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



European Technical Assessment ETA-22/0051 of 2024/07/02

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 66 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

NOVASIT BM

Product family to which the above construction product belongs:

Fire stopping product – penetration seals.

Manufacturer:

Flamro Brandschutz-Systeme GmbH
Am Sportplatz 2
DE-56291 Leiningen
Tel.: 0049 4105 4090 0
Internet: www.flamro.de

Manufacturing plant:

Plant 10 and Plant 20

This European Technical Assessment contains:

29 pages including 2 annexes which form an integral part of the document

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

European Assessment Document (EAD) No. 350454-00-1104 Fire Stopping and fire sealing products – Penetration seals

This version replaces:

The ETA with the same number issued on 2023-02-16

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

The construction product "NOVASIT BM" is a mortar which is intended to be used in penetration seals. It is supplied in powder form in bags, in cement grey colour.

A detailed technical description and the fire-safety-related performance criteria of the construction products are given in Annex 1.

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

The construction product "NOVASIT BM" is intended to be used as a component with a fire protection effect in building elements or parts thereof or constructions that are subject to fire-protection requirements. Heat transmission and spread of fire are restricted in the event of fire.

The construction product "NOVASIT BM" is intended for use in penetration seals. Construction products for penetration seals are used to seal openings in fire-resistant walls or floors, which are penetrated by services. Penetration seals are used to maintain the fire resistance of the wall or floor in the area of these penetrations.

Within the scope of this ETA, a set of test specimens were subjected to a fire test. A fire resistance of EI 240 was demonstrated for individual designs of cable penetration seals and a fire resistance of EI 120 was demonstrated for individual designs of pipe penetration seals - manufactured using the construction product "NOVASIT BM".

The provisions made in this European Technical Assessment are based on an assumed intended working life of the "NOVASIT BM" of 10 years, provided the manufacturers conditions for the packaging, transport, storage, installation, use, maintenance and repair are met.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body but are to be regarded only as a means for choosing the right 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
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3.2 Safety in case of fire (BWR2)

Reaction to fire

Classification in accordance with EN13501-1, and the EC Delegated regulation 2016/364/EU:
See Annex 1

Resistance to fire

Classification according to EN 13501-2:
See Annex 1

3.3 Hygiene, health, and the environment (BWR3)

Content, emission and/or release of dangerous substances*

Release scenario	IA1: Product with direct contact to indoor air.	
	3 days [mg/m ³]	28 days [mg/m ³]
SVOC	< 0,005	< 0,005
VOC	< 0,005	< 0,005

Air permeability (material property)

No performance assessed

Water Permeability (material property)

No performance assessed

3.4 Safety and accessibility in use (BWR4)

Mechanical resistance and stability

No performance assessed

Resistance to impact/movement

No performance assessed

Adhesion

No performance assessed

Durability

Use category: **Type Z₁**

3.5 Protection against noise (BWR5)

Airborne sound insulation

No performance assessed

3.6 Energy Economy and heat retention (BWR6)

Thermal properties

No performance assessed

Water vapour permeability

No performance assessed

See additional information in section 3.8 – 3.9.

*) 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 characteristic values of the joint sealing system are based on the EAD 350454-00-1104 Firestopping and fire sealing products, Penetration Seals, assessed as a mortar, 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. "NOVASIT-BM" may be used in end-use applications according to the provisions for use category Z_1 (intended for use at temperatures below 0°C with exposure to UV but no exposure to rain) without expecting significant changes of the characteristics relevant for fire protection. Products that meet the requirements for type Z_1 also meet the requirement for type Z_2 .

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.

"NOVASIT BM" is 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

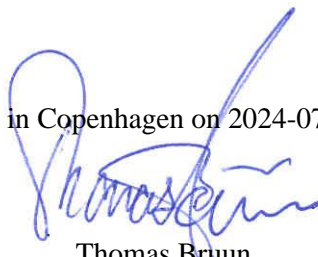
4.1 AVCP system

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

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 2024-07-02 by



Thomas Bruun
Managing Director, ETA-Danmark

Annex 1
Properties of the construction product "NOVASIT BM" and the performance of penetration seals, comprising "NOVASIT BM"

Property	Performance criterion
Fire behavior	Classification of fire behavior according to EN 13501-1: A1
Compressive strength	M 2,5
Density	$\rho \geq 900 \text{ kg/m}^3$
initial shear strength	0,15 N/mm ² (table value)
Contents of chlorides	$\leq 0,10 \text{ M.-%}$
Water vapour permeability μ	5/20 (table value)
Thermal conductivity $\lambda_{10, \text{dry, mat}}$	$\leq 0,25 \text{ W/(m}^{\circ}\text{K)}$ für P = 50% (table value) $\leq 0,27 \text{ W/(m}^{\circ}\text{K)}$ für P = 90%

The properties listed can be used both for the identification of the construction product and for the implementation of the factory production control of the manufacturer.

Implementation details for the factory production control are included in the inspection plan.

Performances of penetration seals, comprising the construction product "NOVASIT BM"

Structural element	Penetration seal	Maximum dimensions of the opening
Plasterboard wall and rigid walls ≥ 100 mm	≥ 100 mm	550 mm x 600 mm or equivalent area
Rigid walls and floors ≥ 150 mm	≥ 150 mm	1200 mm x 2000 mm or equivalent area
Rigid walls ≥ 240 mm and floors ≥ 200 mm	≥ 240 mm	600 mm x 600 mm or equivalent area

Fire resistance classes			
Service	Measures	Wall	Floor
		Fire resistance class	Fire resistance class
Cables, cable bundles and cable trays with fire protection wrap "DG-CR 1.5" (wrap width 500 mm)			
Cables $\varnothing \leq 80$ mm	2 x 2 layers	EI 240	EI 240
Cable bundles $\varnothing \leq 100$ mm with cables ≤ 21 mm	2 x 2 layers	EI 240	EI 240

Distances wall / floor						
	Cables	Cable bundles	Cable trays	Seal edge		
				Upper	Under	Side
Cables	≥ 10 (next to each other) ≥ 40 (above each other)			≥ 30	≥ 20	≥ 20
Cable bundles	≥ 10 (next to each other) ≥ 40 (above each other)			≥ 30	≥ 20	≥ 20
Cable trays	≥ 10 (next to each other) ≥ 40 (above each other)			≥ 30	≥ 20	≥ 20

Fire resistance classes		
Service	Measures	Flexible Plasterboard wall
		Fire resistance class
Cables, cable bundles, conduits and "Cable Tube CT" without protective measures		
Cables $\varnothing \leq 21$ mm	-	EI 90 / E 120
Cable bundles $\varnothing \leq 60$ mm with cables $\varnothing 21$ mm	-	EI 90
Plastic conduits $\varnothing \leq 16$ mm	-	EI 90
"Cable Tube CT" (length ≥ 150 mm)	-	EI 90
Cables, cable bundles and cable trays with fire protection wrap "DG-CR 1.5"		
Cables $\varnothing \leq 50$ mm	2 x 2-layer, 125 mm outside seal	EI 90 / E 120
Cables $\varnothing \leq 80$ mm	2 x 2-layer, 125 mm outside seal	EI 90 / E 120
Cable bundles $\varnothing \leq 150$ mm with cable $\varnothing 21$	2 x 2-layer, 125 mm outside seal	EI 120
Electrical installation conduit with fire protection wrap "DG-CR 1.5" (wrap width 125 mm)		
Conduits $\varnothing \leq 32$ mm	2 x 2-layer, 50 mm inside seal / 75 mm outside seal	EI 120
Conduit-bundles $\varnothing \leq 100$ mm (single conduits $\varnothing \leq 32$ mm)		

Distances wall								
	Cables	Cable bundles	Cable trays	Electrical installation conduits single or bundled	Cable Tube CT	Seal edge		
						Upper	Under	Side
Cables	≥ 5 (side by side) ≥ 50 (above the other)			≥ 5 (side by side) ≥ 50 (above the other)	≥ 50	≥ 50	≥ 0	≥ 5
Cable bundles $\varnothing \leq 60$ mm				≥ 75	≥ 50	≥ 100		
Cable bundles $\varnothing \leq 150$ mm				≥ 50	≥ 50			
Cable trays				≥ 5 (side by side) ≥ 50 (above the other)	≥ 50	≥ 50		
Electrical installation conduits single or bundled				≥ 50	≥ 50			
Cable Tube CT	≥ 50	≥ 50	≥ 50	≥ 100	≥ 10	≥ 5	≥ 5	

