

1. Unique identification of product	Firetect® Graphite sealant	
2. Intended use	service closure for structural openings for pipe and cable penetrations, to form a penetration seal in case of fire to reinstate the fire resistance of: - standard flexible walls \geq 100mm - standard rigid walls \geq 100mm - standard rigid floors \geq 150mm incl. flexible ceilings	
3. Manufacturer	KLF Building Products BV Techniekweg 11, 4207 HC Gorinchem, The Netherlands	
4. Authorised representative	not applicable	
5. System of AVCP	System 1	
6a. Harmonised standard	not applicable	
Notified body	not applicable	
6b. European Assessment Document (EAD)	350454-00-1104	
European Technical Assessment (ETA)	ETA-14/0273	
Certificate of Constancy of Performance	0960-CPR-SKGIKOB.011133.01.NL	
Technical Assessment Body (TAB)	SKG-IKOB	
Identification notified body	No. 0960	
7. Declared performances		
essential requirements	characteristics	performances
BWR 1 Mechanical resistance + stability		not relevant
BWR 2 Safety in case of fire EN 13501-1 EN 13501-2	reaction to fire resistance to fire	Class F per tested assembly; EI 20 up to EI 240, see ANNEX BWR2 + ANNEX A
	field of application	
BWR 3 Hygiene, health + environment EAD 350454-00-1104, §2.2.3 EAD 350454-00-1104, §2.2.4 EAD 350454-00-1104, §2.2.5	air permeability water permeability content, emission and/or release of dangerous substances	IA1, S/W3 npd npd acc. CLP classified as not dangerous acc. Regulation 1272/2008
BWR 4 Safety + accessibility in use EAD 350454-00-1104, §2.2.6 EAD 350454-00-1104, §2.2.7 EAD 350454-00-1104, §2.2.8 EAD 350454-00-1104, §2.2.9	mechanical resistance + stability resistance to impact / movement adhesion durability	npd npd npd Z ₂ (internal use)
BWR 5 Protection against noise EAD 350454-00-1104, §2.2.10	airborne sound insulation	R _{s,w} = 43 dB up to 53 dB see ANNEX B
	field of application	
BWR 6 Energy economy + heat retention EAD 350454-00-1104, §2.2.11 EAD 350454-00-1104, §2.2.12	thermal properties water vapour permeability	npd npd
General aspects relation to fitness for use EAD 350454-00-1104, §1.2.2	assumed working life for the intended use	10 years
8. Specific Technical Documentation	not applicable	npd= no performance determined

The performances of the products identified are in conformity with the declared performances. This declaration of performance is issued, in accordance with Regulation 305/2011, under the sole responsibility of the manufacturer.

Signed for and on behalf of the manufacturer in Gorinchem dated 12-05-2023 by C. Buikema

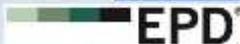
field of application (FoA)	Firetect® Graphite sealant
	tested and certified by ETA-14/0273; fire resistance performances and assembly methods for uses in:

constructive element ¹⁾	
fire rated walls acc. EN 1363-1	<ul style="list-style-type: none"> - flexible wall ≥100mm; metal or timber studs, plaster board type A + wall insulation - flexible wall ≥75mm; metal or timber studs, plaster board type A, non-insulated - flexible wall ≥100mm; metal or timber studs, plaster board type A, non-insulated - shaft wall ≥75mm; metal or timber studs, plaster board type A + wall insulation - rigid wall ≥100mm: blockwork/concrete/masonry, density ≥ 600 kg/m³ - rigid wall ≥150mm: blockwork/concrete/masonry, density ≥ 600 kg/m³ - CLT wall ≥100mm: cross-laminated timber
fire rated floors acc. EN 1363-1	<ul style="list-style-type: none"> - rigid floor ≥150mm: (aerated) concrete, density ≥ 600 kg/m³ - CLT floor ≥140mm: cross-laminated timber - flexible ceiling ≥150mm: metal studs, plaster board type F
¹⁾ the constructive element must be classified acc. EN 13501-2 for the required fire resistance period	

fire resistance	
field of application:	acc. EN 13501-2 / 1366-3
EI 20 up to EI 240: Graphite sealant	structural openings for pipe + cable penetrations: ²⁾
<ul style="list-style-type: none"> - PE/PP/PVC - PP-R - PP-MD - PP-MX - aluPE-X - PE-Xa - copper - steel - cable trays incl. cable ladders + wire mesh - cable bundles 	<ul style="list-style-type: none"> ≤ Ø125mm ≤ Ø110mm ≤ Ø110mm ≤ Ø110mm ≤ Ø75mm ≤ Ø32 (54) mm ≤ Ø76mm ≤ Ø219mm ≤ 600x1200mm +25% in walls ≤ 1000x1200 mm / 600x5000mm in floors ≤ Ø121mm
	<ul style="list-style-type: none"> also in PA board also in cable trays + PA board also with pipe sockets also with pipe insulation also with pipe insulation also with pipe insulation + PA board also with pipe insulation + PA board coat back is not required coat back is not required also in shaft walls
²⁾ support services; support distance: see principle detail	

environmental performances	BREEAM	LEED	VOC	EN 717-1§	EMICODE	M1	Indoor Air
example protocols, click for full list	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	A+	E1	EC1 PLUS	<input checked="" type="checkbox"/>	Comfort GOLD
EPD reg.no. S-P-0							

directions for use: application, fasteners, finish & maintenance: see TDS

product information	
Product certification by DoP; more info on certification of CE building products through ETA at firetect.eu/certification	
- full DoP version: declaration of performance + ANNEX BWR2 + ANNEX A + ANNEX B; upon request	
- web DoP version: declaration of performance + ANNEX BWR2; other info can be downloaded at firetect.eu/download	
- FoA charts; suitable products per type of fireseal + EI performance + product / joint details	
- TDS: general directions for use + product specs	
Consult firetect.eu/download for updated versions; product development + fire tests are ongoing processes at KLF.	
Contact KLF for other EI requirements and (non)standard or complex site requirements; mail info@klf.nl	
  	

How-to-read

charts Field of Application Firetect® fire rated building products

certification

Use FoA charts as *guideline* to quickly identify suitable Firetect products within classification.

