

Multifoam 2K

2 Component Fire Protection Foam

European
Technical Assessment
ETA 17/0977



Technical Data Sheet

MULCOL
INTERNATIONAL

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Multifoam 2K

2 Component fire protection foam



Fire resistance
≤ 120 minutes



Acoustic insulation
Rw 47 dB



Working life
10 years



Resistant against
Fungi and bacteria

2 Component fire protection foam

Multifoam 2K is a foaming two-component polyurethane foam with fire-retardant additives for the firestopping of openings around cable trays, cable bundles, Combustible and non-combustible pipes. In the event of fire, the two-component foam prevents fire and smoke from spreading through fire-resistant walls and floors. Multifoam 2K was developed for quick installation and to seal hard-to-reach penetrations.

Multifoam 2K forms part of the Mulcol® Multifoam 2K System.

Advantages

- ✓ Fire resistance ≤ 120 minutes
- ✓ CE-certified
- ✓ Installation from one side possible
- ✓ Quick and easy application
- ✓ Efficient processing, no loss of product
- ✓ Permanently elastic and paintable once hardened
- ✓ No lining required in the case of plasterboard partitions
- ✓ Post-hardening cable mutations possible
- ✓ Excellent adhesion on virtually all surfaces

Applications

- ✓ Rigid walls and floors
- ✓ Flexible walls
- ✓ In combination with Multimastic FB1
- ✓ Plastic pipes up to Ø 50 mm
- ✓ Steel, stainless steel and copper pipes with and without insulation
- ✓ Cable trays, cable ladders, electric cables and cable bundles
- ✓ Aluminium composite pipes with and without insulation
- ✓ Meter box penetrations with encased plastic pipe sleeves

Packaging

	Contents	Box	Pallet	Pallet	Article number
Cartridge	380 ml	6 pieces	60 boxes	360 pieces	301006380

Accessories (included)

- ✓ 8 pieces of mixing nozzles 380 ml

1. Technical data

EAN-code	8719324470230
Colour	Red/brown
Transportation - storage temperature	+5 °C to +30 °C (store dry and dustfree in the original packaging)
Application temperature	+15 °C to +30 °C (optimum temperature between +20°C and +25°C)
Temperature resistance	-20 °C to +80 °C
Foam yield*	Up to 2.1 litres (at +22 °C material and ambient temperature)
Work interruption*	Approx. 50 sec.
Cuttability	After approx. 90 seconds (at +22 °C material and ambient temperature)
VOC	< 2 µg/m ³
Density	$\rho \geq 215 \text{ kg/m}^3$
Thermal conductivity (λ)	0.088 W/(m*K)
Expansion pressure	No expansion pressure measurable
Category of use¹⁾	Type Z ₁ in accordance with EAD 350454-00-1104
Recoatable²⁾	Yes
Expansion factor³⁾	1.6 x up to 4.5 x
Air permeability	Q600 $\leq 0.08 \text{ m}^3/(\text{h} \cdot \text{m}^2)$ (at 600 Pa differential pressure, with measurement accuracy of 0.01 m ³ /h, no air permeability was measurable) Test standard EN 1026 (Tested dimensions: 350 x 350 x 200 mm (l x w x d))
Resistance to static pressure differences	No visible changes up to the maximum test pressure of the test device (P _{max} =10000 Pa). Test standard: In accordance with EN 12211 (sample dimensions 350 x 350 x 200 [mm], tested without penetrations)
Acoustic properties	R _w 47 dB (test dimension 360 x 360 x 200 mm)
Fire class	E in accordance with EN 13501-1
Approvals	ETA report 17/0977
Function retention	10 years

* Foam output and max. possible work interruptions depend on the material and ambient temperature.

¹⁾Permissible environmental conditions

Product intended for use in conditions with > 85% RV, protected from temperatures below 0 °C, and without exposure to rain and/or UV (TR 024:2019, type Z₁). Limited contact with splash water tolerated. Lasting wetness, stagnant water and water pressure must be avoided.

