

# Multisealant GR

Firestop Intumescent Graphite

European  
Technical Assessment  
ETA 16/0567



Technical Data Sheet

**MULCOL**  
INTERNATIONAL

# Content

<b>Product Specification</b>	2
■ Advantages	
■ Applications	
■ Packaging	
<b>1. Technical Data</b>	3
<b>2. Consumption table</b>	4
<b>3. Acoustic properties</b>	4
<b>4. Meter cabinet penetration</b>	5
<b>5. Installation Manual</b>	6
<b>6. Performance</b>	7
■ Uninsulated Plastic Pipe Penetrations	
■ Uninsulated Multilayer Pipe Penetrations	
■ Uninsulated Multilayer Pipe Penetrations through Coated Batts	
■ Uninsulated Metal Pipe Penetrations	
■ Electric Cables	
■ PVC Pipe Sleeves	
■ Insulated Multilayer Pipe Penetrations	
■ Insulated Multilayer Pipe Penetrations	
■ Insulated Metal Pipe Penetrations	
■ Insulated Metal Pipe Penetrations i.c.w. PIR/PUR insulation	
<b>7. Actually tested solutions</b>	10
<b>8. Spacing</b>	11
<b>9. Pipe Insulation (Configuration)</b>	12
<b>10. Permitted Insulation Materials</b>	12
<b>11. Pipe Support Penetrations</b>	12
<b>12. Test Configuration</b>	13
<b>13. Building Element Properties</b>	14
<b>14. Available Documents</b>	14
■ Technical documents	
■ Approvals	

# Multisealant GR

Firestop Intumescent Graphite



**Fire resistance**  
≤ 240 minutes



**Acoustic insulation**  
Rw 53 dB



**Working life**  
30 years



**Paintable**  
after 24 hrs

## Firestop Intumescent Graphite

Multisealant GR is a graphite-based sealant that foams and insulates when heated up for the fire-resistant sealing of gaps around cable and pipe penetrations. In the event of fire, this sealant prevents fire and smoke from spreading through fire-resistant walls and floors. Multisealant GR was developed to seal inaccessible penetrations and for places where traditional fire-resistant sealants are insufficient, for instance in the case of large plastic pipes.

Multisealant GR forms part of the Mulcol® Penetration Seal System.

### Advantages

- ✓ Fire resistance ≤ 240 minutes
- ✓ CE-certified
- ✓ High acoustic insulation
- ✓ Environmentally and user-friendly
- ✓ Quick and easy application
- ✓ Fast-drying and limited shrinkage
- ✓ Remains elastic during movement up to 12.5%
- ✓ Halogen-free
- ✓ Working life of 30 years

### Applications

- ✓ Rigid walls and floors
- ✓ Flexible walls
- ✓ Firestop boards
  
- ✓ Plastic pipes up to Ø 110 mm
- ✓ Electric cables, cable bundles and metal pipes
- ✓ Meter box penetrations with encased plastic pipe sleeves
- ✓ Aluminium composite pipes with and without insulation

### Packaging

	Contents	Box	Pallet	Pallet	Article number
Cartridge	310 ml	12 pieces	128 boxes	1536 pieces	201012310

# 1. Technical Data

<b>EAN-code</b>	8719324470032
<b>Condition</b>	Ready to use, water-based sealant that dries when water evaporates
<b>Colour</b>	Dark grey (may become darker after hardening)
<b>Shelf life</b>	12 months in unopened packaging at a temperature between 5°C and 30°C
<b>Transportation storage temp.</b>	+5 °C to +30 °C
<b>Application temperature</b>	+5 °C to +30 °C
<b>Temperature resistance</b>	-15 °C to +75 °C
<b>Film formation</b>	After max. 30 minutes
<b>Non- adhesive</b>	After max. 60 minutes
<b>Completely hardened</b>	3 to 5 days, depending on the thickness and the temperature
<b>Flexibility</b>	± 12,5% (according to ISO 11600)
<b>Density</b>	1,50 - 1,60 g/cm <sup>3</sup>
<b>Expansion pressure</b>	0,442 N/mm <sup>2</sup> at 350 °C
<b>Reaction temperature</b>	Approx. 150 °C
<b>Thermal conductivity</b>	0,85 W/mK (+/- 3%) at 20 mm thickness
<b>Flash point</b>	None
<b>Expansion factor <sup>3)</sup></b>	25.0 x to 28.0 x
<b>Category of use <sup>1)</sup></b>	Type Z <sub>2</sub> in accordance with EAD 350454-00-1104
<b>Recoatable <sup>2)</sup></b>	Yes
<b>pH value</b>	8.0 - 9.5
<b>Acoustic properties</b>	RW 53 dB (with a depth of 25mm, one-sided installation)
<b>Fire class</b>	F in accordance with EN 13501-1
<b>LEED VOC</b>	72 - 94 g/l
<b>Approvals</b>	ETA 16/0567 and C 1769-2E-RA-007
<b>Compatibility</b>	Suitable for use with most material
<b>Function retention</b>	30 years

## <sup>1)</sup> Permissible environmental conditions

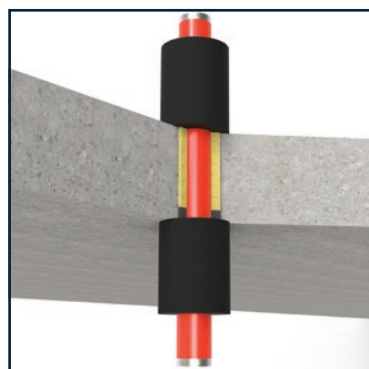
Joint sealant for use in interior conditions with humidity of < 85% RH without temperatures below 0 °C and without exposure to rain and/or UV (TR 024:2009, type Z<sub>2</sub>).