Always apply acc. details as stated per principle detail; click [EI performance](#) in chart.

Product certification of CE marked building products is done by DoPs (Declaration of Performance), rather than test reports; more info at www.firetect.eu. Charts do not include all test data. Contact KLF for non-standard (EI) requirements: +31 345 63 97 97 or info@klf.nl.

supporting construction

product has been tested in + certified for constructive element, default type:

- 1** flexible wall \geq 100 mm; metal or timber studs, plaster board type A + wall insulation
- 1-n**(xxx) flexible wall \geq (xxx) mm; metal or timber studs, plaster board type F, **no** wall insulation
- 1-sh**(xxx) shaft wall \geq (xxx) mm, **non**-insulated
(xxx) = wall thickness in mm; see in charts with EI performance
- 1-sw** sandwich wall \geq 100 mm
- 2** rigid wall \geq 100 mm: blockwork/concrete/masonry, density \geq 600 kg/m³
- 3** rigid wall \geq 150 mm: blockwork/concrete/masonry, density \geq 600 kg/m³
- 4** flexible ceiling \geq 150 mm: metal studs, plaster board type F
- 5** rigid floor \geq 150 mm: (aerated) concrete, density \geq 600 kg/m³
- 6** CLT wall \geq 100 mm
- 7** CLT floor \geq 140 mm

Note

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period.

tested in construction type **1**

also applicable in constructive element type **2+3** if wall thickness + m³ weight are either equal or increased

tested in construction type **2**

also application in constructive element type **3** if wall thickness + m³ weight are either equal or increased

tested in **PA board**

also applicable in FR Mortar fireseal; contact KLF for more info

"you may always upgrade, but never downsize"

pipe penetrations

type of **plastic**

all plastic pipe types acc. [EN norms](#)

type of **metal**

all copper or steel or pipes; also suitable for material with lower thermal conductivity + melting point at least equal to tested material

EI

fire resistance in minutes (integrity + insulation)

U/U + U/C + C/U + C/C

pipe end: U = uncapped and C = capped, at resp. exposed / unexposed side

1S + 2S

PA board coated on 1 side (1S) or 2 sides (2S)

pipe insulation

- all synthetic rubber min. 60 kg/m³ eg Armaflex

- all glass wool or rock wool min. 75 kg/m³ eg Climpipe or U Protect Pipe Section Alu2

- all polyolefin foam min. 28 kg/m³ eg Uponor

- all PIR min. 33 kg/m³

LS

local sustained = partly insulated pipe; **total** insulation length in mm through constructive element (symmetrically)

LI

local interrupted = partly insulated pipe; insulation length in mm **on either side** of constructive element

CS

continued sustained = fully insulated pipe

CI

continued interrupted = fully insulated pipe, yet interrupted in constructive element

max. opening

see principle detail, plus:

- allowed **oversize opening** \leq 15mm with collar + wrap; if larger, use PA board:

walls: max. 600 x 1200 mm + 25%, floors: max. 1000 x 1200 mm up to 600 x 5000 mm

- allowed **'oversized' collar** \leq 15mm, eg use Ø90 collar for Ø80 pipe

Note

Support pipes; support distance: see principle detail.

Fasten glass wool or rock wool individually (not wrapped!) with steel wire; see principle detail.

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How-to-read

charts Field of Application Firetect® fire rated building products

certification

Use FoA charts as *guideline* to quickly identify suitable Firetect products within classification.

Always apply acc. details as stated per principle detail; click EI performance in chart.

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cable penetrations

type of **service**

all steel (galvanised) cable trays + ladders, non-perforated + perforated

all steel (galvanised) mesh wire cable trays

EI

fire resistance in minutes (integrity + insulation)

minimum working spaces

	configuration	horizontal	vertical
Min. distances from opening edges	LARGE	35mm	30 mm
	MIXED	30 mm	0 mm
Min. distances between services	LARGE	5mm	100 mm
	MIXED	20 mm	20 mm

cable groups

group 1 - small sheathed	max. Ø 21mm
group 2 - medium sheathed	max. Ø 50mm
group 3 - large sheathed	max. Ø 80mm
group 4 - data + fibre optic	max. Ø 100mm bundle
group 5 - non-sheathed	max. Ø 23mm
conduit, steel or plastic	max. Ø 16mm

max. opening

see principle detail

Note

Support cable services; support distance: see principle detail.

blank seals

EI

gaps + openings **without any service penetrations**

fire resistance in minutes (integrity + insulation)

[up to EI 120](#) for application in walls + floors

disclaimer

Consult www.firetect.eu/download for updates; product development + fire tests are ongoing processes at KLF.

Mentioned brand names are for illustrative purpose only, to indicate type of material tested.