²⁾Influence of finishing materials and chemicals

The following paints and occasional brief influences from chemicals will not change the fire protection properties:

Coating materials	: Dispersion paint, alkyd paint, polyurethane acrylic paint, epoxy resin paint, silicone
Solvent/oil	: Butyl acetate, butanol, trichloroethylene, xylene, acetone, turpentine
Gaseous chemicals	: Brief storage with concentrated ammonium hydroxide solution

Remark

Environmental conditions with high humidity levels and/or some types of coating materials and chemicals may affect the colour or reduce colour changes.

³⁾Expansion factor

Tested on samples at +450 °C for 25 minutes with overload. The expansion factor is a laboratory characteristic value.

The expansion factor in an installed state depends on the existing preconditions.

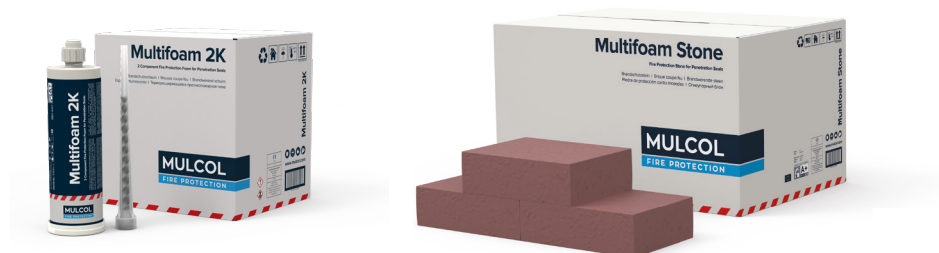
Contact with metals and plastics

The surface consistency of aluminium, stainless steel, galvanised steel and polyethylene and polyvinyl chloride plastics is not adversely affected through contact with Multifoam Stone and Multifoam 2K.

Acoustic performance

Multifoam 2K has been tested according to EN ISO 717-1, the same or higher sound insulation can be achieved by applying **Multifoam 2K over a depth of more than 200 mm**. The sound insulation value only applies to the sealant and not to other elements in the building structure.

Components



Multifoam 2K 380ml, 6 pieces per set
Incl. 8 x Mulcol® Mixing nozzle,
Packaging unit: 1
Article number: 301006380

Multifoam Stone
(200 x 144 x 60 mm)
Packaging unit: 1
Article number: 303001200

Accessories



PowerMax dispensing gun
380 ml (5:1)
Packaging unit: 1
Article number: 803010206



HandyMax dispensing gun
380 ml (5:1)
Packaging unit: 1
Article number: 803010202



Mixing nozzle 380 ml
8 pieces per set
Packaging unit: 1
Article number: 803010108

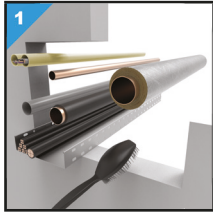
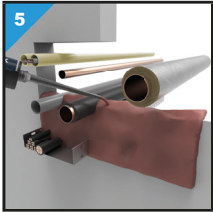
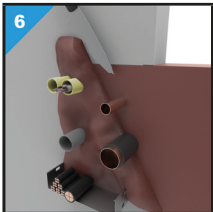
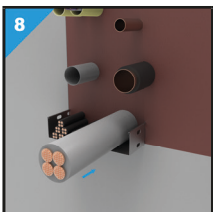


Extension for mixing nozzle
10 pieces per set
Packaging unit: 1
Article number: 803010102



Tempering box
Capacity: 18 pieces of 380 ml
Packaging unit: 1
Article number: 803010401

2. Installation manual

	1 Make sure that the service penetrations and the gap are free from dust, dirt and grease. If necessary, the other side of the opening can be sealed with cardboard, plastic film or form tape.
	2 Hold the cartridge vertically with the cap facing upwards, unscrew the cap and mount the supplied mixing nozzle.
	3 Place the cartridge in the holder of a sealant gun.
	4 Hold the sealant gun upwards so that the two components come out of the mixing nozzle simultaneously. Discard the first material to come out that is not mixed.
	5 Fill the opening from the back to the front and build the foam from bottom to the top. Always keep the end of the mixing nozzle above the foam so that it does not become clogged¹⁾.
	6 After about 2 minutes the protruding foam residue can be cut off with a suitable knife.
	7 Fill in the conformity statement and paste it next to the fireproof seal.
	8 After the Multifoam 2K has been installed, cable changes can be carried out carefully without damaging the fireproof seal!

