

1. Unieke identificatie van product	Firetect® Graphite sealant	
2. Beoogd gebruik	bouwproduct om bouwkundige sparingen tbv kabeldoorvoeren bij brand af te dichten, teneinde voortijdige branddoorslag te voorkomen in: - standaard flexibele wanden ≥ 100mm - standaard massieve wanden ≥ 100mm - standaard massieve vloeren ≥ 150mm incl. flexibele plafonds	
3. Fabrikant	KLF Building Products BV Techniekweg 11, 4207 HC Gorinchem, Nederland	
4. Aangewezen gemachtigde	nvt	
5. AVCP systeem	Systeem 1	
6a. Geharmoniseerde norm	nvt	
Certificeringsinstantie	nvt	
Conformiteitscertificaat	0960-CPR-SKGIKOB.011133.01.NL	
6b. Europees BeoordelingsDocument (EBD)	350454-00-1104	
Europese Technische Beoordeling (ETB)	ETA-14/0273	
Technische BeoordelingsInstantie (TBI)	SKG-IKOB	
Identificatie aangemelde instantie	No. 0960	
7. Aangegeven product prestaties		
essentiële kenmerken	eigenschappen	prestaties
BWR 1 Mechanische weerstand + stabiliteit		nvt
BWR 2 Brandveiligheid		
EN 13501-1	brandreactie	Klasse F
EN 13501-2	brandweerstand	per geteste toepassing; EI 20 t/m EI 240, zie ANNEX BWR2 + ANNEX A
	toepassingsgebied	
BWR 3 Hygiëne, gezondheid + milieu		
EAD 350454-00-1104, §2.2.3	luchtdoorlaatbaarheid	IA1, S/W3
EAD 350454-00-1104, §2.2.4	waterdichtheid	npd
EAD 350454-00-1104, §2.2.5	bestanddelen, emissie en/of uitstoot gevaarlijke bestanddelen	conform CLP geclassificeerd als niet gevaarlijk vlg. Verordening 1272/2008
BWR 4 Veiligheid in gebruik		
EAD 350454-00-1104, §2.2.6	weerstand tegen belasting	npd
EAD 350454-00-1104, §2.2.7	weerstand tegen beweging	npd
EAD 350454-00-1104, §2.2.8	adhesie	npd
EAD 350454-00-1104, §2.2.9	duurzaamheid	Z ₂ (intern gebruik)
BWR 5 Bescherming tegen geluid		
EAD 350454-00-1104, §2.2.10	luchtgeluidisolatie	R _{s,w} = 43 dB t/m 53 dB
	toepassingsgebied	zie ANNEX B
BWR 6 Energiebesparing + warmtebehoud		
EAD 350454-00-1104, §2.2.11	thermische geleidbaarheid	npd
EAD 350454-00-1104, §2.2.12	waterdampdoorlaatbaarheid	npd
Algemene aspecten in relatie tot geschiktheid		
EAD 350454-00-1104, §1.2.2	aangenomen voorgenomen levensduur in gebruik	10 jaar
8. Specifieke technische documentatie	nvt	npd= geen prestatie bepaald

De prestaties van de omschreven producten zijn conform de aangegeven prestaties. Deze product prestatie verklaring is verstrekt conform Verordening 305/2011, onder de exclusieve verantwoordelijkheid van de fabrikant.
Ondertekend voor en namens de fabrikant te Gorinchem dd 12-05-2023 door C. Buikema

toepassingsgebied (FoA)	Firetect® Graphite sealant
	getest en gecertificeerd middels ETB 14/0251; brandwerende prestaties en toepassingsmethoden voor gebruik in:

bouwdeel ¹⁾

brandwerende wanden vlg. EN 1363-1	<ul style="list-style-type: none"> - flexibele wand ≥100mm; metalen of houten regels, gipsplaat type A + wand isolatie - flexibele wand ≥75mm; metalen of houten regels, gipsplaat type A, ongeïsoleerd - flexibele wand ≥100mm; metalen of houten regels, gipsplaat type A, ongeïsoleerd - schacht wand ≥75mm; metalen of houten regels, gipsplaat type A, + wand isolatie - massieve wand ≥100mm: (cellen)beton of steenachtig, dichtheid ≥ 600 kg/m³ - massieve wand ≥150mm: (cellen)beton of steenachtig, dichtheid ≥ 600 kg/m³ - CLT wand ≥100mm: kruislings verlijmd hout
brandwerende vloeren vlg. EN 1363-1	<ul style="list-style-type: none"> - massieve vloer ≥150mm: (gas)beton, dichtheid ≥ 600 kg/m³ - CLT vloer ≥140mm: kruislings verlijmd hout - flexibel plafond ≥150mm: metalen regels, gipsplaat type F

¹⁾ het bouwdeel moet zijn geclassificeerd vlg. EN 13501-2 voor de gestelde brandweerstand

brandweerstand

toepassingsgebied:	vlg. EN 13501-2 / 1366-3	
EI 20 t/m EI 240: Graphite sealant	bouwkundige sparingen tbv buis + kabeldoorvoeren: ²⁾	
- PE/PP/PVC	≤ Ø125mm	ook in PA board
- PP-R	≤ Ø110mm	ook in kabelgoten + PA board
- PP-MD	≤ Ø110mm	
- PP-MX	≤ Ø110mm	ook met buis mof/sok
- aluPE-X	≤ Ø75mm	ook met buis isolatie
- PE-Xa	≤ Ø32 (54) mm	ook met buis isolatie
- koper	≤ Ø76mm	ook met buis isolatie + PA board
- staal	≤ Ø219mm	ook met buis isolatie + PA board
- kabelgoten incl. kabelladders + draadgoten	≤ 600x1200mm +25% in wanden ≤ 1000x1200 mm / 600x5000mm in vloeren	uitcoaten is niet nodig
- kabel bundels	≤ Ø121mm	ook in schachtwanden

²⁾ ondersteun voorzieningen; afstand ophanging: zie principe detail

milieu prestaties	BREEAM	LEED	VOC	EN 717-1§	EMICODE	M1	Indoor Air
voorbeeld protocollen, bekijk complete lijst	☑	☑	A+	E1	EC1 PLUS	☑	Comfort GOLD
EPD reg.no. S-P-0							




gebruiksaanwijzing: applicatie, bevestigingsmiddelen, afwerking & onderhoud: zie TDS

product informatie

Product certificering middels DoP; meer info over certificering van CE bouwproducten via ETB op firetect.nl/certificering

- complete DoP versie: prestatieverklaring + ANNEX BWR2 + ANNEX A + ANNEX B; op aanvraag
- web DoP versie: prestatieverklaring + ANNEX BWR2; overige info is te downloaden via firetect.nl/downloads
- schema's FoA; [geschikte producten per type brandwerende afdichting + EI prestatie + product / voeg details](#)
- TDS: [algemene gebruiksaanwijzing + product specs](#)

Raadpleeg firetect.nl/downloads voor actuele versies; product ontwikkeling + brandtesten zijn continue processen bij KLF. Neem contact op met KLF voor **afwijkende** EI eisen en (niet)standaard of complexe situaties; mail info@klf.nl

toelichting

FoA schema's toepassingsgebied Firetect® brandwerende bouwmaterialen

certificering

Gebruik FoA schema's als **richtlijn** om snel geschikte Firetect producten binnen classificatie te bepalen.

Applicatie altijd vlg. detaillering zoals vermeld per principe detail; klik EI prestatie in FoA schema.