## <sup>2)</sup> Recoatable

Multisealant GR firestop sealant is paintable with most water-based paint systems. It is recommended to apply a primer to the sealant (after hardening) before repainting it.

## <sup>3)</sup> Expansion factor

Tested on samples at 450 °C for 25 minutes without overload. The expansion factor is a laboratory characteristic value. The expansion factor in an installed state depends on the existing preconditions.



## 2. Consumption table per cartridge of 310 ml

Joint width	10 mm	15 mm	20 mm	25 mm	30 mm	40 mm	50 mm	60 mm	80 mm	100 mm
Joint depth 12.5 mm	2.45 m <sup>1</sup>	1.65 m <sup>1</sup>	1.20 m <sup>1</sup>	1.00 m <sup>1</sup>	0.80 m <sup>1</sup>	0.60 m <sup>1</sup>	0.50 m <sup>1</sup>	0.40 m <sup>1</sup>	0.30 m <sup>1</sup>	0.25 m <sup>1</sup>
Joint depth 15 mm	2.05 m <sup>1</sup>	1.35 m <sup>1</sup>	1.00 m <sup>1</sup>	0.80 m <sup>1</sup>	0.65 m <sup>1</sup>	0.50 m <sup>1</sup>	0.40 m <sup>1</sup>	0.30 m <sup>1</sup>	0.25 m <sup>1</sup>	0.20 m <sup>1</sup>
Joint depth 25 mm	1.20 m <sup>1</sup>	0.80 m <sup>1</sup>	0.60 m <sup>1</sup>	0.50 m <sup>1</sup>	0.40 m <sup>1</sup>	0.30 m <sup>1</sup>	0.25 m <sup>1</sup>	0.20 m <sup>1</sup>	0.15 m <sup>1</sup>	0.10 m <sup>1</sup>

## 3. Acoustic properties

Multisealant GR has been tested at BM Trada (UKAS accredited); according to EN ISO 10140-2: 2010. The same or higher sound insulation can be achieved with a deeper or double-sided seal or by applying backing material. The sound insulation value only applies to the sealant and not to other elements in the building structure.

- ✓ With one-sided seal 25 mm deep, without backing: RW 53 dB

## 4. Meter cabinet penetration

Multisealant GR Firestop Intumescent Graphite has been tested according to EN 1366-3 in concrete floors with a thickness of at least 150 mm. Meter cabinet penetrations can be easy to finish with Multisealant GR sealant. The tables below show a few of common penetrations. Refer to the Multiselector for all currently tested solutions with the Multisealant GR.

Plastic pipes	Penetration Ø x s [mm]	Injection depth [wxd / mm]	Backing required	RF-150	Classification minutes
PVC pipes with or without cables	≤ 40 x 3.	≥ 10 x 25	Yes	✓	≤ EI 240-U/U
	≤ 25 (8x)	≥ 5 x 25	No	✓	≤ EI 90-U/U

Plastic pipe sleeve	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	RF-150	Classification minutes
PVC pipe sleeve	≤ 110 x 3.4	110 x 15	Yes <sup>†</sup>	✓	≤ EI 120

Multilayer pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	RF-150	Classification minutes
Aluminum composite pipes	≤ 40 x 2.0 - 4.0	≥ 15 x 20	Yes <sup>†</sup>	✓	≤ EI 120-U/C

Metal pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	RF-150	Classification minutes
Copper, steel and cast iron pipes	≤ 35 x 1.5 - 14.2	≥ 15 x 20	Yes <sup>†</sup>	✓	≤ EI 30-C/U

Electric cables and bundles	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	RF-150	Classification minutes
Electric cables	≤ 25	≥ 15 x 20	Yes <sup>†</sup>	✓	≤ EI 60
Cable bundles	≤ 80	≥ 10 x 15		✓	≤ EI 120
Electric cable(s) i.c.w. PE sleeve	≤ 50	≥ 15 x 20		✓	≤ EI 120

<sup>†</sup> Multitherm Backing

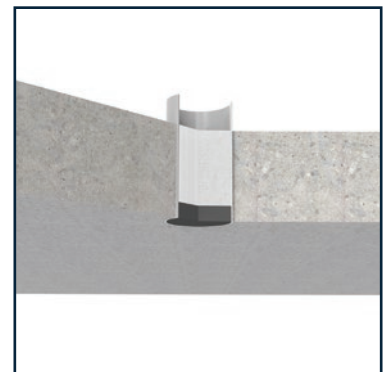
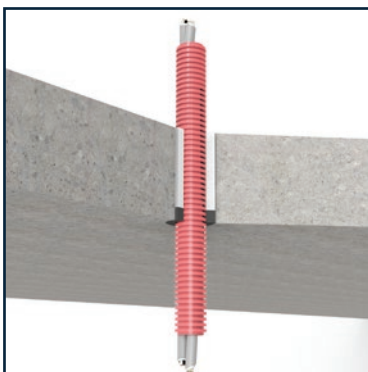
Pipe types