¹⁾ After a work interruption of longer than about 50 seconds, the foam in the mixing nozzle hardens and it must be replaced. Remove pressure from the sealant gun before replacing the mixing nozzle and remove it carefully.

PowerMax Settings

The recommendations below are based on experience and are for guidance purposes only. The user is solely responsible for adjusting the settings to current conditions and for using the equipment with the necessary caution. It is essential that you do not continue to inject if the mixing nozzle is clogged up. First replace the mixing nozzle, and slowly heat up the cartridge if it is too cold.

At application temperature (+15 to +30 °C) the recommended setting is: position 2.

At optimal operating temperature (+20 to +25 °C) the recommended setting is: position 2/3.



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.

General instructions

A	Cable trays, cables, tubes and pipes must be secured in accordance with the installation instructions.
B	Cable trays and ladders, as well as their supporting elements and attachments must be made of steel and must be present on both sides of the structure. If this is the case, the additional mechanical load must not affect the firestop penetration, even in the event of a fire. The technical regulations of the relevant manufacturer must be observed.
C	Tube and pipe support elements must be made of steel and must be present on both sides of the structure. If this is the case, the additional mechanical load must not affect the firestop penetration, even in the event of a fire. The technical regulations of the relevant manufacturer must be observed.
D	Optionally, cable trays and ladders can be fitted at an angle.
E	The total cross-section (surface) of the penetrations must not exceed 60% of the gap.
F	The first cable tray, cable and conduit supports must be installed a maximum of 200 mm from the penetration. In the case of floors, this maximum distance is only required at the top.
G	For walls, the first pipe support must be installed at a maximum of 750 mm from the penetration. In the case of floors, pipes must be supported at 1200 mm. This maximum distance is required at the top.

Temperature influence on processing Multifoam 2K foam

Multifoam 2K foam must be processed at a temperature between +15 °C and +30 °C. At a higher temperature the best expansion is achieved, which is approx. 2.5 litres per sleeve at +30 °C. The product also begins to foam more quickly and the foamed and hardened material can be cut off more quickly. Incidentally, the cut-off material can be processed in a subsequent gap so that there is no residual waste.

The temperature box can be used to process the material at the correct temperature. Table 1 shows how the Multifoam 2K foam relates to the temperature.

Table 1

Temperature	[°C]	+15 °C	+20 °C	+30 °C
Theoretical foam yield	[L/sleeve]	1.9	2.0	2.5
Start foaming	[sec.]	ca. 35	ca. 20	ca. 12
Can be cut off after	[sec.]	ca. 110	ca. 90	ca. 70
Work interruption	[sec.]	ca. 70	ca. 50	ca. 40



Installation with Multifoam Stone

Gaps in lightweight partitions, solid walls and floors can be sealed completely fire-resistant in a simple manner with Multifoam 2K foam. This product can also be installed in combination with Multifoam Stone. In this case, the areas that are not penetrated by cables, cable trays, pipes or tubes can be sealed with Multifoam Stone. Maintain the minimum seal thickness during installation. Below is a description of the installation method.

1. The protective film must be removed from the Multifoam Stone.
2. Install the Multifoam Stone in layers (i.e. in "half brick formation") so that they fit tightly into the opening.
3. Seal other openings, seams and cracks with Multifoam 2K foam.

For detailed installation instructions, refer to the Multifoam Stone installation instructions.

Installation on different surfaces

If the thickness of the construction is insufficient to inject Multifoam 2K over the minimum tested depth, it must be thickened. This applies for lightweight partition walls, solid walls and floors. Below are a few points of interest that apply to the various structures.