Product certificering van bouwproducten met CE markering verloopt via prestatieverklaringen (DoPs) in plaats van testrapporten; meer info op www.firetect.nl. Schema's omvatten niet alle test data. Neem voor afwijkende (EI) situaties contact op met KLF: +31 345 63 97 97 of info@klf.nl.

bouwdeel

- product is getest in + gecertificeerd voor bouwdeel, standaard type:
- 1** flexibele wand ≥ 100 mm; metalen of houten regels, gipsplaat type A + wand isolatie
 - 1-n**(xxx) flexibele wand ≥ 100 mm, **niet geïsoleerd**
 - 1-sh**(xxx) schacht wand \geq (xxx) mm, **niet geïsoleerd**
(xxx) = wand dikte in mm; zie in schema's bij EI prestatie
 - 1-sw** sandwich wand ≥ 100 mm
 - 2** massieve wand ≥ 100 mm: (cellen)beton of steenachtig, dichtheid ≥ 600 kg/m³
 - 3** massieve wand ≥ 150 mm: (cellen)beton of steenachtig, dichtheid ≥ 600 kg/m³
 - 4** flexibel plafond ≥ 150 mm: metalen regels, gipsplaat type F
 - 5** massieve vloer ≥ 150 mm: (gas)beton, dichtheid ≥ 600 kg/m³
 - 6** CLT wand ≥ 100 mm
 - 7** CLT vloer ≥ 140 mm

Let op Bouwdeel moet zijn geclassificeerd vlg. EN 13501-2 voor de gestelde brandweerstand.

- getest in bouwdeel type **1** ook toepasbaar in bouwdeel type **2+3** als wanddikte + m³ gewicht gelijk zijn danwel toenemen
- getest in bouwdeel type **2** ook toepasbaar in bouwdeel type **3** als wanddikte + m³ gewicht gelijk zijn danwel toenemen
- getest in PA board ook toepasbaar met **brandwerende mortel** (BW); neem contact op met KLF voor meer info

"you may always upgrade, but never downsize"

buis doorvoeren

- type **kunststof** alle kunststof buizen vlg. [EN normen](#)
- type **metaal** alle koper of staal buizen; ook geschikt voor materiaal met lagere thermische geleiding + smeltpunt minstens gelijk aan getest materiaal
- EI brandweerstand in minuten (integriteit + isolatie)
- U/U + U/C + C/U + C/C buis einde: U = uncapped (open) en C = capped (gesloten), aan resp. blootgestelde / niet blootgestelde zijde
- 1S + 2S PA board gecoat aan 1 zijde (1S) of 2 zijden (2S)

- buis isolatie
 - alle synthetische rubber min. 60 kg/m³ bijv. Armaflex
 - alle glaswol of steenwol min. 75 kg/m³ bijv. Climpipe
 - alle polyolefine schuim min. 28 kg/m³ bijv. Uponor
 - alle PIR min. 33 kg/m³
- LS local sustained = gedeeltelijk geïsoleerde buis; **totale** isolatie lengte in mm door bouwdeel (symmetrisch)
- LI local interrupted = gedeeltelijk geïsoleerde buis; isolatie lengte in mm **aan elke zijde** van bouwdeel
- CS continued sustained = volledig geïsoleerde buis
- CI continued interrupted = volledig geïsoleerde buis, echter onderbroken in bouwdeel

- max. opening zie principe detail, plus:
 - toegestane **overmaatse sparing** ≤ 15 mm bij brandmanchet + wrap; indien groter, gebruik PA board:
wanden: max. 600 x 1200 mm + 25%, vloeren: max. 1000 x 1200 mm t/m 600 x 5000 mm
 - toegestane '**oversized**' **brandmanchet** ≤ 15 mm, bijv. gebruik Ø90 manchet voor Ø80 buis
- Let op** Ondersteun buizen; afstand ophanging: zie principe detail.
Zet glaswol of steenwol individueel vast (niet omwikkelen!) met staaldraad; zie principe detail.