Fire resistance classes			
Service	Measures	Wall	Floor
		Fire resistance class	Fire resistance class
Cables, cable bundles and cable trays without protective measures			
Cables $\varnothing \leq 32$ mm		EI 120	EI 120
Single-core-non-sheathed cables (Wires, $\varnothing \leq 24$ mm)		EI 120	EI 120
Cable bundles $\varnothing \leq 60$ mm		EI 120	EI 120
Cable bundles $\varnothing \leq 100$ mm		EI 90 / E 120	EI 60 / E 120
Cables, cable bundles and cable trays with 240 mm seal thickness			
Cables $\varnothing \leq 50$ mm	240 mm seal thickness	EI 120	EI 90 / E 120
Cables $\varnothing \leq 50$ mm		EI 90 / E 120	EI 90 / E 120
Cable bundles $\varnothing \leq 100$ mm		EI 120	EI 120
Cables, cable bundles and cable trays with fire protection wrap "DG-CR 1.5"			
Cables $\varnothing \leq 50$ mm	2 x 2-layer, 125 mm	EI 120	EI 120
Cables $\varnothing \leq 80$ mm	2 x 2-layer, 125 mm	EI 90 / E 120	EI 120
	2 x 2-layer, 150 mm	EI 120	EI 120
Cable bundles $\varnothing \leq 100$ mm	2 x 1-layer, 125 mm	EI 120	EI 120
Electrical installation conduit with fire protection wrap "DG-CR 1.5" (wrap width 125 mm)			
Conduits $\varnothing \leq 32$ mm	2 x 1-layer	EI 120 U/U	EI 120 U/U
Conduits $\varnothing \leq 63$ mm	2 x 2-layer	EI 120 U/U	EI 120 U/U
Conduits $\varnothing \leq 100$ mm	2 x 3-layer + lamella mat ≥ 500 mm x ≥ 30 mm	-	EI 120 U/U
Conduit-bundles $\varnothing \leq 100$ mm (single conduits $\varnothing \leq 32$ mm)	2 x 2-layer	EI 120 U/U	EI 120 U/U
Electrical installation conduit with non-combustible insulation made of mineral-fibre „lamella mat“			
Conduits $\varnothing \leq 63$ mm	Lamella mat ≥ 500 mm x ≥ 30 mm	EI 120 U/U	EI 120 U/U
"speed pipe" single or bundled, with or w/o glass fibre or micro cable; with fire protection wrap "DG-CR 1.5" (wrap width 125 mm)			
max. 24 pcs.; outside pipe- $\varnothing \leq 7$ mm max. 7 pcs.; outside pipe- $\varnothing \leq 10$ mm max. 5 pcs.; outside pipe- $\varnothing \leq 12$ mm	Wall 2 x, Floor 1x 1-layer	EI 120 U/U	EI 120 U/U
Non-combustible pipes made of copper with non-combustible insulation made of mineral-fibre „lamella mat“			
Outside pipe- $\varnothing \leq 15$ mm	≥ 250 mm x ≥ 20 mm	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 28$ mm	≥ 500 mm x ≥ 20 mm		
Outside pipe- $\varnothing \leq 42$ mm	≥ 500 mm x ≥ 30 mm		
Outside pipe- $\varnothing \leq 54$ mm	≥ 500 mm x ≥ 40 mm		
Outside pipe- $\varnothing \leq 88,9$ mm	≥ 750 mm x ≥ 60 mm		
Non-combustible pipes made of steel, stainless steel or cast iron with non-combustible insulation made of mineral-fibre „lamella mat“			
Outside pipe- $\varnothing \leq 15,0$ mm	≥ 250 mm x ≥ 20 mm	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 28,0$ mm	≥ 500 mm x ≥ 20 mm		
Outside pipe- $\varnothing \leq 42,0$ mm	≥ 500 mm x ≥ 30 mm		
Outside pipe- $\varnothing \leq 114,3$ mm	≥ 500 mm x ≥ 40 mm		
Outside pipe- $\varnothing \leq 168,3$ mm	≥ 1000 mm x ≥ 40 mm		
Outside pipe- $\varnothing \leq 323,9$ mm	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 30 mm		

Fire resistance classes			
Service	Measures	Wall	Floor
		Fire resistance class	Fire resistance class
Multilayer pipes „HENCO pipes“ with non-combustible insulation made of mineral-fibre „lamella mat“			
Outside pipe-Ø ≤ 12,0 mm, wall thickness 1,6 mm	Lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 U/C	EI 120 U/C
Outside pipe-Ø ≤ 32,0 mm, wall thickness 3,0 mm		EI 120 U/C	EI 120 U/C
Outside pipe-Ø ≤ 63,0 mm, wall thickness 4,5 mm	Lamella mat ≥ 250 mm x ≥ 30 mm	EI 120 U/C	EI 120 U/C
Multilayer pipes „HENCO pipes“ with PE-foam (PEF) insulation and intumescent wrap “DG-CR BS“ (wrap width 100 mm)			
Outside pipe-Ø ≤ 14,0 mm, wall thick. 2,0 mm, PEF 6 mm	2 x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120 U/C	EI 120 U/C
Outside pipe-Ø ≤ 26,0 mm, wall thick. 3,0 mm, PEF 6 - 13 mm		EI 120 U/C	EI 120 U/C
Outside pipe-Ø ≤ 32,0 mm, wall thick. 2,0 mm, PEF 6 - 10 mm		EI 120 U/C	EI 120 U/C
Combustible pipes with/without 5 mm PE-foam acoustic insulation made of PVC-U, PVC-C, PP-H or PE-100 with intumescent wrap “DG-CR BS“ (wrap width 100 mm)			
Outside pipe-Ø ≤ 50,0 mm	Wall 2 x, Floor 1 x 1-layer	EI 120 U/U	EI 120 U/U
Outside pipe-Ø ≤ 80,0 mm	Wall 2 x, Floor 1 x 2-layer	EI 120 U/U	EI 120 U/U
Outside pipe-Ø ≤ 110,0 mm	Wall 2 x, Floor 1 x 3-layer	EI 120 U/U	EI 120 U/U
Outside pipe-Ø ≤ 135,0 mm	Wall 2 x, Floor 1 x 4-layer	EI 120 U/C	EI 120 U/C
Outside pipe-Ø ≤ 160,0 mm	Wall 2 x, Floor 1 x 5-layer	EI 120 U/C	EI 120 U/C
HVAC split line combinations** with fire protection wrap “DG-CR 1.5“ (wrap width 125 mm)			
Pipe 1/Pipe 2 outside-Ø 6 mm - 10 mm/ 10 mm - 18 mm + PE-100 outside-Ø ≤ 25 mm, t 1.9 - 3.5 mm	2 x 2-layer	EI 120	EI 120
Double solar pipes „NanoSUN2“ with fire protection wrap “DG-CR 1.5“ (wrap width 125 mm)			
DN16 and DN 25	Wall 2 x, Floor 1 x 1-layer	EI 120 C/U	EI 120 C/U
Hydraulic hoses „HANSA FLEX“ (also with wire braid reinforcement) with fire protection wrap “DG-CR 1.5“ (wrap width 125 mm)			
Up to Ø 55.9 mm (Hansa-Flex HD 200 (2SN)) (e.g., hydraulic hoses for elevators) with additional cables	2 x 1-layer + lamella mat ≥ 250 mm x ≥ 20 mm	EI 120	EI 120

**combined lines for split HVAC-units with twin or single copper pipe and pipe insulation 9 mm thick, made from PE foam, in accordance with EN 14313; optionally with additional cable/pipe without spacing.

Fire resistance classes			
Service	Measures	Wall	Floor
		Fire resistance class	Fire resistance class
Combustible pipes with/without 5 mm PE-foam acoustic insulation made of PVC-U with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 75,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation made of PE-HD with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Outside pipe- $\varnothing \leq 125,0$ mm	Wall 2 x, Floor 1 x	EI 90 U/U	EI 120 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 90 U/U	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation made of PP-H with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 90 U/U	EI 120 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type POLO-KAL NG with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 90 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	-	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type POLO-KAL XS with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	-	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Geberit Silent PP with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	-	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Geberit Silent Pro with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Geberit Silent dB 20 with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	-
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 90 U/U	-
Combustible pipes with/without 5 mm PE-foam acoustic insulation type GF Silenta Premium with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 120 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Conel Drain, Rehau Raupiano light with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 110,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Wavin SiTECH+ with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 90 U/U
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Valsir TriPlus with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 50,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	EI 90 U/U
Outside pipe- $\varnothing \leq 160,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	-
Combustible pipes with/without 5 mm PE-foam acoustic insulation type Rehau Raupiano Plus, Pipelife Master 3 Plus, KeKelit Phonex AS, Wavin AS with pipe collar "AWM II/ VARIANT N IIA"			
Outside pipe- $\varnothing \leq 50,0$ mm	Wall 2 x, Floor 1 x	EI 120 U/U	-