1. Installation in solid walls and floors

A	If the thickness of the solid wall or floor at the penetrations is less than the required minimum injection depth, cladding (see Fig. 3) or frame (see Fig. 1 & 2) of flammable gypsum boards, silicate or calcium silicate boards (class A2-s1, d0 or A1 according to EN 13501-1) must be fitted in the seals on the construction. This allows the Multifoam 2K to be injected over the minimum required injection depth.
B	When installing cladding in the gap, the minimum panel thickness must be at least 2 x 12.5 mm or 25 mm. The panels are clamped together in the gap, any seams and cracks between the solid construction and the cladding should be sealed with Multimortar or Multimastic SP mastic, for example. In the case of walls, attachment with screws is not necessary.
C	To attach the plate frame (min. 50 mm wide and max. 50 mm thick) on walls and floors, use metal fasteners that are large/long enough and suitable for the surface. In the case of aerated concrete, chipboard screws should be used without plugs. At least two screws must be used per sheet; the distance between the screws must not exceed 250 mm.
D	In the case of solid floors, the Multifoam 2K system must be protected against loads, in particular against entering the floor through a grille or a casing.

2. Installation in lightweight partitions

A	If the thickness of the lightweight partition at the penetrations is less than the required minimum injection depth, a cladding (see Fig. 3) or frame (see Fig. 1 & 2) of flammable gypsum boards, silicate or calcium silicate boards (class A2-s1, d0 or A1 according to EN 13501-1) must be fitted in the seals on the construction. This allows the Multifoam 2K to be injected over the minimum required injection depth.
B	For openings up to a size of 320 x 320 mm, a trimming joint of steel profiles can be omitted. For larger openings, a steel profile is sufficient at the underside and top of the gap, which must be fixed in the same way as prescribed for the wall cladding. A connection to the vertical steel profiles in the wall is not necessary.
C	When installing cladding in the recess, the minimum panel thickness must be at least 2 x 12.5 mm or 25 mm. The boards are clamped together in the gap, any seams and cracks between the light partition and the cladding should be sealed with Multimortar or Multimastic SP mastic, for instance. Attachment with screws is not necessary.
D	To attach the plate frame (min. 50 mm wide and max. 50 mm thick) on walls, use metal fasteners that are large enough / long enough and suitable for the surface. Two screws must be used per sheet; the distance between the screws must not exceed 250 mm.
E	If no frame is used, the cavity between the cladding of the flexible wall should be closed - with mineral wool (melting point ≥ 1000 °C, minimum density 40 kg/m ³) of at least 100 mm around the recess.
F	In the case of lightweight partitions with timber studs, a distance of at least 100 mm must be maintained between the penetrations and the timber studs. The spacing must be filled with mineral wool (class A2-s1, d0 or A1) in accordance with EN 13501-1.

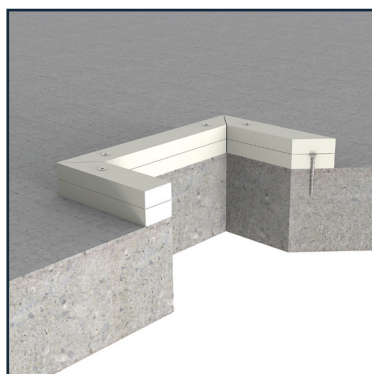


Fig. 1
Frame for solid floors (1- or 2-sided mounted, thickness max. 50 mm per side)