Firetect®

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PE + PP + PVC

kunststof mantelbuizen

PP-R

PP-MD

PP-MX

aluPE-X

PE-Xa

koper

staal

stalen mantelbuizen

gietijzer

kabelgoot + ladder / mand

kabels + bundels

brandkleppen

ventilatie roosters

luchtkanaal bekleding

rechte voegen

inbouwdozen

loze sparringen

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FoA schema's toepassingsgebied Firetect® brandwerende bouwmaterialen

certificering

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Applicatie altijd vlg. detaillering zoals vermeld per principe detail; klik EI prestatie in FoA schema.

Product certificering van bouwproducten met CE markering verloopt via prestatieverklaringen (DoPs) in plaats van testrapporten; meer info op www.firetect.nl. Schema's omvatten niet alle test data. Neem voor afwijkende (EI) situaties contact op met KLF: +31 345 63 97 97 of info@klf.nl.

kabel doorvoeren

type **voorziening**

alle stalen (gegalvaniseerde) kabelgoten + ladders, niet geperforeerd + geperforeerd

alle stalen (gegalvaniseerde) draadgoten

EI

brandweerstand in minuten (integriteit + isolatie)

optimale bezetting

	configuratie	horizontaal	verticaal
		Min. afstand naar bouw. sparing	LARGE MIXED
Min. afstand tussen voorzieningen	LARGE MIXED	5mm 20 mm	100 mm 20 mm

kabelgroepen

KG 1 - klein ommanteld	max. Ø 21mm
KG 2 - medium ommanteld	max. Ø 50mm
KG 3 - groot ommanteld	max. Ø 80mm
KG 4 - data + glasvezel	max. Ø 100mm bundel
KG 5 - niet ommanteld	max. Ø 23mm
mantelbuis, staal of kunststof	max. Ø 16mm

max. opening

zie principe detail

Let op

Ondersteun kabel voorzieningen; afstand ophanging: zie principe detail.

loze sparingen

EI

gaten + sparingen **zonder doorvoeren**
brandweerstand in minuten (integriteit + isolatie)
t/m EI 120 voor toepassing in wanden + vloeren

disclaimer

Raadpleeg www.firetect.nl/downloads voor updates; product ontwikkeling + brandtesten zijn doorlopende processen bij KLF. Genoemde merken zijn uitsluitend voor illustratief gebruik, ter indicatie van geteste type materialen.

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loze sparingen

EN normen kunststof buizen

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duurzaamheid

kunststof buizen

Firetect® brandwerende bouwmaterialen zijn toepasbaar in:

PE
polyethylene**aluPE-X**
verwarming + sanitair
ook wel PEX-AL-PEX,
Al-Composite of Multilayer**PE-Xa**
druk- en warmte bestendig
cross-linked PE**PP**
polypropylene**PP-R**
high pressure + temperature**PP-MD**
low noise**PVC**
polyvinyl chloride**PE-LD + PE-HD**dØ t/m 250 mm
s1 3,2 t/m 22,7 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1519-1
EN 12666-1
EN 12201-2
EN ISO 15494
DIN 8074
DIN 8075
DIN 19535-10bijv. Wavin TS
Agru PE 100
Agru PE 100-RC**aluPE-X**dØ t/m 75 mm
s1 2,0 t/m 7,5 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1519-1
EN 12201-2
EN 12666-1
EN ISO 15494
DIN 8074
DIN 8075
DIN 19535-10bijv. Uponor MLC
TECEflex
Geberit Mepla
Kekelit Kelox KM 110
Rehau Rautitan stabil
Henco Alupex
Bbijv.etube Apex**PE-Xa**dØ t/m 32 (54) mm
s1 2,2 t/m 4,4 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1519-1
EN 12201-2
EN 12666-1
EN 15875
EN ISO 15494
ISO 21003
DIN 8074
DIN 8075
DIN 19535-10bijv. Uponor Aqua
Geberit Mepla
Kekelit Kelox KM 110
Rehau Rautitan flex
Rehau Rautitan stabil**PP**dØ t/m 250 mm
s1 2,7 t/m 22,7 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1451-1
EN ISO 15494
EN ISO 15874
DIN 8077
DIN 8078bijv. Dyka PP
Agru PP-H**PP-R**dØ t/m 110 mm
s1 3,7 t/m 15,1 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1451-1
EN ISO 15494
EN ISO 15874
ISO 21003
DIN 8077
DIN 8078bijv. Aquatherm Blue
Aquatherm Green
Aquatechnik PP-R
Akatherm PP-R
Wavin Pilsa**PP-MD**dØ t/m 160 mm
s1 1,8 t/m 5,4 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1451-1
EN ISO 15494
EN ISO 15874
DIN 8077
DIN 8078bijv. 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 t/m 160 mm
s1 2,7 t/m 5,7 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1451-1
EN ISO 15494
EN ISO 15874
DIN 8077
DIN 8078