Fire resistance classes			
Service	Measures	Wall	Floor
		Fire resistance class	Fire resistance class
Non-combustible pipes made of copper with non-combustible insulation „Conlit 150U“			
Outside pipe $\varnothing \leq 15$ mm	≥ 250 mm x $\geq 22,5$ mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 28$ mm	≥ 500 mm x ≥ 26 mm	EI 120 C/U	-
Outside pipe $\varnothing \leq 42$ mm	≥ 500 mm x ≥ 19 mm	-	EI 120 C/U
Outside pipe $\varnothing \leq 54$ mm	≥ 500 mm x ≥ 38 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 108$ mm	≥ 1000 mm x ≥ 36 mm	EI 120 C/U	EI 120 C/U
Non-combustible pipes made of steel, stainless steel or cast iron with non-combustible insulation „Conlit 150U“			
Outside pipe $\varnothing \leq 15$ mm	≥ 750 mm x ≥ 33 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 28$ mm	≥ 500 mm x ≥ 26 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 42$ mm	≥ 500 mm x ≥ 19 mm	-	EI 120 C/U
Outside pipe $\varnothing \leq 54$ mm	≥ 500 mm x ≥ 38 mm	-	EI 120 C/U
Outside pipe $\varnothing \leq 114,3$ mm	≥ 750 mm x ≥ 33 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 219,1$ mm	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 323,9$ mm	≥ 1000 mm x ≥ 40 mm + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Non-combustible pipes made of copper with combustible insulation „Armaflex Protect“			
Outside pipe- $\varnothing \leq 28,0$ mm	≥ 250 mm x ≥ 25 mm	EI 120 C/U	EI 120 C/U
	≥ 500 mm x ≥ 26 mm - 51 mm	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 88,9$ mm	≥ 500 mm x ≥ 25 mm	EI 120 C/U	EI 120 C/U
	≥ 1000 mm x ≥ 26 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 108$ mm	≥ 1000 mm x ≥ 26 mm - 52 mm + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Non-combustible pipes made of steel, stainless steel or cast iron with combustible insulation „Armaflex Protect“			
Outside pipe- $\varnothing \leq 28,0$ mm	≥ 250 mm x ≥ 25 mm	EI 120 C/U	EI 120 C/U
	≥ 500 mm x ≥ 26 mm - 51 mm	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 88,9$ mm	≥ 500 mm x ≥ 25 mm	EI 120 C/U	EI 120 C/U
	≥ 1000 mm x ≥ 26 mm - 51 mm	EI 120 C/U	EI 120 C/U
Outside pipe $\varnothing \leq 170$ mm	≥ 1000 mm x 52 mm	EI 120 C/U	-
	≥ 1000 mm x 26 mm - 52 mm + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Non-combustible pipes made of copper with combustible FEF insulation acc. to EN 14304, e.g. „NH/Armaflex“ with fire protection wrap “DG-CR 1.5“ (wrap width 125 mm)			
Outside pipe- $\varnothing \leq 54,0$ mm / 76,0 mm (floor)	2 x 2-layer	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 88,9$ mm	2 x 2-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Outside pipe- $\varnothing \leq 108,0$ mm	2 x 2-layer + lamella mat ≥ 750 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U
Non-combustible pipes made of steel, stainless steel or cast iron with combustible FEF insulation acc. to EN 14304, e.g. „NH/Armaflex“ with fire protection wrap “DG-CR 1.5“ (wrap width 125 mm)			
Outside pipe- $\varnothing \leq 168,3$ mm	2 x 2-layer + lamella mat ≥ 500 mm x ≥ 40 mm	EI 120 C/U	EI 120 C/U

Fire resistance classes					
Service	Measures		Fire resistance class		
"Cable Tube CT" – Installation length 200 mm					
Cables, cable bundles	Wall	Floor	Wall	Floor	
Cable $\varnothing \leq 21$ mm	-	-	EI 120	EI 120	
Cable $\varnothing \leq 50$ mm		only 100% configuration	-	EI 90 / EI 120	
Cable bundle $\varnothing \leq 100$ %, with cable $\varnothing \leq 14$ mm		-		EI 120	
Cable bundle $\varnothing \leq 100$ %, with cable $\varnothing \leq 21$ mm		-	EI 60 / E 90		
Cable bundle $\varnothing \leq 100$ %, with cable $\varnothing \leq 21$ mm		Intumescent wrap 1 x 1-layer, 50 mm overlap, above or below	EI 120	EI 120	
Electrical installation conduits (EIC)					
Conduits $\varnothing \leq 32$ mm, with/without cable $\varnothing \leq 14$ mm	-	max. 3 pcs.	-	EI 90 U/U	
Conduits single $\varnothing \leq 40$ mm, with/without cable $\varnothing \leq 21$ mm		-	-	EI 120 U/U	-
Conduit bundle, with or without configuration, $\varnothing \leq 90$ mm with conduit $\varnothing \leq 40$ mm, with/without cable $\varnothing \leq 21$ mm			-	EI 120 U/U	
Conduit bundle $\varnothing \leq 100$ % with conduit $\varnothing \leq 32$ mm, with/without cable $\varnothing \leq 21$ mm			-	EI 120 U/U	
HVAC split line combinations					
Pipe 1/pipe 2 outer- \varnothing 6-10 mm/10-18 mm + pipe insulation 9 mm thick made of PE foam + PE-100 outer- $\varnothing \leq 25$ mm, depth 1.5 mm (U/U) + max 3 cables $\varnothing \leq 14$ mm	-	-	EI 90 U/U	EI 90 U/U	
Pipe 1/pipe 2 outer- \varnothing 6-22 mm/ 6-22 mm + pipe insulation 9 mm thick made of PE foam + PE-100 outer- $\varnothing \leq 25$ mm, depth 1.5 mm (U/U) + max 3 cables $\varnothing \leq 14$ mm	-	Lamella mat ≥ 250 mm x ≥ 30 mm above	-	EI 120 U/U	
Speed pipes, bundled or individually, with/without glass fibre cables					
7 mm $\leq \varnothing \leq 14$ mm bundle ≤ 100 %	-	-	EI 120 U/U	-	
max. 24 pcs. pipe outer- $\varnothing \leq 7$			-	EI 120 U/U	
max. 7 pcs. pipe outer- $\varnothing \leq 10$ max. 5 pcs. pipe outer- $\varnothing \leq 12$			-	EI 120 U/U	

Fire resistance classes					
Service	Measures		Fire resistance class		
"Cable Tube CT" – Installation length 300 mm					
Cables, cable bundles	Wall	Floor	Wall	Floor	
Cable $\varnothing \leq 21$ mm	-	-	EI 120	EI 120	
Cable $\varnothing \leq 50$ mm			EI 90 / E 120	EI 60 / E 120	
Cable $\varnothing \leq 50$ mm			100% configuration	-	EI 90 / E 90
Cable $\varnothing \leq 50$ mm			Lamella mat ≥ 100 mm x ≥ 30 mm + intumescent wrap x 1-layer, above		EI 120
Cable $\varnothing \leq 80$ mm	solid wall	-	EI 90 / E 120	EI 60 / E 120	
Cable bundle $\varnothing \leq 100$ %, with cable $\varnothing \leq 21$ mm	-	-	EI 120	EI 120	
Wave guides					
CommScope HELIAX LDF (low density foam), $\varnothing \leq 16,002$ mm	-	-	EI 120 U/C	-	
CommScope 50 Ω braided CNT, $\varnothing \leq 15,0$ mm			EI 120 U/C		
CommScope HELIAX AVA, $\varnothing \leq 28$ mm			E 120 U/C / EI 90 U/C		
CommScope HELIAX FSJ (super flexible), $\varnothing \leq 13,5$ mm			E 120 U/C / EI 90 U/C		
RFS RADIAFLEX RLK, $\varnothing \leq 28,5$ mm			EI 120 U/C		
RFS CELLFLEX LCF, $\varnothing \leq 27,8$ mm			EI 120 U/C		
Electrical installation conduits (EIC)					
Conduits single $\varnothing \leq 40$ mm, with/without cable $\varnothing \leq 21$ mm	-	-	EI 120 U/U	-	
Conduits single $\varnothing \leq 63$ mm, with/without cable $\varnothing \leq 21$ mm			-	EI 120 U/U	
Conduit bundle, with or without configuration, $\varnothing \leq 90$ mm with conduit $\varnothing \leq 40$ mm, with/without cable $\varnothing \leq 21$ mm			EI 120 U/U	-	
Conduit bundle $\varnothing \leq 100$ % with conduit $\varnothing \leq 32$ mm, with/without cable $\varnothing \leq 21$ mm			EI 120 U/U	-	
Conduit bundle $\varnothing \leq 100$ % mm with conduit $\varnothing \leq 32$ mm, with/without cable $\varnothing \leq 21$ mm			Floor ≥ 200 mm	-	EI 120 U/U
HVAC split line combinations					
Pipe 1/pipe 2 outer- \varnothing 6-10 mm/ 10-18 mm + pipe insulation 9 mm thick made of PE foam + PE-100 outer- $\varnothing \leq 25$ mm, depth 1.5 mm (U/U) + max 3 cables $\varnothing \leq 14$ mm	-	-	EI 90 U/U	EI 90 U/U	
Pipe 1/pipe 2 outer- \varnothing 6-22 mm/ 6-22 mm + pipe insulation 9 mm thick made of PE foam + PE-100 outer- $\varnothing \leq 25$ mm, depth 1.5 mm (U/U) + max 3 cables $\varnothing \leq 14$ mm			Lamella mat ≥ 250 mm x ≥ 30 mm above	-	EI 120 U/U
Speed pipes, bundled or individually, with/without glass fibre cables					
7 mm $\leq \varnothing \leq 14$ mm bundle ≤ 100 %	-	-	EI 120 U/U	-	
max. 24 pcs. pipe outer- $\varnothing \leq 7$			-	EI 120 U/U	
max. 7 pcs. pipe outer- $\varnothing \leq 10$ max. 5 pcs. pipe outer- $\varnothing \leq 12$			-	EI 120 U/U	
Combustible pipes made of PVC-U					
Pipe outer \varnothing 20 mm x s 1.5 mm up to pipe outer \varnothing 32 mm x s 2.4 mm	-	-	EI 120 U/U	-	