- Alpex DUO, Valsir Pexal, Valsir Mixal and APE Plain (PE-Xb/AL/PE-Xb)
- Geberit Mepla and Uponor Unipipe (PE-RT/AL/PE-RT)
- Henco and Uponor (PE-Xc/AL/PE-Xc)
- Uponor, REHAU (PE-Xa) en REHAU (PE-Xc)
- SP Superpipe and POLYGON PEX (PE-X/AL/PE-X)
- Valsir Pexal and Valsir Mixal (PE/AL/PE-Xb)
- Wavin Tigris, Protecta-Line System and Alpex F50 Profi (PE-X/AL/PE)

E: Integrity  
I: Thermal insulation

RF-150: Rigid floor, 150 mm thick

Ø x S [mm] Diameter x wall thickness of the penetration  
Ø [mm] Diameter  
[wxh / mm] width x height / mm



## 5. Installation Manual



<sup>1)</sup>When using backing, cut it slightly wider than the joint width and make sure it is applied to the correct depth in the joint.



### Information



For use and for more information about an application, refer to the Mulcol documentation, local and international approvals.

See the **Mulcol Fire Protection app** for the correct application in combination with fire resistance, or use our **selector** at [www.mulcol.com](http://www.mulcol.com) For professional use only.

## 6. Performance

### Uninsulated Plastic Pipe Penetrations through Flexible Walls, Rigid Walls and Floors

EN 1366-3

Plastic pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	Spacing	Construction			Classification minutes
					FW-100	RW-100	RF-150	
PVC-U / PVC-C	≤ 40 x 1.9 - 3.7	≥ 10 x 25	Yes	fig. 1 to 4	✓	✓		≤ EI 120-U/C
	≤ 110 x 2.7 - 6.6							
	≤ 40 x 1.9 - 3.7		Yes				✓	≤ EI 240-U/U
	≤ 110 x 2.7 - 6.6							≤ EI 90-C/U
PVC pipes	≤ 25 (8x)	≥ 5 x 25	No	fig. 1 to 4	✓	✓	✓	≤ EI 90-U/U
PP	≤ 110 x 6.6	≥ 30 x 25	Yes	fig. 1 to 4	✓	✓		≤ EI 120-U/C
PE, PE-HD, ABS or SAN+PVC	≤ 40 x 2.4 - 3.7	≥ 10 x 25	Yes	fig. 1 to 4	✓	✓		≤ EI 120-U/C
	≤ 110 x 3.4 - 10.0							
	≤ 110 x 1.8 - 10.0		Yes				✓	≤ EI 60-U/U
	≤ 110 x 4.3 - 10.0							≤ EI 90-U/C

### Uninsulated Multilayer Pipe Penetrations through Flexible Walls, Rigid Walls and Floors

EN 1366-3

Multilayer pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	Spacing	Construction			Classification minutes
					FW-100	RW-100	RF-150	
Aluminum composite pipes	≤ 40 x 2.0 - 4.0	≥ 15 x 20	No	fig. 1 to 4	✓	✓		≤ EI 120-U/C
			Yes <sup>†</sup>				✓	

<sup>†</sup>Multitherm Backing

### Uninsulated Multilayer Pipe Penetrations through Coated Batts (2 x 50 mm)

EN 1366-3

Multilayer pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	Spacing	Construction			Classification minutes
					FW-100	RW-100	RF-150	
Aluminum composite pipes	≤ 40 x 2.0 - 4.0	≥ 15 x 20	No	fig. 5 and 6	✓	✓		≤ EI 120-U/C
							✓	≤ EI 90-C/U

#### Pipe types

- Alpex DUO, Valsir Pexal, Valsir Mixal and APE Plain (PE-Xb/AL/PE-Xb)
- Geberit Mepla and Uponor Unipipe (PE-RT/AL/PE-RT)
- Henco and Uponor (PE-Xc/AL/PE-Xc)
- Uponor, REHAU (PE-Xa) and REHAU (PE-Xc)
- SP Superpipe and POLYGON PEX (PE-X/AL/PE-X)
- Valsir Pexal and Valsir Mixal (PE/AL/PE-Xb)
- Wavin Tigris, Protecta-Line System and Alpex F50 Profi (PE-X/AL/PE)

E: Integrity

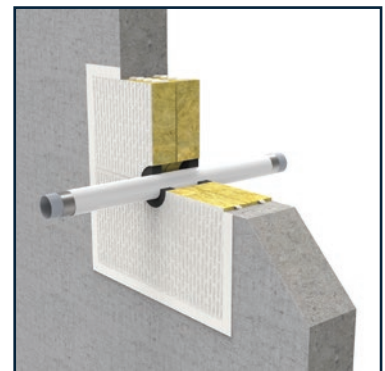
I: Thermal insulation

FW-100: Flexible wall, 100 mm thick

RW-100: Rigid wall, 100 mm thick

RF-150: Rigid floor, 150 mm thick

Ø x S [mm] Diameter x wall thickness of the penetration  
[wxh / mm] width x height / mm





**Uninsulated Metal Pipe Penetrations through Flexible Walls, Rigid Walls and Floors**
**EN 1366-3**

Metal pipes	Size Ø x s [mm]	Injection depth [wxh / mm]	Backing required	Spacing	Construction			Classification minutes
					FW-100	RW-100	RF-150	
Copper, steel and cast iron pipes	≤ 15 x 1.0 - 14.2	≥ 15 x 20	No	fig. 1 to 4	✓	✓		≤ EI 30-C/U
	≤ 54 x 1.5 - 14.2						≤ EI 60-C/U <sup>12</sup>	
	≤ 35 x 1.0 - 14.2		Yes <sup>11</sup>			✓	≤ EI 30-C/U	

