110 mm	4250153545521	9 x
HENSOTHERM® ST 400-63 length 400 mm, DN 63 mm	4250153545538	36 x
HENSOTHERM® ST 400-90 length 400 mm, DN 90 mm	4250153545545	16 x
HENSOTHERM® ST 400-110 length 400 mm, DN 110 mm	4250153545552	9 x
HENSOMASTIK® Acrylic	4250153545903	Cartridge 310 ml 20 cartridges = 1 carton

HENSOTHERM® AND HENSOMASTIK® SOLUTIONS FOR WOOD



SINGLE AND MIXED PENETRATION SEALS IN CLT AND SOLID WOOD ELEMENTS



Seal penetration solutions for wooden floors

For single penetrations with HENSOTHERM® RM 50 and HENSOMASTIK® Acrylic. For larger component apertures with HENSOMASTIK® Kombischott. These applications can also take the HENSOTHERM® Service Transit.

Advantages:

- Easy-to-install, cost-effective solutions for standard wooden structural elements
- Also suitable for larger penetrations in combination with HENSOMASTIK® mixed penetration seals
- Low emissions; environmental and user friendly
- Airtight annular-gap sealing with (optional) adhesive tape covered by testing

Assessment / ETA	Tested with success, ETA application submitted
Tested in accordance with	DIN EN 1366-3
Fire resistance classification	Up to EI 60
Construction elements	DIN EN 13986 floor structures of CLT, rigid wood, DiagonalDübelholz®
Minimum construction element thickness	≥ 12 cm (minimum EN 13501-2 fire-resistance time 60 minutes)
Annular gap filling	HENSOMASTIK® Acrylic

Fitting	Conduits	Max diameter [mm]
	All cabling types, including coaxial, OWG, redundant	≤ 21.0
	All bundled cable types, including coaxial, OWG, redundant	≤ 100.0 Each cable ≤ 21.0
	Combustible pipes with synthetic rubber insulation	≤ 110.0
	Multiple-layer composite pipes with synthetic rubber or mineral wool insulation	≤ 63.0
	Non combustible metal pipes with synthetic rubber or mineral wool insulation	≤ 63.0 [steel]
	Vent stacks (folded spiral-seam tubing) with HENSOTHERM® FLI-VE	≤ 160.0

Products	EAN / order number	Packaging
HENSOMASTIK® 5 KS Farbe	4250153504917	12.5 kg
HENSOMASTIK® 5 KS Farbe	4250153504900	6.0 kg
HENSOMASTIK® 5 KS viskos	4250153505129	12.5 kg
HENSOMASTIK® 5 KS viskos	4250153505136	6.0 kg
Mineral fibre boards One side precoated		Board 600 x 1,000 x 50 mm
HENSOTHERM® RM50	Matching pipe diameter	
HENSOMASTIK® Acrylic	4250153545903	Cartridge 310ml 20 cartridges = 1 carton

FURTHER PRODUCT SYSTEMS



HENSOMASTIK® 5 KS Farbe | Cables

- Approved in accordance with DIN 4102
Giscode: M-DF01
- abZ Z-19.11-1246
- Environmental product declaration no.
EPD-RHG-20190171-IAA1-DE
- Indoor and outdoor applications
- Horizontal and vertical cable routing /
supporting structures
- Mechanically loadable, weatherproof / UV resist-
ant under DIN 53384, oil and petrol resistant
- Contains no solvents, halogens, or plasticisers
- Substitute for suspended ceiling F30 or instal-
lation ducts I30 when approved in each specific
case by the highest building authority
- Approved and certified for international
applications as defined under IEC 60332-3
Cat A and IEC 60331-21
- Registration in the DGNB Navigator: CDDWRA



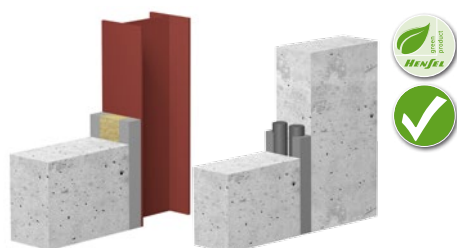
HENSOTHERM® 7 KS Gewebe 1000 E

- Building material approval ETA 16/0369
Giscode: M-DF01
- Applications: indoor and outdoor protected
against driving rain, use categories Y2/Z1/Z2
- Coated glass filament woven fabric A2 as
envelope for cabling and support and holding
structures
- Highly flexible, suitable for narrow objects
- Intumescent, so protects difficult-to-access
installations as well
- Contains no solvents, halogens, or plasticisers
- Fabric closures can be secured with clips,
straps, or galvanised wire