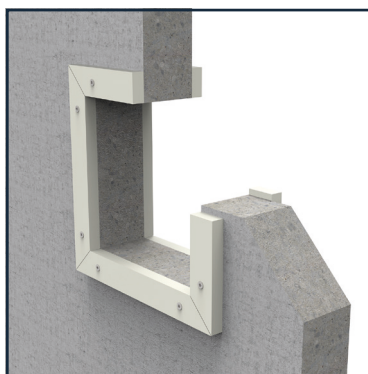
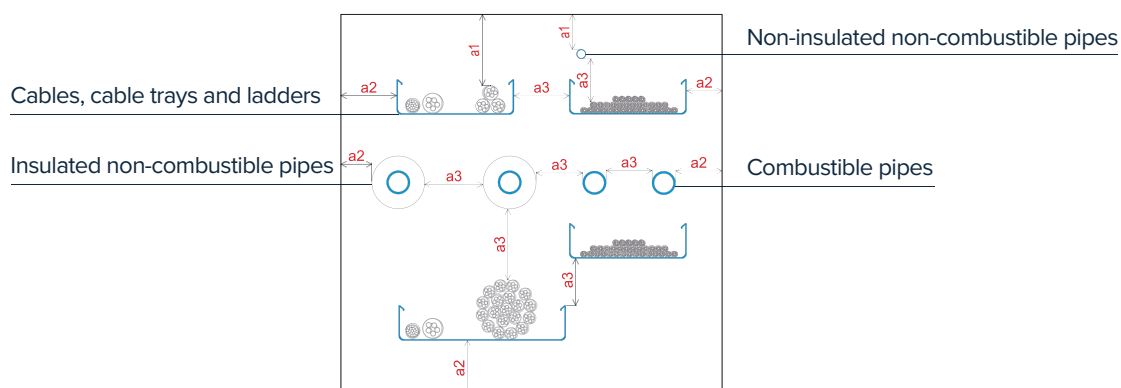


Fig. 2
Frame for solid and light walls (1- or 2-sided mounted, thickness max. 50 mm per side)



Fig. 3
Frame for solid and light walls (Centred in the recess with floors it may penetrate on one side)

Minimum spacing between penetrations



Legend

- a1: Distance from penetration to top of gap
- a2: Distance from penetration to bottom of gap
- a3: Distance between penetrations

Minimum spacing between multiple penetrations				
Penetration	a1	a2	a3	
Cables, cable trays, ladders and pipes	50 mm	0 mm	Cables/cable trays, ladders and tubes, horizontal	0 mm
			Cables/cable trays, ladders and tubes, vertical	50 mm
			Non-insulated non-combustible pipes	60 mm
			Other penetrations	50 mm
Non-combustible pipes with rock wool insulation	0 mm	0 mm	Non-combustible pipes with rock wool insulation	0 mm
			Non-insulated non-combustible pipes	60 mm
			Other penetrations	50 mm
Non-combustible pipes with Elastomer insulation	35 mm	35 mm	Non-combustible pipes with Elastomer insulation (thickness > 9 mm)	35 mm
			Non-combustible pipes with Elastomer insulation (thickness > 9 mm)	50 mm
			Non-insulated non-combustible pipes	60 mm
			Other penetrations	50 mm
Non-insulated non-combustible pipes	35 mm	35 mm	Non-insulated non-combustible pipes	60 mm
			Other penetrations	60 mm
Combustible pipes	50 mm	50 mm	Combustible pipes	50 mm
			Non-insulated non-combustible pipes	60 mm
			Other penetrations	50 mm
Minimum spacing between gaps (for both walls and floors)				100 mm