<sup>11</sup> Multitherm Backing in combination with 1 x 150 mm Multitherm Bandage

<sup>12</sup> in combination with 2 x 150 mm Multitherm Bandage

**Electric Cables through Flexible Walls, Rigid Walls and Floors**
**EN 1366-3**

Electric cables	Size Ø x s [mm]	Injection depth [wxh / mm]	Backing required	Spacing	Construction			Classification minutes
					FW-100	RW-100	RF-150	
Electric cables	≤ 25	≥ 15 x 20	No	fig. 1 to 4	✓	✓		≤ EI 60
			Yes <sup>11</sup>			✓		
Cable bundles	≤ 100	≥ 10 x 15	No	fig. 1 to 4	✓	✓		≤ EI 60
	≤ 80		Yes <sup>11</sup>			✓	≤ EI 120	
Electric cable(s) i.c.w. PE sleeve	≤ 50	≥ 15 x 20	Yes <sup>11</sup>	fig. 1 to 4			✓	≤ EI 120

<sup>11</sup> Multitherm Backing

**PVC Pipe Sleeves through Rigid Floors in Rigid Floors**
**EN 1366-3**

Elektrakabels	Size Ø [mm]	Injection depth [wxh / mm]	Backing required	Spacing	Construction RF-150	Classification minutes
PVC-U / PVC-C	≤ 110 x 3.2	≥ 110 x 15	Yes <sup>11</sup>	fig. 1 to 4	✓	≤ EI 60

<sup>11</sup> Multitherm Backing

**Insulated Multilayer Pipe Penetrations through Flexible and Rigid Walls  
PE-foam insulation, Fire class CL-s1-d0, in accordance with EN 13501-1  
Thickness: ≤ 6 mm**
**EN 1366-3**

Multilayer pipes	Size Ø [mm]	Injection depth [wxh / mm]	Backing required	Spacing	Construction		Classification minutes
					FW-100	RW-100	
Aluminum composite pipes	≤ 32 x 2.0 - 3.0	≥ 15 x 20	No	LS, LI - 300 or CI, CS	✓	✓	≤ EI 120-U/C

**Pipe types**

- Alpex DUO, Valsir Pexal, Valsir Mixal and APE Plain (PE-Xb/AL/PE-Xb)
- Geberit Mepla and Uponor Unipipe (PE-RT/AL/PE-RT)
- Henco and Uponor (PE-Xc/AL/PE-Xc)
- Uponor, REHAU (PE-Xa) and REHAU (PE-Xc)
- SP Superpipe and POLYGON PEX (PE-X/AL/PE-X)
- Valsir Pexal and Valsir Mixal (PE/AL/PE-Xb)
- Wavin Tigris, Protecta-Line System and Alpex F50 Profi (PE-X/AL/PE)

**E:** Integrity

**I:** Thermal insulation

**FW-100:** Flexible wall, 100 mm thick

**RW-100:** Rigid wall, 100 mm thick

**RF-150:** Rigid floor, 150 mm thick

 Ø x S [mm] Diameter x wall thickness of the penetration  
 [wxh / mm] width x height / mm

**Insulated Multilayer Pipe Penetrations through Flexible and Rigid Walls**  
**Elastomeric insulation, Fire class B<sub>1</sub>-s3, d0 or B-s3, d0, in accordance with EN 13501-1**  
**Thickness: 9 to 32 mm**

**EN 1366-3**

Multilayer pipes	Size Ø x s [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction		Classificatie minuten
					LSW-100	MW-100	
Aluminum composite pipes	≤ 75 x 2,0 - 6,0	≥ 15 x 20	No	LS, LI - 300 or CI, CS	✓	✓	≤ EI 60-U/C ≤ EI 120-U/C <sup>†</sup>

<sup>†</sup> insulation thickness: 32 mm

**Insulated Metal Pipe Penetrations through Flexible and Rigid Walls**  
**Elastomeric insulation, Fire class B<sub>1</sub>-s3, d0 or B-s3, d0, in accordance with EN 13501-1**  
**Thickness: 13 mm**

**EN 1366-3**

Metal pipes	Size Ø [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction		Classification minutes
					FW-100	RW-100	
Copper pipes	≤ 54 x 1.5 - 14.2	≥ 15 x 20	No	LS - 300 or CS	✓	✓	≤ EI 60-C/U
	≤ 76.1 x 1.5 - 14.2			LS - 500 or CS			≤ EI 60-C/U

**Insulated Metal Pipe Penetrations through Flexible and Rigid Walls**  
**Elastomeric insulation, Fire class B<sub>1</sub>-s3, d0 or B-s3, d0, in accordance with EN 13501-1**  
**Thickness: 25 mm**

**EN 1366-3**

Metal pipes	Size Ø [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction		Classification minutes
					FW-100	RW-100	
Steel and cast iron pipes	≤ 76.1 x 1.5 - 14.2	≥ 15 x 20	No	LS - 300 or CS	✓	✓	≤ EI 60-C/U
	≤ 168.3 x 1.5 - 14.2			LS - 500 or CS			≤ EI 60-C/U
	≤ 219.1 x 1.5 - 14.2			LS - 300 or CS			≤ EI 45-C/U