HENSOTHERM® 421 KS | R 30 – R 120

- Approved in accordance with DIN EN 13501-2
Giscode: M-DF01
- ETA 20/1228 | aBG no. Z-19.51-2313
- Environmental product declaration no.
EPD-RHG-20190097-IAC1-DE
- Applications: for open and closed steel
sections, girders and supports indoors
- Non VOC, contains no halogens, APEO,
borates, or plasticisers
- AgBB tested, A+ VOC emission class, LEED v4
- Water-based system
- Approved for galvanised steel sections
- Also suitable for off-site coating
- 1C and 2C top coats available
- Registration in the DGNB Navigator: 3E4MHK



HENSOTHERM® Spachtel universal joints

- DIN EN 1366-4 tested
Giscode: M-DF01
- DIN EN 1366-4 tested
- abZ Z-19.11-1246
- Registration in the DGNB Navigator: CDDWRA
- Contains no solvents, halogens, borates, or
plasticisers
- Mechanically loadable, weatherproof / UV re-
sistant under DIN 53384, oil and petrol resistant
- Applications: Indoor and outdoor between
concrete, reinforced concrete, cellular con-
crete, lime sandstone, and masonry
- Joint seals EI 90 in floors (see figure on left)
See abP no. P-3193/4829-MPA BS
Max joint width 100 mm
- Membrane up to EI 240 in floors (see figure
on right) See KB no. KB 3.2/12-275-2,
Max joint width 75 mm



HENSOMASTIK® 5 KS Farbe | viscous joint sealing | membrane

- Approved in accordance with DIN 4102-2
Giscode: M-DF01
- DIN EN 1366-4 tested
- abZ Z-19.11-1246
- Environmental product declaration no.
EPD-RHG-20190171-IAA1-DE
- Registration in the DGNB Navigator: CDDWRA
- Contains no solvents, halogens, borates, or
plasticisers
- Mechanically loadable, weatherproof / UV re-
sistant under DIN 53384, oil and petrol resistant
- Applications: Indoor and outdoor between
concrete, reinforced concrete, cellular con-
crete, lime sandstone, and masonry
- Joint seals EI 90 in floors (see figure on left)
See abP no. P-3193/4829-MPA BS
Max joint width 100 mm
- Membrane up to EI 240 in floors (see figure
on right) See KB no. KB 3.2/12-275-2,
Max joint width 75 mm



HENSOTHERM® 820 KS

- EN 13381-3:2015 tested
Giscode: M-DF01
- Building material approval abZ no. Z-19.11-2196
- Fire protection system for **hollow concrete slabs** (2012-Efectis-R0556 [Rev1]), **flat concrete floors and walls** (Exova WF report no. 339814), **concrete beams and columns** (Exova WF report no. 339816), **ribbed floors** on request
- Fire resistance R30 – R240
- Applications: dry indoors
- No spalling on subsequent penetrations and
installations
- Combined with BETON-CARBONSPERRE,
protects against ingress of pollutants
- Low material consumption, maintenance free
- VOC < 6 g/l, contains no halogens, APEO,
borates, fibres, or plasticisers / colour: white,
approx RAL 9010

NEW



Product Selector for fire protection penetration seals

We have digitised for your use the general type approvals (aBG) and European Technical Assessments (ETA) affecting our fire protection systems for penetration seals!

Your advantages in brief:

- ✓ The right product system in only 5 steps
- ✓ Access to all relevant product information and documents
- ✓ Planning, sizing, and implementation provisions at a glance
- ✓ Full text search and quick filter for tested lines
- ✓ MRP support
- ✓ Various print functions
- ✓ Fast and intuitive interface
- ✓ Compatible with all customary web browsers
- ✓ Optimised PC and tablet operability
- ✓ Freeware

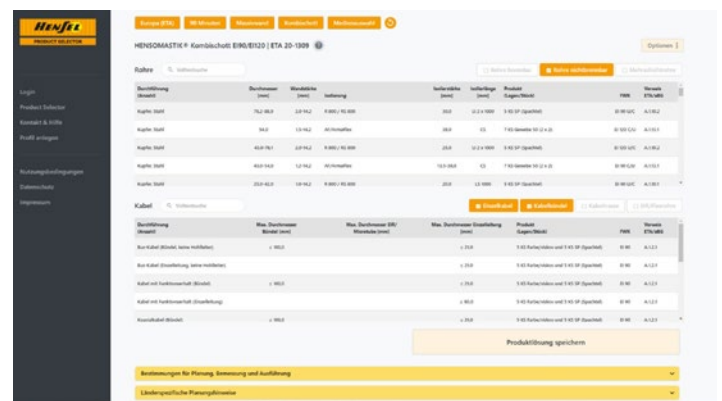
Additional advantages for registered users:

- ✓ Structured project management in a private area
- ✓ MRP support for major projects
- ✓ Project documentation simplified with personal notes and project partners' contact details
- ✓ Requests for quotations based on planning data
- ✓ Fast support for all conformity questions affecting project approval
- ✓ Additional languages and options for networking data shared with other users

Try now without commitment at
www.rudolf-hensel.de/product-selector

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.

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 members.



Simple networking: Once registered as a user, you can also assign the product system and the penetrations you have selected to a specific project and construction phase and commit these to a file under "Save Product Solution". You can then manage these, add additional details, and print them out for your hardcopy files at your convenience in a private area.

Use now the Product Selector to configure your first penetration seal solution.

The Product Selector opens in a new browser window in encrypted mode. You can immediately start configuring your own, approved penetration seal solution without first having to register.

Just give it a go.



Let's go!

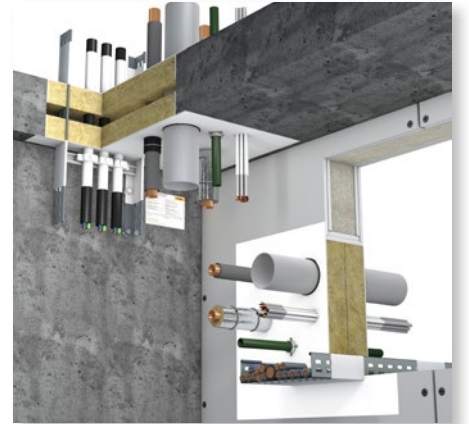
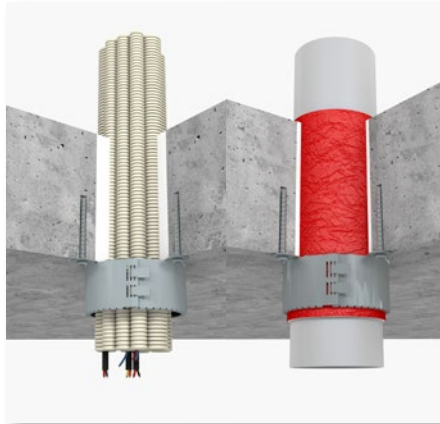
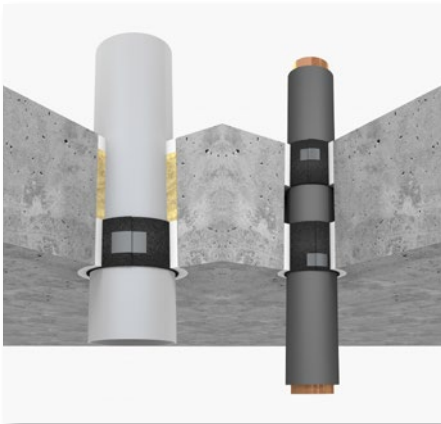
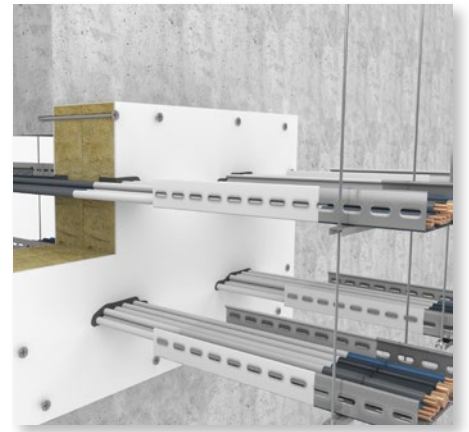
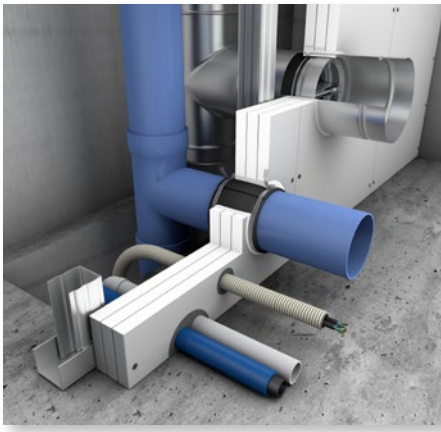
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NOTES

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