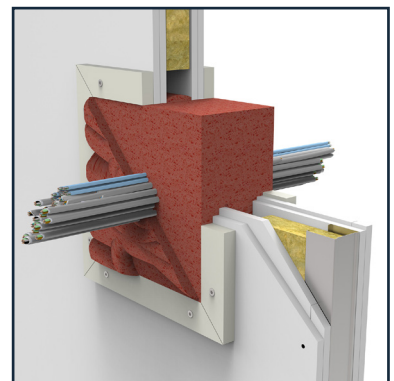
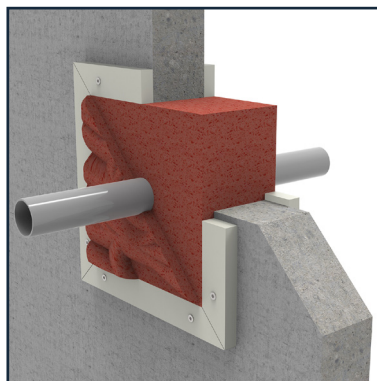
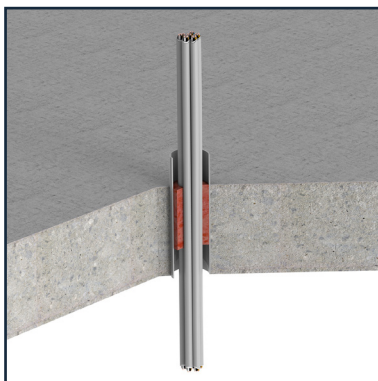
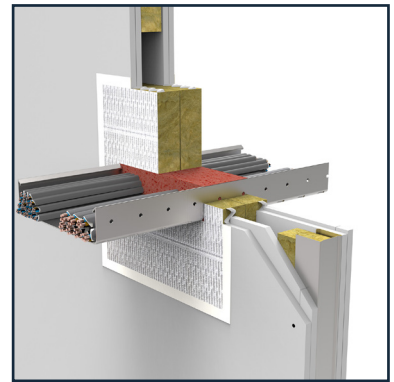
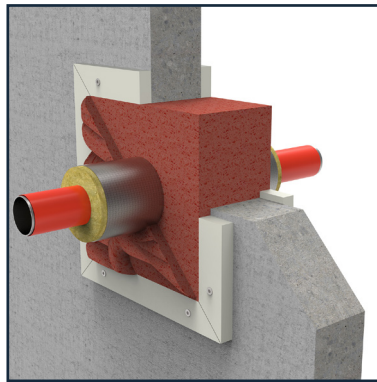
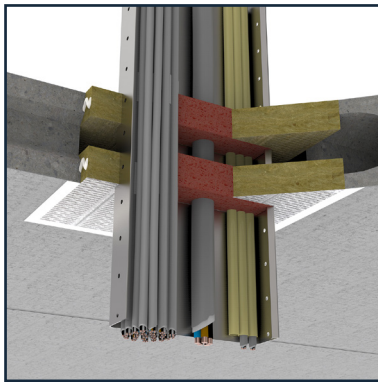
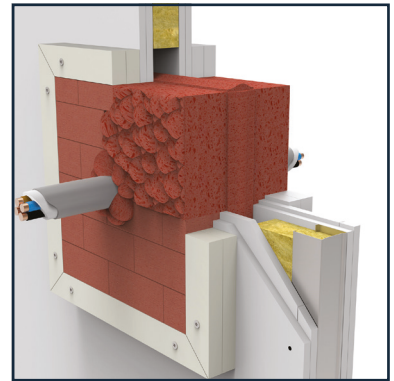
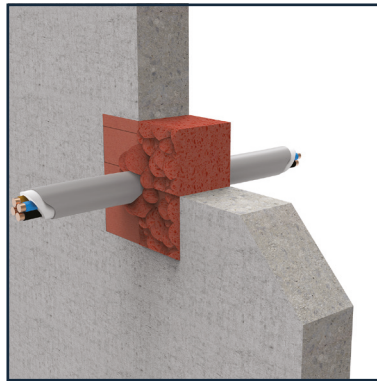
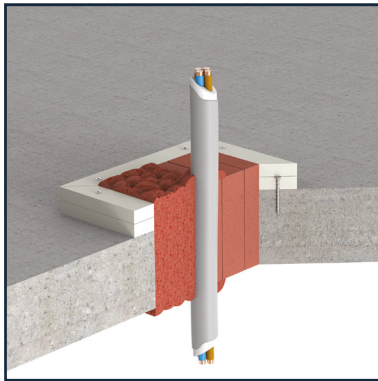
Minimum spacing between multiple penetrations				
Penetration	a1	a2	a3	
Cables, cable trays, ladders and tubes	50 mm	0 mm	Cables/cable trays, ladders and tubes	0 mm
Minimum spacing between gaps (for both walls and floors)				100 mm

3. Tested solutions

All the latest tested solutions with the Multifoam 2K 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.