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FoA plastic pipes

Firetect® fire rated building products are applicable for:

PE
polyethylene

aluPE-X
heating + water supply
aka PEX-AL-PEX,
Al-Composite or Multilayer

PE-Xa
high pressure + temperature
cross-linked PE

PP
polypropylene

PP-R
high pressure + temperature

PP-MD
low noise

PVC
polyvinyl chloride

PE-LD + PE-HD
dØ up to 250 mm s1 3,2 up to 22,7 mm
pipes within range (dØ+s1) acc.
EN 1519-1 EN 12666-1 EN 12201-2 EN ISO 15494 DIN 8074 DIN 8075 DIN 19535-10
eg Wavin TS Agru PE 100 Agru PE 100-RC

aluPE-X
dØ up to 75 mm s1 2,0 up to 7,5 mm
pipes within range (dØ+s1) acc.
EN 1519-1 EN 12201-2 EN 12666-1 EN ISO 15494 DIN 8074 DIN 8075 DIN 19535-10
eg Uponor MLC TECEflex Geberit Mepla Kekelit Kelox KM 110 Rehau Rautitan stabil Henco Alupex Begetube Alpex

PE-Xa
dØ up to 32 (54) mm s1 2,2 up to 4,4 mm
pipes within range (dØ+s1) acc.
EN 1519-1 EN 12201-2 EN 12666-1 EN 15875 EN ISO 15494 ISO 21003 DIN 8074 DIN 8075 DIN 19535-10
eg Uponor Aqua Geberit Mepla Kekelit Kelox KM 110 Rehau Rautitan flex Rehau Rautitan stabil

PP
dØ up to 250 mm s1 2,7 up to 22,7 mm
pipes within range (dØ+s1) acc.
EN 1451-1 EN ISO 15494 EN ISO 15874 DIN 8077 DIN 8078
eg Dyka PP Agru PP-H

PP-R
dØ up to 110 mm s1 3,7 up to 15,1 mm
pipes within range (dØ+s1) acc.
EN 1451-1 EN ISO 15494 EN ISO 15874 ISO 21003 DIN 8077 DIN 8078
eg Aquatherm Blue Aquatherm Green Aquatechnik PP-R Akatherm PP-R Wavin Pilsa

PP-MD
dØ up to 160 mm s1 1,8 up to 5,4 mm
pipes within range (dØ+s1) acc.
EN 1451-1 EN ISO 15494 EN ISO 15874 DIN 8077 DIN 8078
eg Uponor Decibel Geberit Silent-PP PipeLife Master 3 Rehau Raupiano Plus Poloplast Polo-Kal NG / 3S Wavin SiTech / AS Valsir Silere / Triplus

PP-MX
dØ up to 160 mm s1 2,7 up to 5,7 mm
pipes within range (dØ+s1) acc.
EN 1451-1 EN ISO 15494 EN ISO 15874 DIN 8077 DIN 8078
eg Geberit Silent-Pro

PVC + PVC-C + PVC-U
dØ up to 400 mm s1 2,7 up to 22,7 mm
pipes within range (dØ+s1) acc.
EN 1329-1 EN 1453-1 EN 1452 EN 1566-1 EN ISO 15493 ISO 15877 DIN 8061 DIN 8062 DIN 19531-10

Scope of pipes tested with Firetect products
Fire performances are valid for range of pipe diameter **dØ** + pipe wall thickness **s1** within the same pipe material.
Per FoA chart (pipe **material**) is stated what Firetect product to use within range (dØ+s1).
Always install services acc. manufacturer's instructions; support distance ≤ 500mm (walls) and ≤ 400mm (floors).

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PE + PP + PVC classification ≤ Ø250 mm

Fire performances are valid for **range** of dØ pipe diameter + s1 pipe thickness within the same pipe material:

PE + PP + PVC acc. EN norms
 dØ up to 250 mm
 s1 up to 22,7 mm
 pipe brands eg Pipelife, Agru, Dyka, Wavin

suitable Firetect products within classification: *

dØ s1 pipe insulation

up to Ø110		2,7 up to 10,0	non-insulated
	PE	3,4 up to 10,0	
	PP	2,7 up to 6,3	
	PVC	2,7 up to 10,0	

Ø125		3,1 up to 11,7	non-insulated
	PE	3,9 up to 11,7	
	PP	3,1 up to 7,1	
	PVC	3,1 up to 11,7	

Ø140 - Ø160		4,0 up to 14,6	non-insulated
	PE	4,9 up to 14,6	
	PP	4,0 up to 14,6	
	PVC	4,0 up to 14,6	

Ø200		4,9 up to 18,2	non-insulated
	PE	6,2 up to 18,2	
	PP	4,9 up to 18,2	
	PVC	4,9 up to 18,2	

Ø250		6,2 up to 22,7	non-insulated
	PE	9,6 up to 22,7	
	PP	6,2 up to 22,7	
	PVC	6,2 up to 22,7	

* Alternatively, use Acrylic sealant or PA sealer for pipes ≤ Ø50mm; see [individual results](#).

Graphite sealant
DoP CPR-14/0273

FMU collar
DoP CPR-14/0251

Wrap
DoP CPR-14/0251

walls floors

EI 90 in wall 1+2+3	EI 90 in floor 5
EI 90 in wall 1-n100	
EI 30 in wall 1-n75	
EI 90 in wall 6	EI 90 in floor 7

walls floors

EI 60 in wall 1+2+3	EI120 in ceiling 4
EI 60 in wall 1-n100	EI 120 in floor 5
EI 30 in wall 1-n75	EI 90 in floor 7
also on PA board: screwed on or cast-in	also on PA board: screwed on or cast-in

walls floors

EI 120 in wall 1+2+3	EI 180 in floor 5
2 layer	2 layer
	EI 90 in floor 7
	2 layer

EI 60 in wall 1+2+3	EI 60 in wall 1-n100
collar Ø125	

EI 60 in wall 1+2+3	EI 180 in floor 5
2 layer	3 layer

EI 60 in wall 1+2+3	EI 90 in floor 5
EI 60 in wall 1-n100	collar Ø140 or Ø160
collar Ø140 or Ø160	collar Ø140 or Ø160
	EI 180 in floor 5
	3 layer

EI 60 in wall 1+2+3	EI 60 in wall 1-n100
collar Ø200	

EI 60 in wall 1+2+3	EI 60 in wall 1-n100
collar Ø250	

non-standard configurations eg angled, bundled or XL:
up to **Ø400mm** with FMU collar

joint details: min. W x D, default:
walls: 10 x 25 mm, apply on 2 sides
floors: 15 x 25 mm, apply on 2 sides

default:
walls: apply on 2 sides
floors: apply on 1 side
always apply smoke seal Acrylic sealant on **2** sides

default:
walls: apply on 2 sides
floors: apply on 1 side
always apply smoke seal Acrylic sealant on **2** sides