bijv. Geberit Silent-Pro

PVC + PVC-C + PVC-UdØ t/m 400 mm
s1 2,7 t/m 22,7 mm

buizen binnen bandbreedte (dØ+s1) vlg.

EN 1329-1
EN 1453-1
EN 1452
EN 1566-1
EN ISO 15493
ISO 15877
DIN 8061
DIN 8062
DIN 19531-10

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gietijzer
kabelgoot + ladder / mand
kabels + bundels
brandkleppen
ventilatie roosters
luchtkanaal bekleding
rechte voegen
inbouwdozen
loze sparingen

Toepassingsgebied van buizen, getest met Firetect producten

Brandwerende prestaties zijn geldig voor bandbreedte buis diameter **dØ** + buiswanddikte **s1** van hetzelfde buis materiaal.

Per FoA schema (buis **materiaal**) is vermeld welk Firetect product te gebruiken binnen de bandbreedte (dØ+s1).

Installeer voorzieningen altijd vlg. instructies van fabrikant; afstand ophanging ≤ 500mm (wanden) en ≤ 400mm (vloeren).

[EN normen kunststof buizen](#)[toelichting](#)[akoestiek](#)[duurzaamheid](#)

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

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](#).

suitable Firetect products within classification: *

Graphite sealant DoP CPR-14/0273		FMU collar DoP CPR-14/0251		Wrap DoP CPR-14/0251	
walls	floors	walls	floors	walls	floors
EI 90 in wall 1+2+3 EI 90 in wall 1-n100 EI 30 in wall 1-n75 EI 90 in wall 6	EI 90 in floor 5 EI 90 in floor 7	EI 60 in wall 1+2+3 EI 60 in wall 1-n100 EI 30 in wall 1-n75 also on PA board: screwed on or cast-in	EI120 in ceiling 4 EI 120 in floor 5 EI 90 in floor 7 also on PA board: screwed on or cast-in	EI 120 in wall 1+2+3 2 layer	EI 180 in floor 5 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 2 layer	EI 180 in floor 5 3 layer
		EI 60 in wall 1+2+3 EI 60 in wall 1-n100 collar Ø140 or Ø160	EI 90 in floor 5 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 also in PA board collar Ø250			
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		non-standard configurations eg angled, bundled or XL: up to Ø400mm with FMU collar		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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- steel conduits
- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals

NOTE:

CONDUITS: see **PLASTIC CABLE CONDUITS**

- how-to-read
- acoustical
- environmental

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:

		Graphite sealant DoP CPR-14/0273		FMU collar DoP CPR-14/0251		Wrap DoP CPR-14/0251	
dØ	s1	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	
		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	

supporting construction

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

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- 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

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

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- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals
- EN norms for plastic pipes
- how-to-read
- acoustical
- environmental

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
- aluPE-X
- PE-Xa
- copper
- steel
- steel conduits
- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
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- socket boxes
- blank seals
- EN norms for plastic pipes
- how-to-read
- acoustical
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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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- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals

EN norms for plastic pipes

how-to-read

acoustical

environmental

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 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
- copper
- steel
- steel conduits
- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals

EN norms for plastic pipes

how-to-read

acoustical

environmental

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 smokesseal Acrylic sealant on 2 sides		default: walls: apply on 2 sides floors: apply on 1 side always apply smokesseal 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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- PP-MX
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- PE-Xa
- copper
- steel
- steel conduits
- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals

'eccentric to zero' position in opening is allowed

- EN norms for plastic pipes
- how-to-read
- acoustical
- environmental

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 + synth. rubber or rock wool (alu) insulation	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 + glass or rock wool (alu) insulation	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		
EI 90 in wall 1+2+3 individual results max. EI 60 in wall 1-n75	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
EI 90 in wall 1+2+3 individual result: EI 90 in wall 1-n100 individual results max. EI 60 in wall 1-n75					
EI 60 in wall 1+2+3		individual results max. EI 90 in wall 1-n100 EI 60 in wall 1-n75 EI 120 in wall 3	individual results max. EI 120 in floor 5		
EI 90 in wall 1+2+3					
EI 90 in wall 1+2+3	EI 90 in floor 5			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+3	EI 90 in floor 5			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+3	EI 90 in floor 5			EI 90 in wall 1+2 EI 120 in wall 3 2 layer	EI 120 in floor 5 2 layer
EI 90 in wall 3	EI 90 in floor 5			EI 60 in wall 1+2 EI 120 in wall 3 3 layer	EI 120 in floor 5 3 layer
EI 240 in wall 3	EI 240 in floor 5			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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- cast iron
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- cables + bundles
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- air transfer grilles
- duct cladding
- linear joints
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- blank seals

- EN norms for plastic pipes
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- environmental

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 Climpsipe, 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-n100 EI 60 in wall 1-n75	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 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

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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- copper
- steel
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- cast iron
- trays + ladders + wire mesh
- cables + bundles
- fire dampers
- air transfer grilles
- duct cladding
- linear joints
- socket boxes
- blank seals

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

- EN norms for plastic pipes
- how-to-read
- acoustical

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
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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
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suitable Firetect products within classification:

Graphite sealant DoP CPR-14/0273	Acrylic or PA sealer DoP CPR-14/0273	PA board DoP CPR-14/0260	or	FR Mortar
	EI 60 in wall 1+2+3	2x 50mm 2S	100mm	
	EI 30 in wall 1+2+3	2x 50mm 2S	100mm	
	EI 30 in wall 2+3	1x 50mm 2S	50mm	
	EI 60 in floor 5	2x 50mm 2S	100mm	
	EI 60 in wall 1+2+3	2x 50mm 2S	100mm	
	EI 60 in floor 5	2x 50mm 2S	100mm	
results max. EI 180 in wall 3	EI 120 in wall 1+2+3	1x 50mm 2S	50mm	
	EI 60 in wall 1+2+3	-	-	
	EI 30 in wall 1n-75	-	-	
	EI 60 in wall 1+2+3	2x 50mm 2S	100mm	
	EI 90 in wall 1+2+3	2x 50mm 2S	100mm	
	EI 30 in wall 1n-75	-	-	
	EI 60 in floor 5	2x 50mm 2S	100mm	

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 !

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

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 EI 90 in wall 6 EI 240 in floor 5 EI 90 in floor 7		EI 120 in wall 1+2 EI 240 in wall 3 EI 240 in floor 5		
EI 60 in wall 1-n75	EI 90 in wall 1+2 EI 180 in wall 3 EI 180 in floor 5	EI 120 in wall 1+2+3 EI 90 in wall 6 EI 90 in floor 7			
EI 120 in wall 1+2+3 EI 90 in wall 1-n100 EI 60 in wall 1-n75 EI 90 in wall 6 EI 240 in floor 5 EI 120 in ceiling 4 EI 90 in floor 7	EI 120 in wall 1+2+3 EI 90 in wall 6 EI 180 in floor 5 also on PA board EI 90 in floor 7	EI 90 in wall 1+2+3 EI 120 in floor 5		EI 120 in wall 1+2+3 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**