**Insulated Metal Pipe Penetrations through Rigid Floors**  
**Elastomeric insulation, Fire class B<sub>1</sub>-s3, d0 or B-s3, d0, in accordance with EN 13501-1**  
**Thickness: 25 mm**

**EN 1366-3**

Metal pipes	Size Ø [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction RF-150	Classification minutes
Steel and cast iron pipes	≤ 54 x 1.5 - 14.2 ≤ 168.3 x 1.5 - 14.2	≥ 15 x 20	Yes	CS LS - 450 or CS	✓	≤ EI 120-C/U ≤ EI 60-C/U

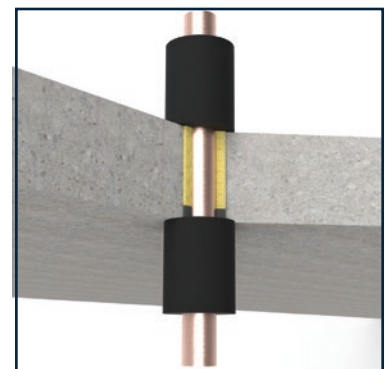
*Permitted elastomeric insulation types*

- AF/Armaflex
- SH/Armaflex for pipes up to Ø39 mm
- Kaiflex ST and Kaiflex KKplus s2
- K-Flex EC, K-Flex EC AD, K-Flex EC, K-Flex ST, K-Flex ST/SK, K-Flex ST Frigo, K-Flex SRC and K-Flex SRC

E: Integrity  
 I: Thermal insulation

FW-100: Flexible wall, 100 mm thick  
 RW-100: Rigid wall, 100 mm thick  
 RF-150: Rigid floor, 150 mm thick

Ø x S [mm] Diameter x wall thickness of the penetration  
 [wxd / mm] width x height / mm  
 config. / L [mm] Configuration / insulation length



**Insulated Metal Pipe Penetrations through Flexible and Rigid Walls**  
**PIR/PUR insulation o.e. Fire class E in accordance with EN 13501-1**  
**Thickness: 25 mm**

**EN 1366-3**

Metal pipes	Size Ø [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction		Classification minutes
					FW-100	RW-100	
Copper pipes	≤ 54 x 1.5 - 14.2	≥ 15 x 20	No	LS - 300 or CS	✓	✓	≤ EI 120-C/U
	≤ 76.1 x 1.5 - 14.2			LS - 500 or CS			≤ EI 45-C/U
				CS			≤ EI 60-C/U

**Insulated Metal Pipe Penetrations through Flexible and Rigid Walls**  
**PIR/PUR insulation o.e. Fire class E in accordance with EN 13501-1**  
**Thickness: 25 mm**

**EN 1366-3**

Metal pipes	Size Ø [mm]	Injection depth [wxd / mm]	Backing required	Insulation config. / L [mm]	Construction		Classification minutes
					FW-100	RW-100	
Steel and cast iron pipes	≤ 54 x 1.5 - 14.2	≥ 15 x 20	Yes	LS - 300 or CS	✓	✓	≤ EI 120-C/U
	≤ 219,1 x 1.5 - 14.2			LS - 500			≤ EI 60-C/U

Permitted PIR/PUR insulation types

- Insul-Phen
- Insul-Pirplus
- Insul-Pir 33
- Kingspan Tarecpir M1
- Kingspan Tarecpir CR
- Kingspan Tarecpir B2
- Kingspan Tarecpir HT
- Kingspan Tarecpir HD
- Kingspan Kooltherm FM

E: Integrity

I: Thermal insulation

FW-100: Flexible wall, 100 mm thick

RW-100: Rigid wall, 100 mm thick

Ø x S [mm] Diameter x wall thickness of the penetration

[wxh / mm] width x height / mm

config. / L [mm] Configuration / insulation length



## 7. Actually tested solutions

All the latest tested solutions with the Multisealant GR can be found in our **Multiselector**. Scan the QR code or press the Multiselector button to get directly to the tested solution for your project.



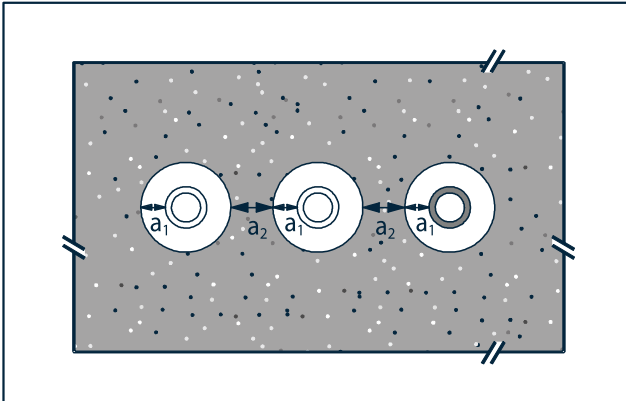
Our Multiselector can also be found in our **Mulcol Fire Protection App**. It can be downloaded from the **App Store** (iOS) or **Google Play Store** (Android).