Distances wall																
	Cables	Cable bundles	Cable trays	Electrical installation conduits single or bundled	Combustible pipes	Multilayer pipes	Non-combustible pipes: insulation made of mineral-fibre mats	Non-combustible pipes: insulation made of FEF	HVAC split line combinations	Double solar pipes „NanoSUN“	PE lines „speed pipes“	Hydraulic hoses „HANSA FLEX“	“Cable Tube CT”	Seal edge		
														Upper	Under	Side
Cables	≥ 10 (≥ 50 one above the other)			Cable ≤ 21: ≥ 0 Cable > 21: ≥ 100	≥ 50	Cable ≤ 21: ≥ 0 Cable > 21: ≥ 100	≥ 35	≥ 35	≥ 40	≥ 100	≥ 25	≥ 45	≥ 65	≥ 30	≥ 0	≥ 0
Cable bundles	≥ 10 (≥ 50 one above the other)			≥ 100	≥ 50	≥ 100	≥ 35	≥ 35	≥ 40	≥ 100	≥ 25	≥ 45	≥ 65	≥ 30	≥ 0	≥ 0
Cable trays	≥ 10 (≥ 50 one above the other)			≥ 100	≥ 50	≥ 100	≥ 35	≥ 35	≥ 40	≥ 100	≥ 25	≥ 45	≥ 65	≥ 30	≥ 0	≥ 0
Electrical installation conduits single or bundled	Cable ≤ 21: ≥ 0 Cable > 21: ≥ 100	≥ 100		≥ 0	≥ 100		≥ 80	≥ 80	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100		≥ 0	
Combustible pipes	≥ 50			≥ 100	≥ 0	≥ 100	≥ 0	≥ 0	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100		≥ 0	
Multilayer pipes	Cable ≤ 21: ≥ 0 Cable > 21: ≥ 100	≥ 100		≥ 100	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100		≥ 0	
Non-combustible pipes: insulation made of mineral-fibre mats	≥ 50			≥ 80	≥ 0	≥ 100	≥ 0	≥ 0	≥ 50	≥ 100	≥ 20	≥ 100	≥ 100		≥ 0	
Non-combustible pipes: insulation made of FEF	≥ 50			≥ 80	≥ 0	≥ 100	≥ 0	≥ 0	≥ 50	≥ 100	≥ 20	≥ 100	≥ 100		≥ 0	
HVAC split line combinations	≥ 40			≥ 100	≥ 50	≥ 100	≥ 50	≥ 50	≥ 25	≥ 85	≥ 100	≥ 100	≥ 100		≥ 0	
Double solar pipes „NanoSUN“	≥ 100			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 85	≥ 100	≥ 100	≥ 85	≥ 100		≥ 0	
PE lines „speed pipes“	≥ 25			≥ 100	≥ 100	≥ 100	≥ 20	≥ 20	≥ 100	≥ 100	≥ 25	≥ 100	≥ 100		≥ 0	
Hydraulic hoses „HANSA FLEX“	≥ 45			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 85	≥ 100	≥ 100	≥ 100		≥ 80	
“Cable Tube CT”	≥ 65			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 3		≥ 15	

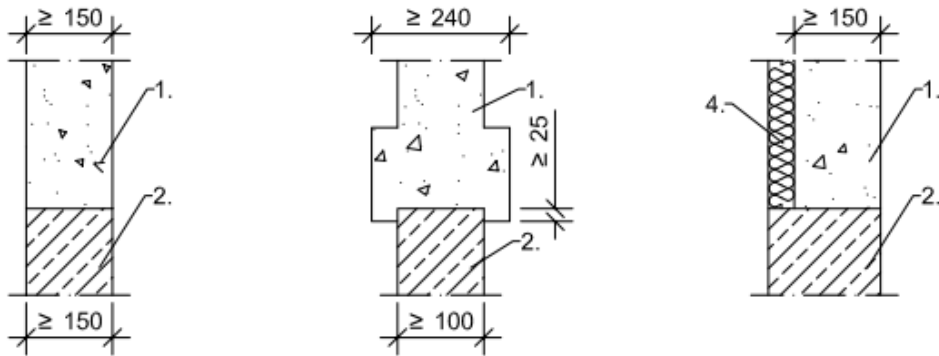
Distances floor																
	Cables	Cable bundles	Cable trays	Electrical installation conduits single or bundled	Combustible pipes	Multilayer pipes	Non-combustible pipes: insulation made of mineral-fibre mats	Non-combustible pipes: insulation made of FEF	HVAC split line combinations	Double solar pipes „NanoSUN“	PE lines „speed pipes“	Hydraulic hoses „HANSA FLEX“	“Cable Tube CT”	Seal edge		
														Upper	Under	Side
Cables	Seal thickness ≥ 150 : ≥ 10 , (≥ 50 one above the other) Seal thickness ≥ 240 : ≥ 0 , (≥ 45 one above the other)			Cable ≤ 21 : ≥ 0 Cable > 21 : ≥ 100	≥ 50	Cable ≤ 21 : ≥ 0 Cable > 21 : ≥ 100	≥ 25	≥ 25	≥ 100	≥ 100	≥ 40	≥ 85	≥ 65	≥ 30	≥ 0	Seal thickness ≥ 150 : ≥ 10 Seal thickness ≥ 240 : ≥ 25
Cable bundles	Seal thickness ≥ 150 : ≥ 10 , (≥ 50 one above the other) Seal thickness ≥ 240 : ≥ 0 , (≥ 45 one above the other)			≥ 100	≥ 50	≥ 100	≥ 25	≥ 25	≥ 100	≥ 100	≥ 40	≥ 85	≥ 65	≥ 30	≥ 0	\geq
Cable trays	Seal thickness ≥ 150 : ≥ 10 , (≥ 50 one above the other) Seal thickness ≥ 240 : ≥ 0 , (≥ 45 one above the other)			≥ 100	≥ 50	≥ 100	≥ 25	≥ 25	≥ 100	≥ 100	≥ 40	≥ 85	≥ 65	≥ 30	≥ 0	\geq
Electrical installation conduits single or bundled	Cable ≤ 21 : ≥ 0 Cable > 21 : ≥ 100	\geq		≥ 0	≥ 100	≥ 100	≥ 60	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100		≥ 0	
Combustible pipes	≥ 50			≥ 100	≥ 25	≥ 100	≥ 0	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100		≥ 100	
Multilayer pipes	Cable ≤ 21 : ≥ 0 Cable > 21 : ≥ 100	≥ 100		\geq	≥ 100	≥ 0	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100		≥ 0	
Non-combustible pipes: insulation made of mineral-fibre mats	≥ 25			≥ 100	≥ 0	≥ 100	≥ 0	≥ 0	≥ 60	≥ 100	≥ 100	≥ 100	≥ 100		≥ 100	
Non-combustible pipes: insulation made of FEF	≥ 25			≥ 100	≥ 0	≥ 100	≥ 0	≥ 0	≥ 60	≥ 100	≥ 100	≥ 100	≥ 100		≥ 100	
HVAC split line combinations	≥ 100			≥ 100	≥ 100	≥ 100	≥ 60	≥ 60	≥ 50	≥ 100	≥ 100	≥ 100	≥ 100		≥ 100	
Double solar pipes „NanoSUN“	≥ 100			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 8	≥ 100		≥ 30	
PE lines „speed pipes“	≥ 40			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 25	≥ 100	≥ 100		≥ 30	
Hydraulic hoses „HANSA FLEX“	≥ 85			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 80	≥ 100	≥ 100	≥ 100		≥ 35	
“Cable Tube CT”	≥ 65			≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 0		≥ 15	

The use of the construction product "NOVASIT BM" shall be in accordance with national requirements for planning, design and execution and in accordance with the installation instruction of the manufacturer.

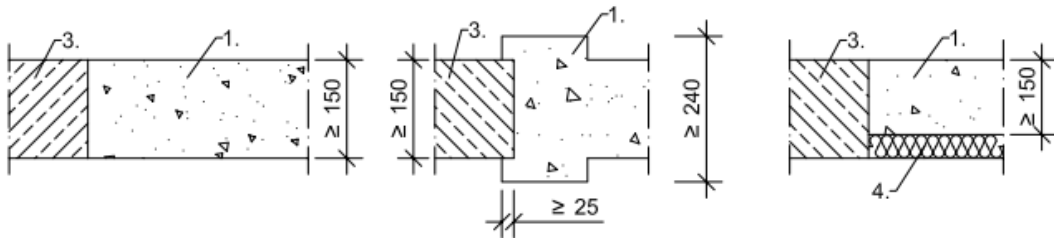
The tested/ illustrated seals are only examples for the use.