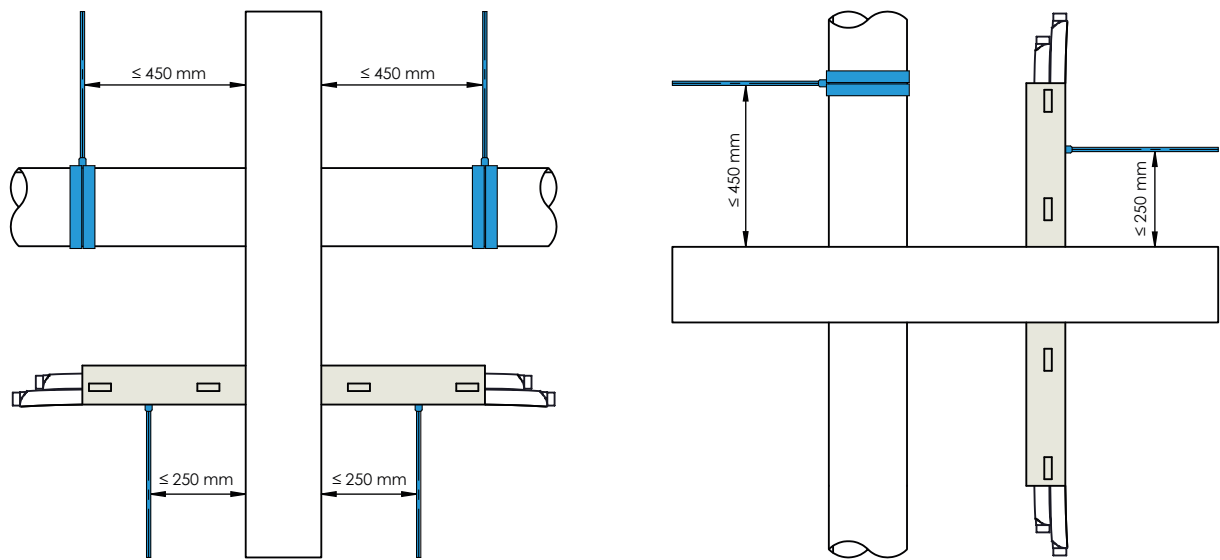


Our **Multiselector** can also be found in our **Mulcol Fire Protection App**. It can be downloaded from the **App Store (iOS)** or **Google Play Store (Android)**.



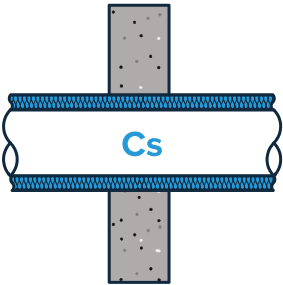
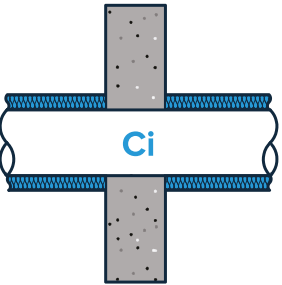
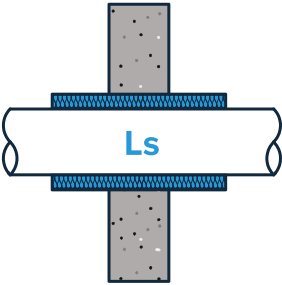
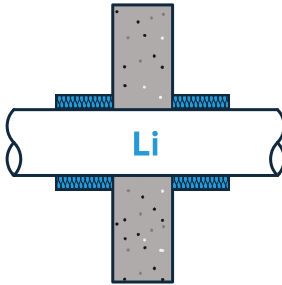
4. Service support