## 8. Spacing

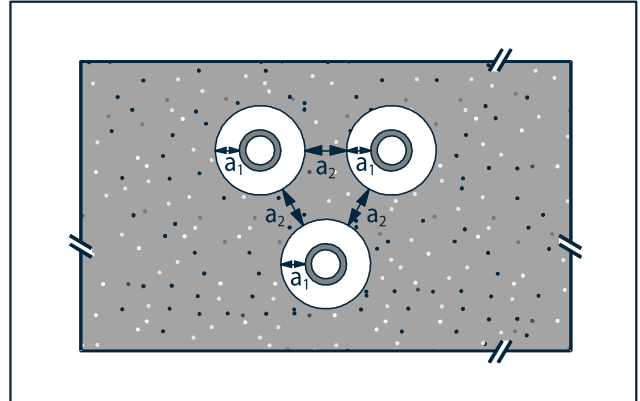
**Figure 1**

- A1:** Distance between the seal and penetration  $\leq 50$  mm
- A2:** Spacing  $\geq 100$  mm



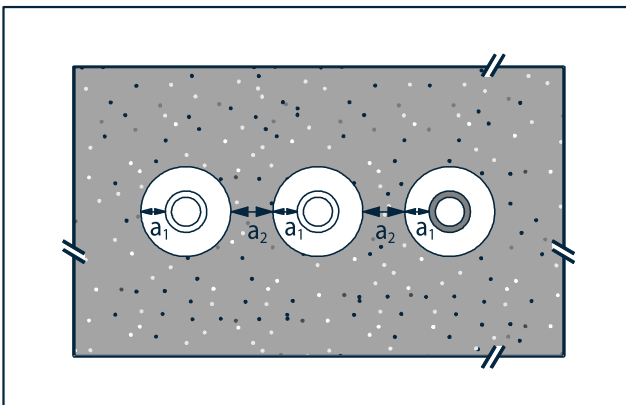
**Figure 2**

- A1:** Distance between the seal and penetration  $\leq 50$  mm
- A2:** Spacing  $\geq 100$  mm



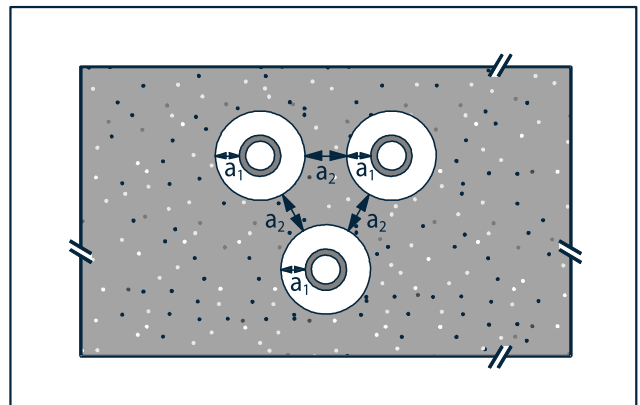
**Figure 3**

- A1:** Distance between the seal and penetration  $\leq 75$  mm
- A2:** Spacing  $\geq 100$  mm



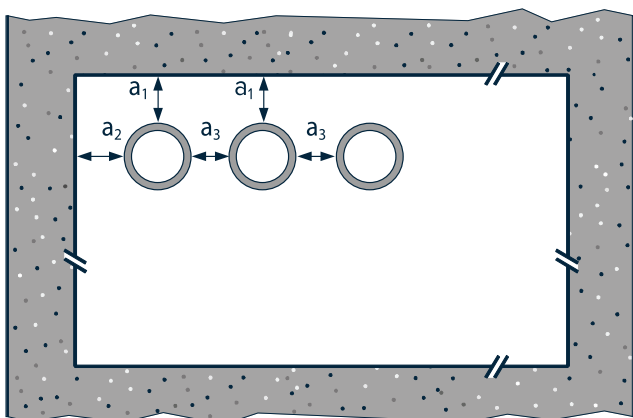
**Figure 4**

- A1:** Distance between the seal and penetration  $\leq 75$  mm
- A2:** Spacing  $\geq 100$  mm



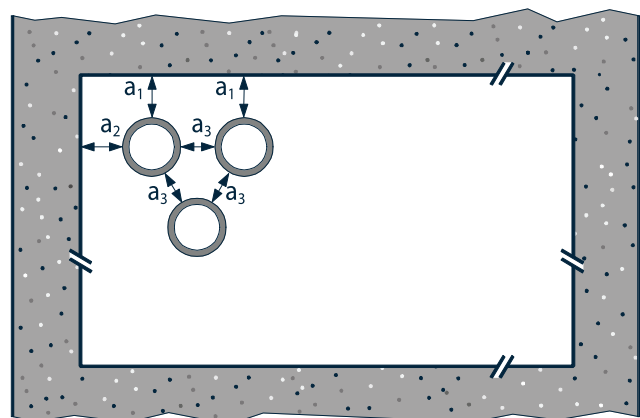
**Figure 5**

- A1:** Distance between penetration and top of the seal  $\geq 50$  mm
- A2:** Distance between penetration and side of the seal  $\leq 50$  mm
- A3:** Spacing  $\geq 100$  mm