Mixed penetration sealing system made of mortar

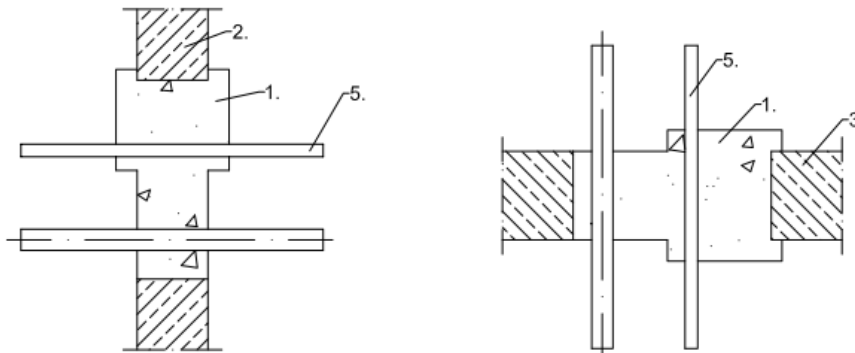
Variants in solid walls



Variants in floors



Cables, cable bundles with cables and cables trays



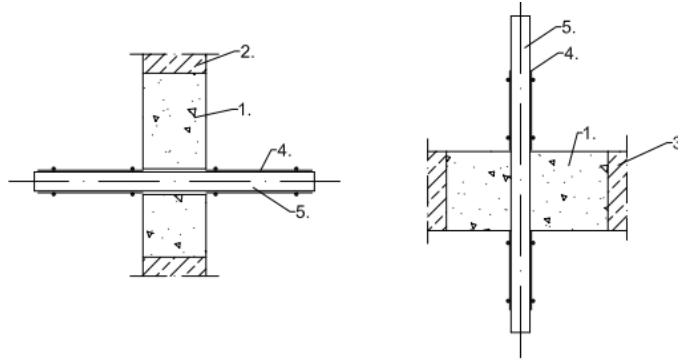
Service	Dimensions [mm]	Seal thickness [mm]	Fire resistance class	
			Wall	Floor
Cables	$\varnothing \leq 32$	150	EI 120	EI 120
	$\varnothing \leq 50$	240	EI 120	EI 90 / E 120
	$\varnothing \leq 80$		EI 90 / E 120	EI 90
Single-core-non-sheathed cables	\varnothing wires ≤ 24	150	EI 120	EI 120
Cable bundles	$\varnothing \leq 60$		EI 120	EI 120
	$\varnothing \leq 100$		EI 90 / E 120	EI 60 / E 120
	$\varnothing \leq 100$	240	EI 120	EI 120

Dimensions in mm

1. Mortar ≥ 150 mm thickness
2. Rigid wall ≥ 150 mm thickness
3. Rigid floor ≥ 150 mm thickness

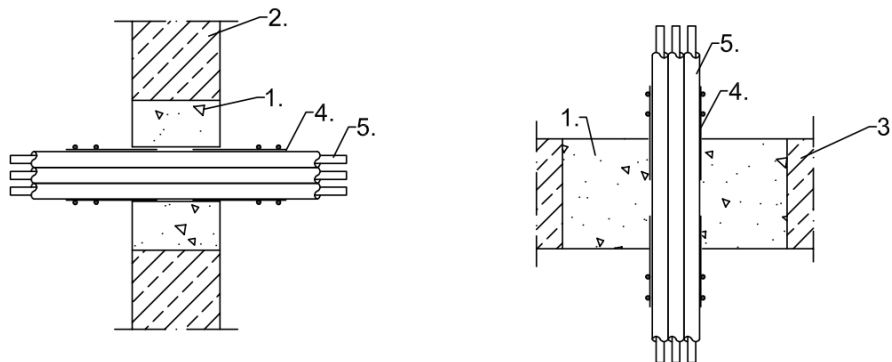
4. Lost formwork e. g. made of mineral fibre mat (non-flammable, melting point > 1000 °C)
5. Cables / cable bundles / cables trays

Cables $\varnothing \leq 80$ mm, cable bundles $\varnothing \leq 100$ mm with cables and cables trays with intumescent wrap



Service	Intumescent wrap							Fire resistance class	
	Dimensions [mm]	Wrap width L [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
Cables	$\varnothing \leq 32$	-	-	-	-	-	-	EI 120	EI 120
	$\varnothing \leq 50$	125	2	2	45 - 60	0	125	EI 120	EI 120
	$\varnothing \leq 80$							EI 90 / E 120	EI 120
		150		EI 120			EI 120		
Cable bundles	$\varnothing \leq 100$	125		1				125	EI 120

Electrical installation conduit $\varnothing \leq 100$ mm single or bundled with intumescent wrap



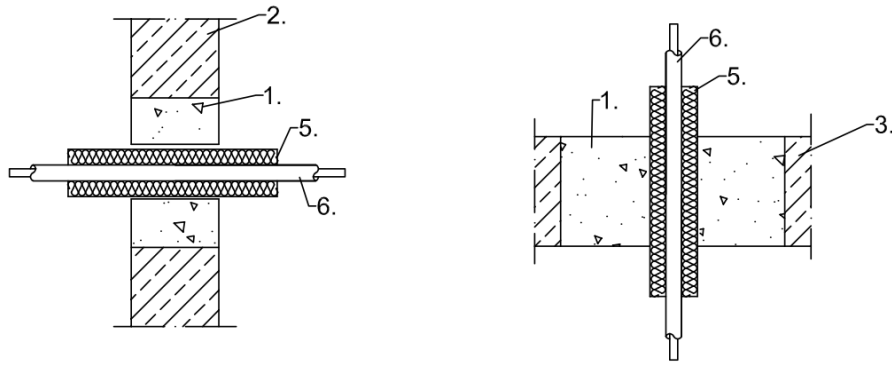
Service	Intumescent wrap							Fire resistance class	
	Dimensions [mm]	Wrap width L [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
EIC made of plastic, single	EIC $\varnothing \leq 32$ cable $\varnothing \leq 21$	125	2	1	0	50	75	EI 120 U/U	EI 120 U/U
	EIC $\varnothing \leq 63$ cable $\varnothing \leq 21$			2				EI 120 U/U	
EIC made of plastic, single*	EIC $\varnothing \leq 100$ cable $\varnothing \leq 50$			3				-	
EIC made of plastic, bundled	Bundle $\varnothing \leq 100$ EIC $\varnothing \leq 32$ cable $\varnothing \leq 21$			2				EI 120 U/U	

* With additional protective insulation made of mineral-fibre mats ($L1 \geq 500$ mm x $D1 \geq 30$ mm)

Dimensions in mm

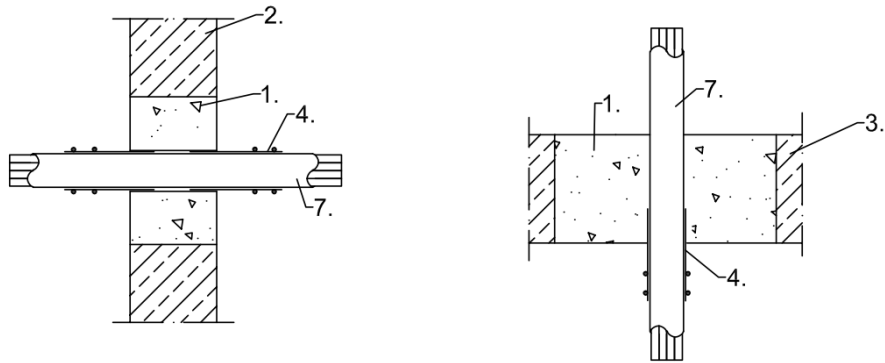
1. Mortar ≥ 150 mm thickness
2. Rigid wall ≥ 150 mm thickness
3. Rigid floor ≥ 150 mm thickness
4. Intumescent wrap
5. Electrical installation conduits (EIC) made of plastic, single or bundled

Electrical installation conduit $\varnothing \leq 63$ mm (single) with non-combustible insulation made of mineral-fibre "lamella mat"



EIC-material	EIC outside \varnothing [mm]	Section insulation		Fire resistance class	
		Thickness [mm]	Length L $\frac{1}{2}$ [mm]	Wall	Floor
PE-HD	≤ 63	≥ 30	≥ 500	EI 120 U/C	EI 120 U/C

PE lines "speed pipes" with intumescent wrap

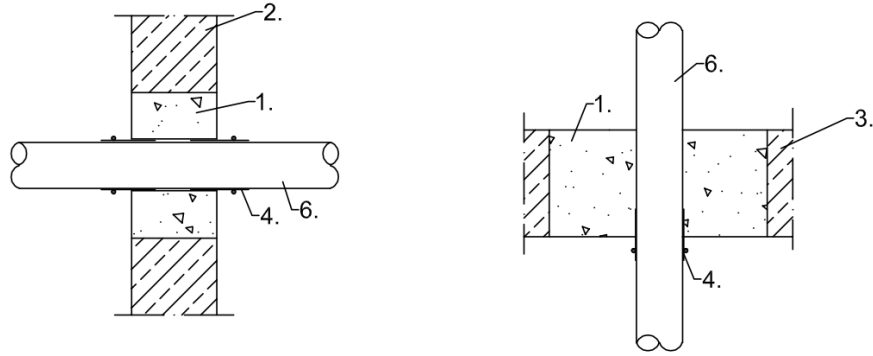


Set-up Speed pipes	Wall thickness [mm]	Intumescent wrap						Fire resistance class	
		Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
$\varnothing 7,0$ mm x 24 Pcs	$\geq 1,5$	125	2	1	0	50	75	EI 120 U/U	-
$\varnothing 10,0$ mm x 7 Pcs	$\geq 2,0$								
$\varnothing 12,0$ mm x 5 Pcs	$\geq 2,0$								
$\varnothing 7,0$ mm x 24 Pcs	$\geq 1,5$		1	2				-	EI 120 U/U
$\varnothing 10,0$ mm x 7 Pcs	$\geq 2,0$								
$\varnothing 12,0$ mm x 5 Pcs	$\geq 2,0$								