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be supported; support distance walls max. 500mm support distance floors max. 400mm

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PP-R classification ≤ Ø125 mm

Fire performances are valid for **range** of dØ pipe diameter + s1 pipe thickness within the same pipe material:
PP-R acc. EN norms
 dØ 40 up to 125 mm
 s1 3,7 up to 17,1 mm
 pipe brands eg Aquatherm, Aquatechnik, Wavin Pilsa

suitable Firetect products within classification:

dØ	s1	pipe insulation	Graphite sealant DoP CPR-14/0273		FMU collar DoP CPR-14/0251		Wrap DoP CPR-14/0251
			walls	floors	walls	floors	floors
Ø40	3,7 up to 5,5	non-insulated + pipe insulation + polythylene rubber, min. 25 kg/m ³ 25 mm	EI 120 in wall 1+2 EI 240 in wall 3	results max. EI 240 in floor 5	results max. EI 120 in wall 1+2 EI 240 in wall 3 collar Ø40	results max. EI 240 in floor 5 collar Ø40	
			individual result: EI 60 in wall 1-n100 in PA board				
Ø50	4,6	non-insulated	individual result: EI 60 in wall 1-n75				
Ø63	5,8 up to 8,6	non-insulated	results max. EI 120 in wall 1+2 EI 240 in wall 3	results max. EI 240 in floor 5	EI 90 in wall 1+2 EI 120 in wall 3 collar Ø63	results max. EI 120 in floor 5 collar Ø63	
			individual result: EI 60 in wall 1-n75				
Ø75	6,8 up to 10,3 s1 up to 10,3	non-insulated	results max. EI 120 in wall 1+2 EI 240 in wall 3	results max. EI 240 in floor 5	EI 90 in wall 1+2 EI 120 in wall 3 collar Ø75	EI 120 in floor 5 collar Ø75	
			individual result: EI 60 in wall 1-n75				
Ø90	8,2	+ pipe insulation + polythylene rubber, min. 25 kg/m ³ 25 mm	individual result: EI 60 in wall 1-n100				
Ø110	10,0 up to 15,1	non-insulated	results max. EI 120 in wall 1+2+3	results max. EI 180 in floor 5	EI 60 in wall 1+2+3 collar Ø110	results max. EI 120 in floor 5 collar Ø110	
			individual result: EI 60 in wall 1-n75				
Ø125	11,4 up to 17,1	non-insulated			results max. EI 180 in floor 5 collar Ø125	EI 240 in floor 5 3 layer	
			individual result: EI 60 in wall 1-n75				

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. **opening** in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be **supported**; support distance walls max. 500mm support distance floors max. 400mm

Min. length pipe insulation LI / LS / CS / CI: see principle detail.

joint details: min. W x D, default:
 walls: 10 x 40 mm, apply on 2 sides
 floors: 15 x 40mm, apply on 2 sides

default:
 walls: apply on 2 sides
 floors: apply on 1 side
 always apply smoke seal Acrylic sealant on 2 sides

default:
 floors: apply on 1 side
 always apply smoke seal Acrylic sealant on 2 sides

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PP-MD classification ≤ Ø160 mm

Fire performances are valid for **range of dØ** pipe diameter + **s1** pipe thickness within the same pipe material:

PP-MD acc. EN norms
 dØ 32 up to 160 mm
 s1 1.8 up to 5,4 mm
 pipe brands eg Uponor, Poloplast, Rehau, Geberit, Pipelife
 acoustical damper brands eg Uponor Bottom Bend

suitable Firetect products within classification:

		Graphite sealant DoP CPR-14/0273		FMU collar DoP CPR-14/0251		Wrap DoP CPR-14/0251				
dØ	s1	walls	floors	walls	floors	walls	floors			
Ø32	1,8	non-insulated	EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5	EI 120 in wall 1+2 EI 240 in wall 3 collar Ø40	EI 240 in floor 5 collar Ø40	EI 120 in wall 1+2 EI 180 in wall 3 1 layer	EI 180 in floor 5 2 layer		
Ø50	2,0	non-insulated	EI 90 in wall 1+2 EI 180 in wall 3	EI 180 in floor 5	EI 120 in wall 1+2 EI 180 in wall 3 collar Ø50	EI 240 in floor 5 collar Ø50	EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 1 layer		
Ø75	2,6	non-insulated	EI 60 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5	EI 120 in wall 1+2 EI 240 in wall 3 collar Ø75	EI 240 in floor 5 collar Ø75	EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 1 layer		
Ø110	3,8	non-insulated	+ pipe socket	EI 60 in wall 1+2+3	EI 60 in floor 5	EI 120 in wall 1+2+3 collar Ø110	EI 180 in floor 5 collar Ø110	EI 120 in wall 1+2+3 2 layer	EI 240 in floor 5 2 layer	
						EI 60 in wall 1+2+3 collar Ø140	EI 240 in floor 5 collar Ø140	EI 90 in floor 7 collar Ø160 in FR Mortar or PA board	EI 90 in floor 7 2 layer	
Ø160	5,4	non-insulated	+ pipe socket	EI 60 in wall 1+2+3 collar Ø160	EI 180 in floor 5 collar Ø160	EI 60 in wall 1+2+3 collar Ø200		EI 240 in floor 5 3 layer		
		joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides				

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be **supported**;
 support distance walls max. 500mm
 support distance floors max. 400mm

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PP-MX classification ≤ Ø160 mm

Fire performances are valid for range of dØ pipe diameter + s1 pipe thickness within the same pipe material:

PP-MX acc. EN norms

dØ 50 up to 160 mm
s1 2,7 up to 5,7 mm
pipe brands eg Geberit

suitable Firetect products within classification:

		Graphite sealant DoP CPR-14/0273		FMU collar DoP CPR-14/0251		Wrap DoP CPR-14/0251	
dØ	s1	walls	floors	walls	floors	walls	floors
Ø50	2,7	non-insulated					
		EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5	EI 90 in wall 1+2 EI 240 in wall 3 collar Ø50	EI 240 in floor 5 collar Ø50	EI 120 in wall 1+2 EI 240 in wall 3 2 layer	EI 240 in floor 5 2 layer
Ø50	2,7	+ pipe socket					
		EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5	EI 120 in wall 1+2 EI 240 in wall 3 collar Ø63	EI 240 in floor 5 collar Ø63	EI 120 in wall 1+2 EI 240 in wall 3 2 layer	EI 240 in floor 5 2 layer
Ø110	4,2	non-insulated					
		EI 90 in wall 1+2+3	EI 60 in floor 5	EI 90 in wall 1+2+3 collar Ø110	EI 240 in floor 5 collar Ø110	EI 120 in wall 1+2+3 2 layer	EI 180 in floor 5 2 layer
Ø110	4,2	+ pipe socket					
			EI 240 in floor 5	EI 90 in wall 1+2+3 collar Ø125	EI 240 in floor 5 collar Ø125	EI 60 in wall 1+2+3 3 layer	EI 60 in floor 5 3 layer
Ø125	4,7	non-insulated					
				EI 120 in wall 1+2+3 collar Ø125	EI 180 in floor 5 collar Ø125	EI 120 in wall 1+2+3 3 layer	EI 120 in floor 5 3 layer
Ø125	4,7	+ pipe socket					
					EI 180 in floor 5 collar Ø140		EI 240 in floor 5 3 layer
Ø160	5,7	non-insulated					
					EI 120 in floor 5 collar Ø160	EI 90 in wall 1+2+3 3 layer	EI 240 in floor 5 3 layer
Ø160	5,7	+ pipe socket					
		EI 120 in wall 1+2+3 collar Ø200		EI 180 in floor 5 collar Ø200		EI 120 in wall 1+2+3 3 layer	EI 240 in floor 5 3 layer
		joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 10 x 25 mm, apply on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides	

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, non-insulated
- 1-sh: shaft wall ≥ (xxx) mm, non-insulated
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be supported;
support distance walls max. 500mm
support distance floors max. 400mm

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EN norms for plastic pipes

how-to-read

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aluPE-X (composite) classification ≤ Ø75 mm

Fire performances are valid for range of dØ pipe diameter + s1 pipe thickness within the same pipe material:

aluPE-X (composite) acc. EN norms
 dØ 16 up to 75 mm
 s1 2.0 up to 7.5 mm

pipe brands eg Uponor, Rehau, Geberit, Henco
 pipe insulation brands eg Climpipe, Rockwool, Armaflex, U Protect Pipe Section Alu2

dØ s1 pipe insulation

up to Ø25 2.0 up to 2.5 non-insulated

Ø16 up to Ø75 + synth. rubber insulation 2.0 up to 7.5 + pipe insulation + synth. rubber, min. 60 kg/m³ up to 13mm

Ø16 up to Ø75 + glass or rock wool (alu) insulation 2.0 up to 7.5 + pipe insulation + glass or rock wool (alu), min. 75 kg/m³ 20 + 30mm 40mm 50mm 60mm 80mm

suitable Firetect products within classification:

Graphite sealant DoP CPR-14/0273		Acrylic sealant or PA sealer DoP CPR-14/0273		FMU collar DoP CPR-14/0251	Wrap DoP CPR-14/0251	
walls	floors	walls	floors	floors	walls	floors
EI 120 in wall 1+2+3		EI 120 in wall 1+2+3				
EI 60 in wall 1+2+3 EI 90 in wall 1-n100 EI 60 in wall 1-n75 also in PA board	individual results max. EI 90 in floor 5 EI 90 in floor 7	EI 120 in wall 3 EI 90 in wall 6	EI 120 in floor 5 EI 90 in floor 7 10 x 25 mm	EI 90 in floor 7 collar Ø50 - Ø90	EI 60 in wall 1+2+3 2 layer also in PA board	EI 90 in floor 7 2 layer
EI 120 in wall 2+3 in FR Mortar		EI 60 in wall 2+3 in FR Mortar			EI 90 in wall 2+3 1 layer in FR Mortar	
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5				EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 2 layer
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5				EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 2 layer
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5				EI 120 in wall 1+2 EI 240 in wall 3 2 layer	EI 240 in floor 5 2 layer
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5				EI 120 in wall 1+2+3 3 layer	EI 120 in floor 5 3 layer
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5				EI 120 in wall 1+2+3 3 layer	EI 120 in floor 5 3 layer
joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides		joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides		floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides	default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides	

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, non-insulated
- 1-sh: shaft wall ≥ (xxx) mm, non-insulated
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be supported; support distance walls max. 500mm support distance floors max. 400mm

Min. length pipe insulation LI / LS / CS / CI: see principle detail.