**Figure 6**

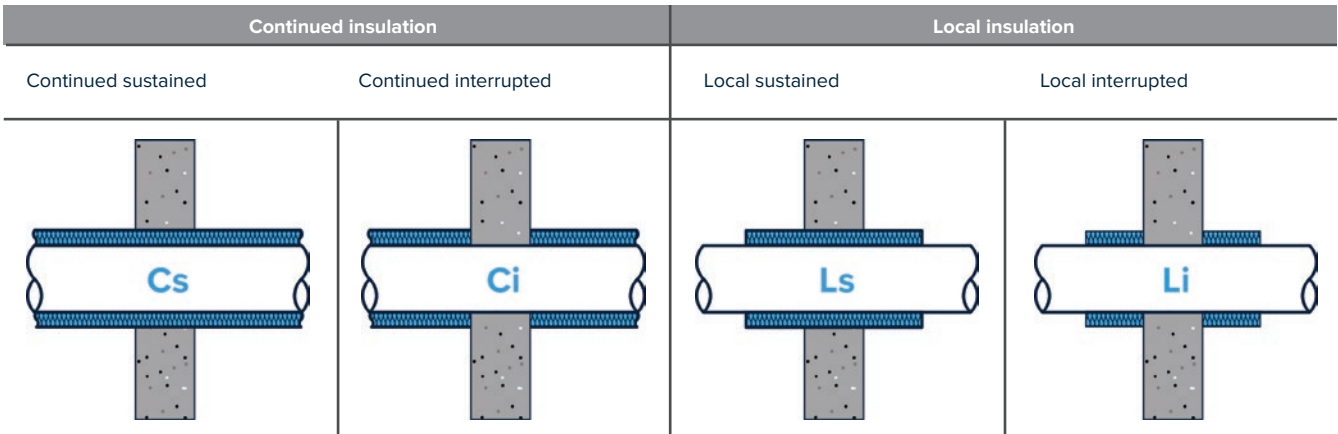
- A1:** Distance between penetration and top of the seal  $\geq 50$  mm
- A2:** Distance between penetration and side of the seal  $\leq 50$  mm
- A3:** Spacing  $\geq 100$  mm



## 9. Pipe Insulation (Configuration)

Insulations serve different functions and can therefore be arranged around pipes in different manners. This must be taken into account when applying fire stopping seals on these pipes.

Possible configurations are shown below:



## 10. Permitted Insulation Materials

Multisealant GR firestop and (in case of heat) intumescent sealant has been extensively tested with various insulation materials; the table below shows the permitted insulation materials. For principle details, refer to the Multiselector and our test reports: ETA 16/0567 and C 1769-2E-RA-007

Insulation type	Pipe types	Permitted <sup>(1)</sup>
<b>Elastomeric insulation</b> Fire class B1-s3, d0 or B-s3, d0, in accordance with EN 13501-1	<ul style="list-style-type: none"> <li>✓ Multilayer pipes</li> <li>✓ Copper pipes</li> <li>✓ (Stainless) steel pipes</li> <li>✓ Cast iron pipes</li> </ul>	<ul style="list-style-type: none"> <li>✓ AF/Armaflex</li> <li>✓ SH/Armaflex</li> <li>✓ Kaiflex ST</li> <li>✓ Kaiflex KK plus s2</li> <li>✓ K-Flex EC</li> <li>✓ K-Flex EC AD</li> <li>✓ K-Flex EC</li> <li>✓ K-Flex ST</li> <li>✓ K-Flex ST/SK</li> <li>✓ K-Flex ST Frigo</li> <li>✓ K-Flex SRC</li> <li>✓ K-Flex SRC Eco</li> </ul>
<b>PIR/PUR insulation</b> Fire class E, in accordance with EN 13501-1	<ul style="list-style-type: none"> <li>✓ Copper pipes</li> <li>✓ (Stainless) steel pipes</li> <li>✓ Cast iron pipes</li> </ul>	<ul style="list-style-type: none"> <li>✓ Insul-Phen</li> <li>✓ Insul-Pirplus</li> <li>✓ Insul-Pir 33</li> <li>✓ Kingspan Tarecpir M1</li> <li>✓ Kingspan Tarecpir CR</li> <li>✓ Kingspan Tarecpir B2</li> <li>✓ Kingspan Tarecpir HT</li> <li>✓ Kingspan Tarecpir HD</li> <li>✓ Kingspan Kooltherm FM</li> </ul>
<b>Miscellaneous thermal insulation</b> Fire class C1-s1-d0, in accordance with EN 13501-1	<ul style="list-style-type: none"> <li>✓ Multilayer pipes</li> </ul>	<ul style="list-style-type: none"> <li>✓ PE-Foam o.e.</li> </ul>

<sup>(1)</sup> Insulation materials must have at least the same fire class as tested in accordance with EN 13501-1

## 11. Pipe Support Penetrations

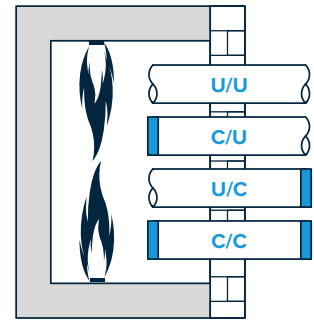
Service penetrations must be held in place  $\leq 350$  mm from the fire partition. With floors, the covering must only be applied at the top of the floor at a distance of  $\leq 350$  mm.

## 12. Test Configuration

### Introduction

The test configuration determines the application of plastic pipes. Before testing a pipeline type, the intended use of the pipeline must be considered. Where will it be used in practice? Standard EN 1366-3:2009 sets requirements in this regard. The end of the pipe must be capped or uncapped, based on this. See the test configuration in table 1 and 2.

In a test, the conditions to which the pipeline and the sealing system are exposed to are determined by asking whether one or both pipe ends are capped in practice. The pressure and flowrate of hot gases will be different in a pipe that is in contact with the outside air than in a capped pipe. It is important to ensure that the sealing system is tested under appropriate conditions.