Dimensions in mm

1. Mortar ≥ 150 mm thickness
2. Rigid wall ≥ 150 mm thickness
3. Rigid floor ≥ 150 mm thickness
4. Intumescent wrap
5. Mineral fibre mats or -shells
6. Single electrical installation conduits (EIC), PE-HD
7. PE lines "speed pipes" (for glass fibre cables and micro cables)

Combustible pipes $\varnothing \leq 160$ mm with / without 5 mm PE-foam acoustic insulation with intumescent wrap

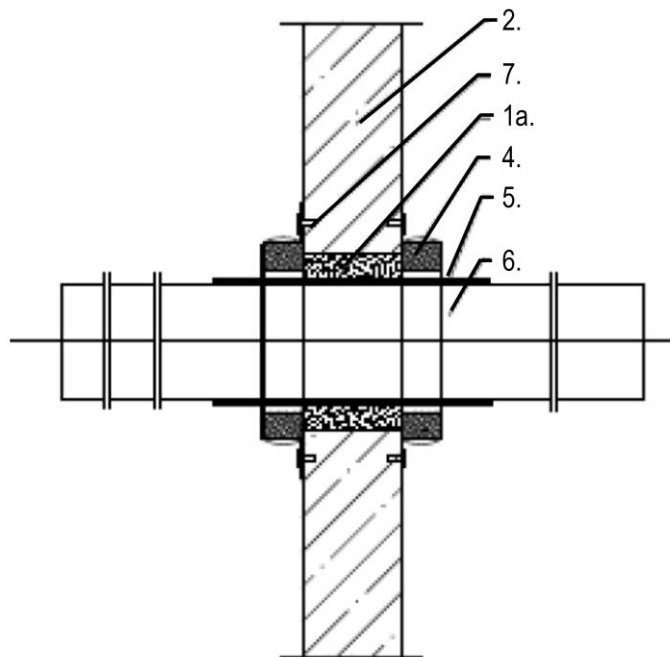
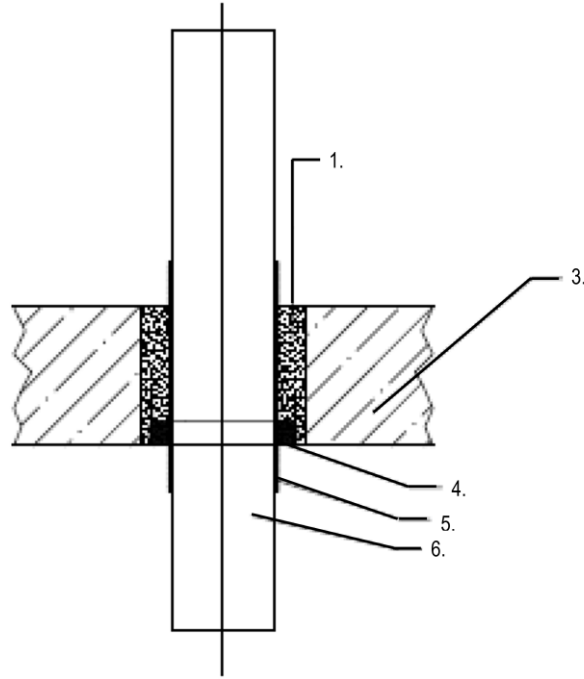


Dimensions [mm]	Intumescent wrap						Fire resistance class	
	Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
$\leq \varnothing 50$	100	2	1	0	70	30	EI 120 U/U	
$> \varnothing 50 - 80$			2					
$> \varnothing 80 - 110$			3					
$> \varnothing 110 - 135$			4					
$> \varnothing 135 - 160$			5					
$\leq \varnothing 50$	100	1	1	0	70	30	-	EI 120 U/U
$> \varnothing 50 - 80$			2					
$> \varnothing 80 - 110$			3					
$> \varnothing 110 - 135$			4					
$> \varnothing 135 - 160$			5					

Dimensions in mm

- | | |
|--|--|
| 1. Mortar ≥ 150 mm thickness | 5. Protective insulation made of lamella mat |
| 2. Rigid wall ≥ 150 mm thickness | 6. Combustible pipes |
| 3. Rigid floor ≥ 150 mm thickness | 7. Multilayer pipes "HENCO pipes" |
| 4. Intumescent wrap | 8. PE-foam insulation |

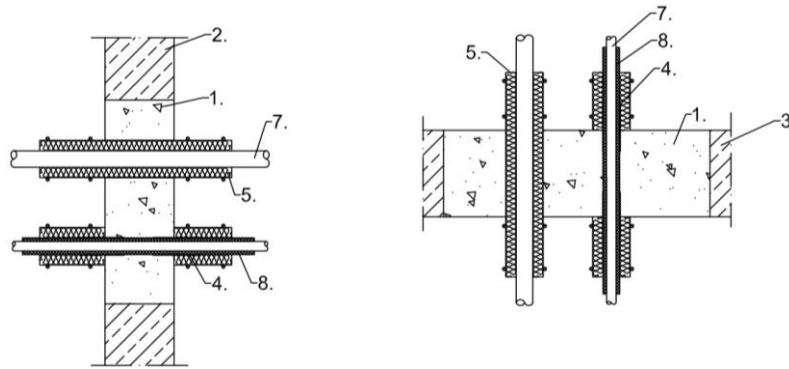
Combustible pipes $\varnothing \leq 160$ mm with / without 5 mm PE-foam acoustic insulation with pipe collar



1. Mortar ≥ 150 mm thickness
- 1a. Mortar ≥ 100 mm thickness
2. Rigid wall / flexible wall ≥ 100 mm thickness
3. Rigid floor ≥ 150 mm thickness

4. Pipe collar
5. Noise insulation made of PE
6. Combustible pipes
7. Fastening

Multilayer pipes “Henco pipes” $\varnothing \leq 32$ mm with non-combustible insulation with intumescent wrap

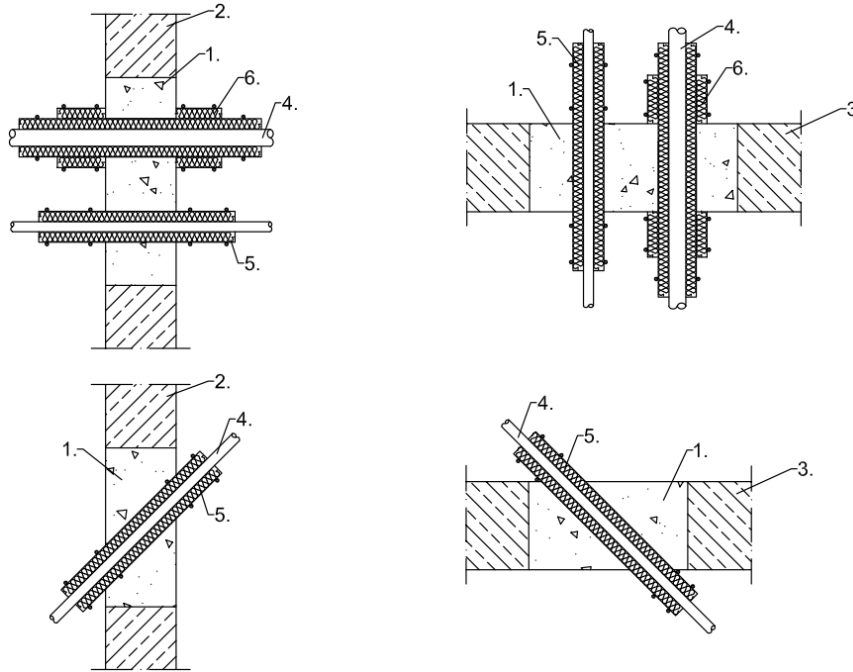


Outside \varnothing [mm]	Thickness PEF-insulation [mm]	Wall thickness [mm]	Intumescent wrap		Protective insulation “Lamella mat”		Fire resistance class	
			Width [mm]	Qty. layers [n]	Length L [mm]	Thick. D [mm]	Wall	Floor
Multilayer pipes “Henco STANDARD”								
≤ 12	-	1,6	-	-	≥ 250	≥ 20	EI 120 U/C	EI 120 U/C
≤ 32		3,0						
≤ 63		4,5						
Multilayer pipes “Henco STANDARD” with PE-foam insulation								
≤ 14	6	2,0	100 (50 inside seal / 50 outside seal)	1 (25 mm overlapping)	≥ 250	≥ 20	EI 120 U/C	EI 120 U/C
≤ 26	6 – 13	3,0						
≤ 32	6 - 10	2,0						