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PE-Xa classification ≤ Ø54 mm

Fire performances are valid for range of dØ pipe diameter + s1 pipe thickness within the same pipe material:
PE-Xa acc. EN norms
dØ 15(28) up to 32(54) mm
s1 2.2 up to 4.4 mm
pipe brands eg Uponor, Rehau, Gebelit
pipe insulation brands eg Uponor, Armaflex

dØ	s1	pipe insulation
Ø15 (28)	2.5	non-insulated
		+ pipe insulation + polyolefin rubber, min. 28 kg/m ³ 10mm
Ø16 (25)	2.2	non-insulated
		+ pipe insulation + polyolefin rubber, min. 28 kg/m ³ 10mm
Ø32 (54)	4.4	non-insulated
		+ pipe insulation + polyolefin rubber, min. 28 kg/m ³ 20mm

suitable Firetect products within classification:

Graphite sealant DoP CPR-140273		Acrylic sealant or PA sealer DoP CPR-140273		FMU collar DoP CPR-140251		Wrap DoP CPR-140251	
walls	floors	walls	floors	walls	floors	walls	floors
EI 90 in wall 1+2 EI 240 in wall 3 EI 60 in wall 1-sh75 on PA board	EI 240 in floor 5	EI 90 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5	EI 60 in wall 1+2 EI 240 in wall 3 collar Ø40	EI 240 in floor 5 collar Ø40	EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 1 layer
EI 120 in wall 1+2 EI 240 in wall 3 EI 60 in wall 1-sh75 on PA board	EI 240 in floor 5			EI 120 in wall 1+2 EI 120 in wall 3 collar Ø50	EI 120 in floor 5 collar Ø50	EI 120 in wall 1+2 EI 240 in wall 3 2 layer	EI 240 in floor 5 2 layer
EI 120 in wall 1+2 EI 240 in wall 3 EI 60 in wall 1-sh75 on PA board	EI 240 in floor 5						
EI 120 in wall 1+2 EI 240 in wall 3 EI 60 in wall 1-sh75 on PA board	EI 240 in floor 5	EI 120 in wall 1+2 EI 240 in wall 3 EI 90 in wall 6 EI 90 in wall 7	EI 240 in floor 5 EI 90 in floor 7	EI 120 in wall 1+2 EI 240 in wall 3 collar Ø40	EI 240 in floor 5 collar Ø40	EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 1 layer
EI 120 in wall 1+2 EI 240 in wall 3	EI 240 in floor 5			EI 120 in wall 1+2 EI 120 in wall 3 collar Ø50	EI 120 in floor 5 collar Ø50	EI 120 in wall 1+2 EI 240 in wall 3 1 or 2 layer	EI 240 in floor 5 2 layer
EI 120 in wall 1+2 EI 240 in wall 3 EI 60 in wall 1-sh75 on PA board	EI 240 in floor 5	EI 60 in wall 1+2 EI 180 in wall 3 EI 180 in floor 5	EI 180 in floor 5	EI 120 in wall 1+2 EI 240 in wall 3 collar Ø63	EI 240 in floor 5 collar Ø63	EI 120 in wall 1+2 EI 240 in wall 3 1 layer	EI 240 in floor 5 1 layer
EI 90 in wall 1+2 EI 120 in wall 3	EI 90 in floor 5			EI 60 in wall 1+2 EI 240 in wall 3 collar Ø110	EI 240 in floor 5 collar Ø110	EI 90 in wall 1+2 EI 240 in wall 3 2 layer	EI 240 in floor 5 2 layer
joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides		joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke-seal Acrylic sealant on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smoke-seal Acrylic sealant on 2 sides	

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be **supported**; support distance walls max. 500mm support distance floors max. 400mm

Min. length pipe insulation LI / LS / CS / CI: see principle detail.

'eccentric to zero' position in opening is allowed

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COPPER classification ≤ Ø76 mm

Fire performances are valid for range of dØ pipe diameter + s1 pipe thickness within the same pipe material:

copper	
dØ	max. 76 mm
s1	max. 14.0 mm

pipe insulation brands eg Climpipe, Rockwool, Armaflex, U Protect Pipe Section Alu2

dØ	s1	pipe insulation
up to Ø28	1,0 up to 1,2	non-insulated

up to Ø42	1,0 up to 14,0	+ pipe insulation	
		+ synth. rubber, min. 60 kg/m ³	13mm
		+ rock wool (alu), min. 90 kg/m ³	25mm, 50mm

up to Ø76	1,0 up to 2,1	+ pipe insulation	
		+ glass or rock wool (alu), min. 75 kg/m ³	20 up to 30mm
		40mm	
		50mm	
		60mm	

suitable Firetect products within classification:

Graphite sealant DoP CPR-14/0273		Acrylic sealant or PA sealer DoP CPR-14/0273		Wrap DoP CPR-14/0251	
walls	floors	walls	floors	walls	floors
individual results max. EI 180 in wall	individual results max. EI 180 in floor 5	individual results max. EI 120 in wall	individual results max. EI 120 in floor 5		
individual results max. EI 90 in wall 1+2+3	individual results max. EI 90 in floor 7	individual results max. EI 120 in wall 3	individual results max. EI 120 in floor 5		individual results max. EI 90 in floor 7
individual results max. EI 60 in wall 1-n75					
individual results max. EI 90 in wall 1+2+3	individual result: EI 90 in wall 1-n100				
individual results max. EI 60 in wall 1-n75	individual results max. EI 60 in wall 1-n75				
individual results max. EI 60 in wall 1+2+3		individual results max. EI 90 in wall 1-n100 EI 60 in wall 1-n75	individual results max. EI 120 in floor 5		
individual results max. EI 90 in wall 1+2+3		individual results max. EI 120 in wall 3			
				EI 90 in wall 1+2 EI 120 in wall 3 2 layer	EI 120 in floor 5 2 layer
				EI 90 in wall 1+2 EI 120 in wall 3 1 layer	EI 120 in floor 5 2 layer
				EI 90 in wall 1+2 EI 120 in wall 3 2 layer	EI 120 in floor 5 2 layer
				EI 60 in wall 1+2 EI 120 in wall 3 3 layer	EI 120 in floor 5 3 layer
				EI 60 in wall 1+2 EI 120 in wall 3 3 layer	EI 120 in floor 5 3 layer

joint details: min. W x D, default:
walls: 10 x 25 mm, apply on 2 sides
floors: 15 x 25 mm, apply on 2 sides

joint details: min. W x D, default:
walls: 10 x 25 mm, apply on 2 sides
floors: 15 x 25 mm, apply on 2 sides

default:
walls: apply on 2 sides
floors: apply on 1 side
always apply smokesel Acrylic sealant on 2 sides

supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, non-insulated
- 1-sh: shaft wall ≥ (xxx) mm, non-insulated
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger, see how-to-read.