**Table 1 - Test configuration plastic pipes**

Test setup	Pipe end		Permitted use			
	In the oven	Outside the oven	U/U	C/U	U/C	C/C
U/U	Uncapped	Uncapped	✓	✓	✓	✓
C/U	Capped	Uncapped	✗	✓	✓	✓
U/C	Uncapped	Capped	✗	✗	✓	✓
C/C	Capped	Capped	✗	✗	✗	✓

**Table 2 - Test configuration metal pipes**

Test setup	Pipe end		Permitted use		
	In the oven	Outside the oven	U/C	C/U	C/C
U/C *	Uncapped	Capped	✓	✓	✓
C/U	Capped	Uncapped	✗	✓	✓
C/C	Capped	Capped	✗	✗	✓

\* U/C tested and therefore U/U is covered

### Plastic Pipes

Table H.1 shows a few examples of types of pipes and the intended use, where the end of the pipe is capped or uncapped. The table does not take all possible applications into account. The choice of whether to close the end or leave it open depends on a number of aspects: is the system under pressure and it is ventilated or unventilated? Consider the intended use of the pipe to determine whether it should be capped or left uncapped. If national regulations set different requirements than those contained in table H1, follow the regulations.

**Table H.1 - Plastic Pipe Test Configuration per Application**

Type of pipe	Pipe end		Test setup
	In the oven	Outside the oven	
Rainwater drainage	Uncapped	Uncapped	U/U
Sewage, Ventilated	Uncapped	Uncapped	U/U
Sewage, Unventilated	Uncapped	Capped	U/C
Gas pipe, drinking water pipe, hot water pipe	Uncapped	Capped	U/C

There is no application for a plastic pipe penetration with a test classification of C/U or C/C, according to table H.1 from EN 1366-3.

### Metal Pipes

Metal pipes will normally be closed in the furnace as no open end is to be expected in the event of a fire, this due to the melting away of metal. Herewith is assumed that the suspension system remains in place. If the pipes are supported by a non fire resistant suspension system or are waste disposal shafts, the pipes are not sealed in the furnace, as shown in Table H.2.

**Table H.2 - Test Configuration Metal Pipe by Application**

Type of pipe	Construction		Test setup
	In the oven	Outside the oven	
Supported by a fire resistant <sup>a</sup> suspension	Capped	Uncapped	C/U
Supported by a non fire resistant suspension system	Uncapped	Capped	U/C
Shafts for waste disposal	Uncapped	Capped	U/C

<sup>a</sup>confirmed by testing or calculations (e.g. Eurocodes)

## 13. Building Element Properties

### Flexible walls

The minimum wall thickness must be 100 mm and the wall must consist of steel or wooden posts\* with at least 2 layers of cladding on both sides with a thickness of 12.5 mm. Can also be used with fire-stopping stone wool boards, 2 x 50 mm Multimastic FB1, maximum seal size: unlimited width x 1200 mm height (uninterrupted partition styles required, with a centre distance of up to 2400 mm).

### Rigid walls

The minimum wall thickness is 100 mm and the wall must consist of concrete, aerated concrete or brickwork, with a minimum density of 650 kg/m<sup>3</sup>. Can also be used with fire-stopping stone wool, 2 x 50 mm Multimastic FB1, maximum seal size: unlimited width x 1200 mm height.

### Rigid floors

The minimum floor thickness is 150 mm and the floor must consist of concrete or aerated concrete, with a minimum density of 650 kg/m<sup>3</sup>. Can also be used with fire-stopping stone wool boards, 2 x 50 mm Multimastic FB1, maximum seal size: 2400 x 1200 mm (w x h).

*\*There must be a minimum distance of 100 mm from each part of the conduit seal to a wooden post and the gap between the conduit seal and the post must be capped. The cavity between the conduit seal and the post must have at least 100 mm class A1 or A2 insulation (according to EN 13501-1).*

The support structure must be classified in accordance with EN 13501-2 for the specified fire resistance

## 14. Available Documents

### Technical documents

- ✓ Product Data Sheet (PDS)
- ✓ Technical Data Sheet (TDS)
- ✓ Safety Data Sheet (SDS)
- ✓ Installation Manual
- ✓ EC certificate
- ✓ Emission reports
- ✓ Acoustic report

### Approvals

- ✓ Tested in accordance with EN 1366-3
- ✓ Classification in accordance with EN 13501-2
- ✓ Certified in accordance with EAD 350454-00-1104
- ✓ ETA report 16/0567
- ✓ Declaration of Performance (DoP)

The above documents are available from your Mulcol contact person or via [www.mulcol.com](http://www.mulcol.com)



For help in finding the right fire-retardant finish for penetrations, see our **Multiselector** at [www.mulcol.com](http://www.mulcol.com) or download the Mulcol Fire Protection App in the **App Store** (iOS) or **Google Play Store** (Android).



Mulcol International composed the technical data on this sheet with great care and reserves the right to change product properties without prior notification. The user of this data remains responsible at all times for the correct application thereof. In the event of a lack of clarity or doubt, we recommend consulting Mulcol International to confirm that this data complies with the required application.

**MULCOL**  
INTERNATIONAL

Mulcol International  
The Netherlands

Arnesteinweg 18  
4338 PD Middelburg

T. +31 (0)118 72 61 40  
contact@mulcol.com

[www.mulcol.com](http://www.mulcol.com)



GB