Dimensions in mm

- | | |
|--|--|
| 1. Mortar ≥ 150 mm thickness | 5. Protective insulation made of lamella mat |
| 2. Rigid wall ≥ 150 mm thickness | 6. Combustible pipes |
| 3. Rigid floor ≥ 150 mm thickness | 7. Multilayer pipes “Henco pipes” |
| 4. Intumescent wrap | 8. PE-foam insulation |

Non-combustible pipes with non-combustible insulation installed in an angle of 45° - 90°



Penetrations seals with lamella mat "Klimarock"

Pipe material	Outside pipe Ø [mm]	Length L [mm]	Thickness D [mm]	Fire resistance class	
				Wall	Floor
Copper	≤ 15,0	≥ 250	≥ 20	EI 120 C/U	EI 120 C/U
	> 15,0 - ≤ 28,0	≥ 500	≥ 20		
	> 28,0 - ≤ 42,0		≥ 30		
	> 42,0 - ≤ 54,0		≥ 40		
	> 54,0 - ≤ 88,9		≥ 60		
> 88,9 - ≤ 108,0*	≥ 1000	≥ 30			
Steel, stainless steel, cast iron	≤ 15,0	≥ 250	≥ 20	EI 120 C/U	EI 120 C/U
	> 15,0 - ≤ 28,0	≥ 500	≥ 20		
	> 28,0 - ≤ 42,0		≥ 30		
	> 42,0 - ≤ 114,3		≥ 40		
	> 114,3 - ≤ 168,3				
> 168,3 - ≤ 323,9*	≥ 1000	≥ 40			

*Additional protective insulation made of mineral fibre mat (L1 ≥ 500 mm x D1 ≥ 30 mm)

Penetrations seals with mineral fibre shells "Conlit 150U"

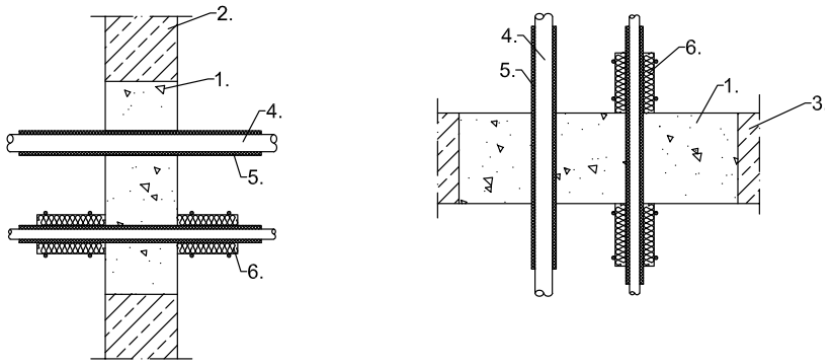
Pipe material	Outside pipe Ø [mm]	Length L [mm]	Thickness D [mm]	Fire resistance class	
				Wall	Floor
Copper	≤ 15,0	≥ 250	≥ 22,5	EI 120 C/U	EI 120 C/U
	> 15,0 - ≤ 28,0	≥ 500	≥ 26		-
	> 15,0 - ≤ 42,0		≥ 19		
	> 28,0 - ≤ 54,0		≥ 38		
	> 54,0 - ≤ 108,0		≥ 38		
Steel, stainless steel, cast iron	≤ 15,0	≥ 250	≥ 22,5	EI 120 C/U	EI 120 C/U
	> 15,0 - ≤ 28,0	≥ 500	≥ 26		
	> 15,0 - ≤ 42,0		≥ 19		
	> 28,0 - ≤ 54,0		≥ 38		
	> 54,0 - ≤ 114,3		≥ 33		
	> 114,3 - ≤ 168,3	≥ 1000	≥ 40	EI 120 C/U	
> 168,3 - ≤ 323,9*	EI 90 / E 120 C/U				

*Additional protective insulation made of mineral fibre mat (L1 ≥ 500 mm x D1 ≥ 40 mm)

Dimensions in mm

- | | |
|-----------------------------------|---|
| 1. Mortar ≥ 150 mm thickness | 4. Non-combustible pipes |
| 2. Rigid wall ≥ 150 mm thickness | 5. Insulation made of mineral fibre mats / shells |
| 3. Rigid floor ≥ 150 mm thickness | 6. Protective insulation made of mineral fibre mats |

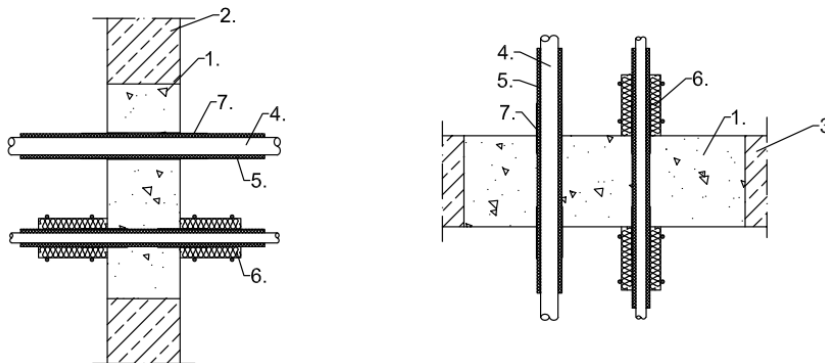
Non-combustible pipes with combustible insulation



Pipe material	Outside pipe Ø [mm]	Length L [mm]	Thickness D [mm]	Fire resistance class		
				Wall	Floor	
Copper	≤ 28,0	≥ 250	25	EI 120 C/U	EI 120 C/U	
	≤ 28,0	≥ 500	26 – 51			
	> 28,0 - ≤ 88,9		25			
	> 28,0 - ≤ 88,9	≥ 1000	26 - 51			
	> 88,9 - ≤ 108,0*		26 - 52			
Steel, stainless steel, cast iron	≤ 28,0	≥ 250	25			
	≤ 28,0	≥ 500	26 – 51			
	> 28,0 - ≤ 88,9		25			
	> 28,0 - ≤ 88,9	≥ 1000	26 – 51			-
	> 88,9 - ≤ 170,0*		52			
	> 88,9 - ≤ 170,0		26 - 52	EI 120 C/U		

*Additional protective insulation made of mineral fibre mat (L1 ≥ 500 mm x D1 ≥ 40 mm)

Non-combustible pipes with combustible insulation with intumescent wrap



Pipe material	Outside pipe Ø [mm]	Insulation thickness [mm]	Intumescent wrap						Fire resistance class	
			Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
Copper	≤ 28,0	9 - 25	125	2	2	0	50	75	EI 120 C/U	
	≤ 42,0	10 – 44								
	≤ 54,0	13 – 50								
	≤ 76,0	13							EI 90 C/U	
		14 – 50								
	≤ 88,9*	19 – 50								
≤ 108,0**	25 – 50	EI 120 C/U	EI 120 C/U							
Steel, stainless steel, cast iron	≤ 168,3*	19 - 50								

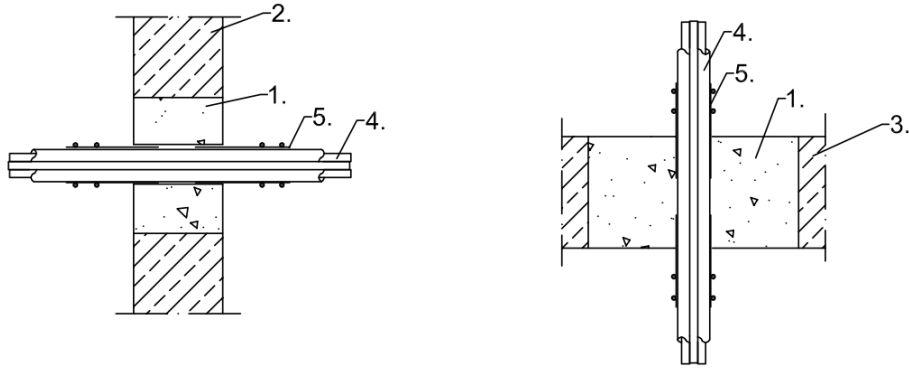
*Additional protective insulation made of mineral fibre mat (L1 ≥ 500 mm x D1 ≥ 40 mm)

**Additional protective insulation made of mineral fibre mat (L1 ≥ 750 mm x D1 ≥ 40 mm)

Dimensions in mm

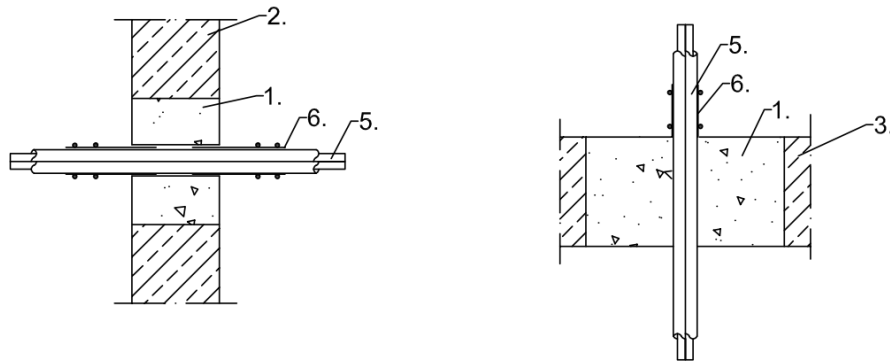
- | | |
|-----------------------------------|---|
| 1. Mortar ≥ 150 mm thickness | 5. FEF-insulation |
| 2. Rigid wall ≥ 150 mm thickness | 6. Protective insulation made of mineral fibre mats / -shells |
| 3. Rigid floor ≥ 150 mm thickness | 7. Intumescent wrap |
| 4. Non-combustible pipes | |