Penetration services must be supported; support distance walls max. 500mm support distance floors max. 400mm

Min. length pipe insulation LI / LS / CS / CI: see principle detail.

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STEEL classification ≤ Ø219 mm

Fire performances are valid for **range of dØ pipe diameter + s1 pipe thickness** within the same pipe material:

steel
dØ max. 219,1 mm
s1 max. 14,2 mm

pipe insulation brands eg Climpipe, Rockwool, Armaflex, U Protect Pipe Section Alu2

dØ	s1	pipe insulation
steel Ø12 up to Ø219	1,0 up to 4,5 mm	non-insulated
	Ø12 up to Ø219 mm	
	1,0 up to 14,2 mm	+ pipe insulation
	Ø15 up to Ø219 mm	+ synth. rubber, min. 60 kg/m ³
	10mm	
	13mm	
	25mm	
	1,0 up to 14,2 mm	+ pipe insulation
	Ø15 up to Ø219 mm	+ glass or rock wool (alu), min. 75 kg/m ³
	20 up to 30mm	
	40mm	
	50mm	
60mm		
80mm		
1,0 up to 14,2 mm	+ pipe insulation	
Ø15 up to Ø219 mm	+ rock wool (alu), min. 90 kg/m ³	
25mm		
50mm		
3,25 up to 14,2 mm	+ pipe insulation	
Ø42 up to Ø219 mm	+ PIR, min. 33 kg/m ³	
25mm		
50mm		

suitable Firetect products within classification:

Graphite sealant DoP CPR-14/0273		Acrylic sealant or PA sealer DoP CPR-14/0273		Wrap DoP CPR-14/0251	
walls	floors	walls	floors	walls	floors
individual results max. EI 120 in wall	individual results max. EI 120 in floor 5	individual results max. EI 180 in wall	individual results max. EI 180 in floor 5		
EI 90 in wall 1+2+3	EI 90 in floor 5				
individual results max. EI 120 in wall 1+2+3	EI 60 in floor 5 EI 90 in floor 7	individual results max. EI 120 in wall 3	individual results max. EI 120 in floor 5	EI 90 in floor 7 2 layer	
EI 90 in wall 1-n100 EI 60 in wall 1-n75					
EI 60 in wall 1+2+3 EI 60 in wall 1-n100	EI 60 in floor 5				
individual results max. EI 60 in wall 1-n75					
EI 60 in wall 1+2+3	EI 90 in floor 5			EI 60 in wall 1+2+3 1 layer	EI 90 in floor 5 2 layer
EI 60 in wall 1+2+3	EI 90 in floor 5			EI 90 in wall 1+2+3 1 layer	EI 90 in floor 5 2 layer
EI 90 in wall 1+2+3	EI 90 in floor 5			EI 120 in wall 1+2+3 2 layer	EI 120 in floor 5 2 layer
EI 90 in wall 1+2+3	EI 90 in floor 5			EI 60 in wall 1+2+3 3 layer	EI 120 in floor 5 3 layer
EI 90 in wall 1+2+3	EI 180 in floor 5			EI 60 in wall 1+2+3 3 layer	EI 120 in floor 5 3 layer
EI 60 in wall 1+2+3		EI 120 in wall 3 EI 60 in wall 1-n100 individual results max. EI 30 in wall 1-n75	EI 120 in floor 5 also on PA board		
EI 90 in wall 1+2+3		individual results max. EI 90 in wall 1-n100			
EI 60 in wall 1+2+3	EI 180 in floor 5				
EI 60 in wall 1+2+3	EI 90 in floor 5				

joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides	joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides	default: walls: apply on 2 sides floors: apply on 1 side always apply smoke seal Acrylic sealant on 2 sides
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supporting construction

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. opening in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be **supported**; support distance walls max. 500mm support distance floors max. 400mm

Min. length pipe insulation LI / LS / CS / CI: see principle detail.

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NOTE:
CONDUITS: see STEEL CONDUITS
SPIRAL pipes: see AIR CONTROL

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TRAYS + LADDERS + WIRE MESH classification ≤ 600 mm

Fire performances are valid for for **range of cable group + max. Cu mm²** with steel services:

cable group 1 + 2 + 3 + 5
dØ up to 80 mm
cable group 4 (data + fibre optic)
dØ up to 100 mm

service size Cu mm² cable specs

cable trays ≤ 500mm + cable ladders ≤ 300mm	max. Cu mm² = 29647	each cable assembly within max. Cu mm ² ; all cable groups are allowed, max.: Ø 21mm group 1 - small sheathed Ø 61mm group 2 - medium sheathed Ø 80mm group 3 - large sheathed Ø 100mm group 4 - data + fibre optic Ø 23mm group 5 - non-sheathed all conduits: max. 3x Ø 16mm steel / plastic
	max. Cu mm² = 15707	each cable assembly within max. Cu mm ² ; all cable groups are allowed, max.: Ø 21mm group 1 - small sheathed Ø 47mm group 2 - medium sheathed Ø 52mm group 3 - large sheathed Ø 100mm group 4 - data + fibre optic Ø 23mm group 5 - non-sheathed all conduits: max. 3x Ø 16mm steel / plastic
trays / ladders ≤ 600mm	max. Cu mm² = 12619	each cable assembly within max. Cu mm ² ; allowed cable groups: group 1 - small sheathed group 4 - data + fibre optic
wire mesh trays ≤ 600mm	max. Cu mm² = 6401	each cable assembly within max. Cu mm ² ; allowed cable groups: group 1 - small sheathed group 2 - medium sheathed group 4 - data + fibre optic

suitable Firetect products within classification:

Graphite sealant DoP CPR-14/0273	Acrylic or PA sealer DoP CPR-14/0273	PA board or FR Mortar DoP CPR-14/0260
EI 60 in wall 1+2+3	EI 30 in wall 1+2+3	EI 30 in wall 2+3
EI 60 in floor 5	EI 60 in floor 5	EI 60 in floor 5
EI 60 in wall 1+2+3	EI 60 in wall 1+2+3	EI 60 in wall 1+2+3
EI 60 in floor 5	EI 60 in floor 5	EI 60 in floor 5
results max. EI 180 in wall 3	EI 120 in wall 1+2+3	EI 60 in wall 1+2+3
	EI 30 in wall 1n-75	EI 30 in wall 1n-75
EI 60 in wall 1+2+3	EI 90 in wall 1+2+3	EI 30 in wall 1n-75
EI 60 in floor 5	EI 60 in floor 5	EI 60 in floor 5

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:
1: flexible wall ≥ 100 mm, insulated
1-n: flexible wall ≥ (xxx) mm, **non-insulated**
1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
1-sw sandwich wall ≥ 100 mm
2: rigid wall ≥ 100 mm
3: rigid wall ≥ 150 mm
4: flexible ceiling ≥ 150 mm
5: rigid floor ≥ 150 mm
6: CLT wall ≥ 100 mm
7: CLT floor ≥ 140 mm

max. opening (mm)	support distance (mm)
600x1200	at 250mm + 500mm
600x1200	at 500mm
600x1200	at 500mm
600x5000	at 250mm + 400mm
600x1200 +25%	at 500mm
600x5000	at 250mm + 400mm
620 x 70	at 500mm
620 x 70	at 500mm
220 x 80	at 250mm + 500mm
730 x 230	at 250mm + 500mm
660 x 120	at 250mm + 500mm
420 x 100	at 250mm + 500mm
600 x 800	at 400mm

joint details, default:
walls: 5mm around cables, apply on 2 sides
floors: 5mm around cables, apply on 2 sides

finish, default:
NO coating on cables, cable tray or on constructive element !

Max. opening in constructive element: see also principle detail.

Penetration services must be **supported**.

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CABLE BUNDLES classification ≤ 121 mm

Fire performances are valid for for **range of cable group + max. Cu mm²**:

cable group 1 + 2 + 4 + 5
dØ up to 31 mm

also cables in plastic conduits
dØ up to 110 mm

bundle size cable specs

max. Ø 40 mm

cable assembly within max. Cu mm², allowed cable groups:

- group 1 - small sheathed
- group 2 - medium sheathed
- group 4 - data + fibre optic conduit, plastic

max. Ø 55 mm

cable assembly within max. Cu mm², allowed cable groups:

- group 1 - small sheathed
- group 4 - data + fibre optic conduit, plastic

max. Ø 121 mm

cable assembly within max. Cu mm², allowed cable groups:

- group 1 - small sheathed
- group 2 - medium sheathed
- group 4 - data + fibre optic conduit, plastic

suitable Firetect products within classification:

Graphite sealant	Acrylic or PA sealer	Cable transit	Flex plug	FMU collar	supporting construction
DoP CPR-14/0273	DoP CPR-14/0273	DoP CPR-14/0251	DoP CPR-14/0251	DoP CPR-14/0251	
	EI 120 in wall 1+2 EI 240 in wall 3 <hr/> EI 90 in wall 6 <hr/> EI 240 in floor 5 EI 90 in floor 7		EI 120 in wall 1+2 EI 240 in wall 3 <hr/> EI 240 in floor 5		
EI 60 in wall 1-n75	EI 90 in wall 1+2 EI 180 in wall 3 <hr/> EI 180 in floor 5	EI 120 in wall 1+2+3 <hr/> EI 90 in wall 6 <hr/> EI 90 in floor 7			
EI 120 in wall 1+2+3 <hr/> EI 90 in wall 1-n100 EI 60 in wall 1-n75 <hr/> EI 90 in wall 6 <hr/> EI 240 in floor 5 EI 120 in ceiling 4 EI 90 in floor 7	EI 120 in wall 1+2+3 <hr/> EI 90 in wall 6 <hr/> EI 180 in floor 5 also on PA board EI 90 in floor 7	EI 90 in wall 1+2+3 <hr/> EI 120 in floor 5		EI 120 in wall 1+2+3 <hr/> EI 240 in floor 5	
joint details: min. W x D, default: walls: 10 x 25 mm, apply on 2 sides floors: 15 x 25 mm, apply on 2 sides	position centrally in construction mount with Acrylic sealant put loose rock wool ≥ 100kg/m ³ in transit on 2 sides	position centrally in construction	default: walls: apply on 2 sides floors: apply on 1 side apply smoke seal Acrylic		

Constructive element must be classified acc. EN 13501-2 for the required fire resistance period:

- 1: flexible wall ≥ 100 mm, insulated
- 1-n: flexible wall ≥ (xxx) mm, **non-insulated**
- 1-sh: shaft wall ≥ (xxx) mm, **non-insulated**
- 1-sw sandwich wall ≥ 100 mm
- 2: rigid wall ≥ 100 mm
- 3: rigid wall ≥ 150 mm
- 4: flexible ceiling ≥ 150 mm
- 5: rigid floor ≥ 150 mm
- 6: CLT wall ≥ 100 mm
- 7: CLT floor ≥ 140 mm

Max. **opening** in constructive element: see principle detail. Use PA board if opening is larger; see how-to-read.

Penetration services must be **supported**;
 support distance walls max. 500mm
 support distance floors max. 400mm

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NOTE:
 CONDUITS in trays + ladders: see **CABLE TRAYS**