HVAC split line combinations “Tubolit Duo Split” with intumescent wrap



Pipe material	Outside pipe Ø [mm]	Qty. Add. Cables Ø ≤ 14 [mm]; [n]	Pipe insulation [type]; [mm]	PE pipe Ø [mm]	Intumescent wrap						Fire resistance class	
					Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
Copper	2 x ≤ 10/18	2	PEF ≤ 9,0	≤ 25	125	2	2	0	50	75	EI 120	EI 120

Double solar pipes “NanoSUN2” with intumescent wrap

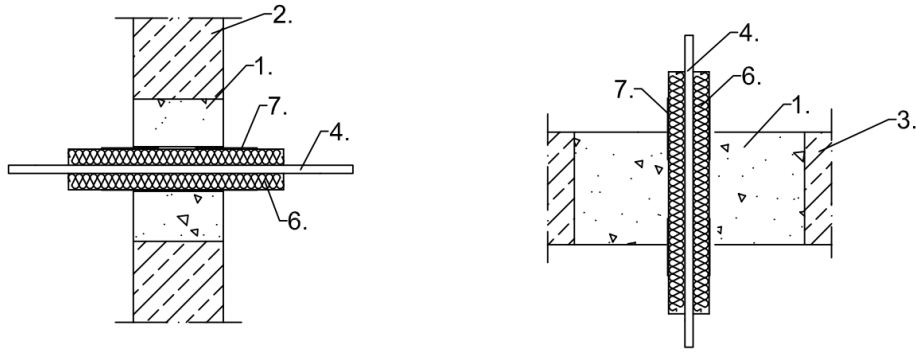


Pipe material	Intumescent wrap						Fire resistance class	
	Wrap width [mm]	Qty. wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
DIN 16 – DN 25	125	2	1	≥ 40	0	125	EI 120 C/U	EI 120 C/U
		1 (above)						

Dimensions in mm

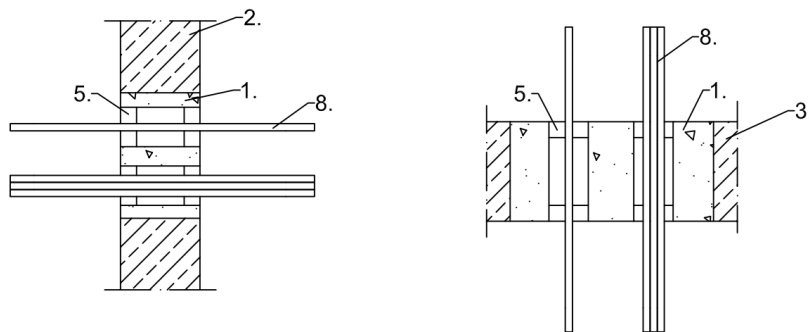
- 1. Mortar ≥ 150 mm thickness
- 2. Rigid wall ≥ 150 mm thickness
- 3. Rigid floor ≥ 150 mm thickness
- 4. HVAC split line combinations
- 5. Double solar pipes “NanoSUN2”
- 6. Intumescent wrap

“HANSA FLEX” hydraulic hoses with lamella mat with intumescent wrap



Outside pipe Ø [mm]	Protective insulation made of lamella mat		Intumescent wrap						Fire resistance class	
	Length L ½ [mm]	Thickness D [mm]	Wrap width [mm]	Qty, wraps [n]	Qty. layers [n]	Overlapping [mm]	Inside seal [mm]	Outside seal [mm]	Wall	Floor
≤ 55,9	≥ 250	≥ 20	125	2	1	0	50	75	EI 120	EI 120

Cable Tube with cables or cable bundles

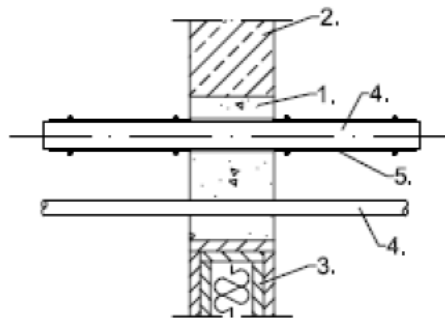


Dimensions in mm

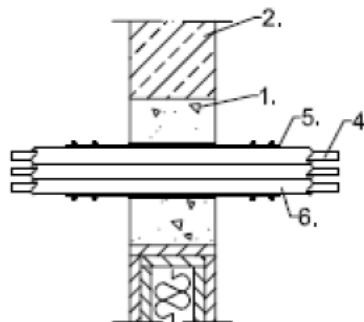
- | | |
|---|---------------------|
| 1. Mortar ≥ 150 mm thickness | 5. Cable Tube |
| 2. Rigid wall ≥ 150 mm thickness | 6. Lamella mat |
| 3. Rigid floor ≥ 150 mm thickness | 7. Intumescent wrap |
| 4. “HANSA FLEX” hydraulic hoses with wire mesh insert | 8. Cables |

Mixed penetration sealing system made of mortar

Cables $\varnothing \leq 80$ mm, cables bundles $\varnothing \leq 150$ mm with cables $\varnothing \leq 21$ mm and cable trays with intumescent wrap (wrap width = 125 mm)



Electrical installation conduit $\varnothing \leq 32$ mm, with conduit-bundles $\varnothing \leq 100$ mm with intumescent wrap (wrap width = 125 mm)

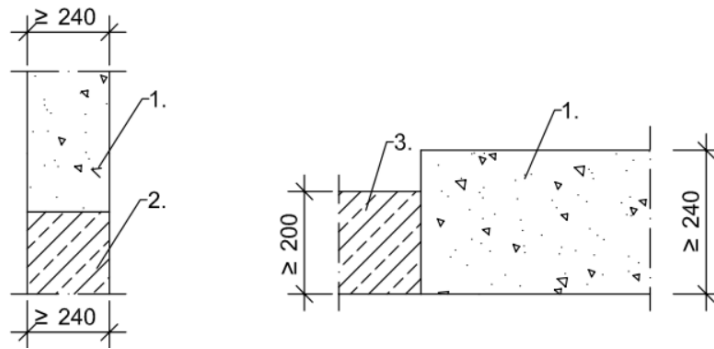


	Dimensions [mm]	Measures	Fire resistance class
			Wall
Cables	$\varnothing \leq 21$	-	EI 90
Cable bundles	$\varnothing \leq 60$ Cable $\varnothing \leq 21$		
Plastic conduits	$\varnothing \leq 16$		
Cable Tubes	Length ≥ 150		
Cables	$\varnothing \leq 50$	Intumescent wrap	EI 90 / E 120
	$\varnothing \leq 80$		
Cable bundles	$\varnothing \leq 150$ Cable $\varnothing \leq 21$		EI 120
EIC made of plastic, single	EIC $\varnothing \leq 32$ Cable $\varnothing \leq 21$		EI 120 U/U
EIC made of plastic, bundled	Bundle $\varnothing \leq 100$ EIC $\varnothing \leq 32$ Cable $\varnothing \leq 21$		

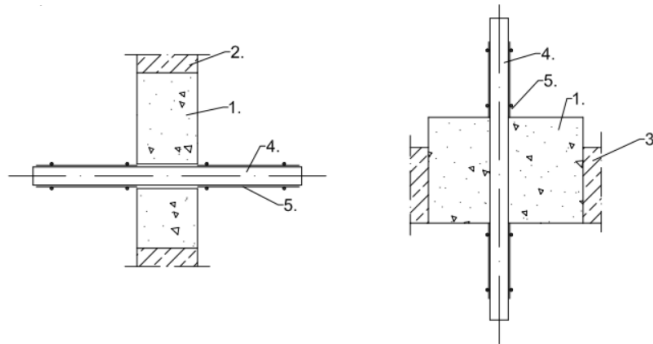
Dimensions in mm

- | | |
|---|--|
| 1. Mortar ≥ 100 mm thickness | 5. Intumescent wrap |
| 2. Rigid wall ≥ 100 mm thickness | 6. Electrical installation pipes (conduits), made of plastic |
| 3. Plasterboard walls ≥ 100 mm thickness | |
| 4. Cable | |

Mixed penetration sealing system made of mortar



Cables $\varnothing \leq 80$ mm, cables bundles $\varnothing \leq 100$ mm with cables $\varnothing \leq 21$ mm and cable trays with intumescent wrap (wrap width = 500 mm)



	Measures	Fire resistance class	
		Wall	Floor
Cables $\varnothing \leq 80$ mm	Intumescent wrap	EI 240	EI 240
Cable bundles $\varnothing \leq 100$ mm With cables $\varnothing \leq 21$ mm		EI 240	EI 240

Dimensions in mm

1. Mortar ≥ 240 mm thickness
2. Rigid wall ≥ 240 mm thickness
3. Rigid floor ≥ 200 mm thickness

4. Cable, cable bundle, cable trays
5. Intumescent wrap