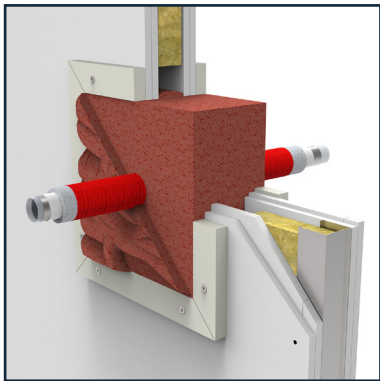
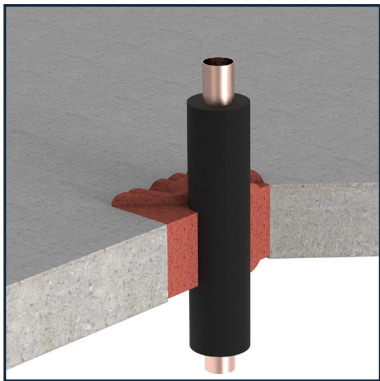
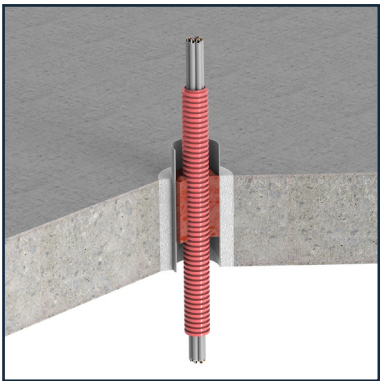
For all services (except cables and cable trays), the first support must be fitted ≤ 450 mm from the fire separating element, with cables and cable carriers at ≤ 250 mm. For floors the first support should be fitted at a distance of ≤ 450 mm from the top of the floor and for cables and cable carriers at ≤ 250 mm.



5. Pipe insulation (configuration)

Insulations serve different funtions and can therefor 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:

Continued Insulated		Locally Insulated	
Continued Sustained	Continued Interrupted	Locally Sustained	Locally interrupted
 Cs	 Ci	 Ls	 Li



6. Test configuration

Introduction

The test configuration determines the application of service penetrations. Before testing a combustible or non-combustible pipe, the intended use must be considered. Where will it be used in practice? Standard EN 1366-3 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 pipe 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.

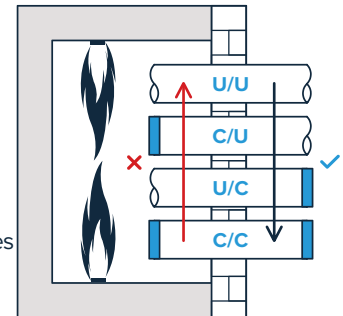


Table 1 - Test configuration plastic pipes

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	✗	✗	✓

Combustible pipes (plastic)

Table below shows a few examples of pipe types 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 the table below, follow the regulations.

Table - Test configuration plastic pipe by 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 EN 1366-3.

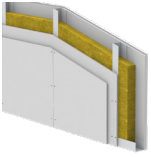
Non-combustible pipes (metal)

Metal pipes will normally be closed in the furnace as no open end is to be expected in the event of a fire, due to the high melting point of metal. With this, it is assumed that the service supporting construction remains in place. If the pipes are supported by a non fire resistant support system, the pipes are not closed in the furnace, as shown in the table below.

Table - Test configuration metal pipe by application

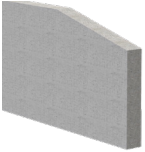
Type of pipe	Construction		Test setup
	In the oven	Outside the oven	
Supported by a fire supporting construction	Capped	Uncapped	C/U
Supported by a non fire supporting construction	Uncapped	Capped	U/C
Shafts for waste disposal	Uncapped	Capped	U/C

7. Constructions



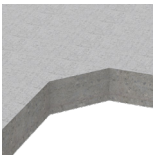
Flexible walls

The minimum wall thickness is 100 mm and consists of steel or timber studs* with at least 2 layers of cladding on both sides with a thickness of 12.5 mm per layer.



Rigid walls

The minimum wall thickness is 100 mm and consists of concrete, aerated concrete or brickwork with a minimum density of 400 kg/m³.



Rigid floors

The minimum floor thickness is 150 mm and consists of concrete or aerated concrete with a minimum density of 400 kg/m³.

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

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

8. Available documents

Technical documents available

- ✓ Technical Data Sheet (TDS)
- ✓ Safety Data Sheet (SDS)
- ✓ CE certificate

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 17/0977
- ✓ Declaration of Performance (DoP)

The above documents are available from your Mulcol contact or via www.mulcol.com

9. Tools



For help in finding the right firestopping solution for penetrations, see our **Multiselector** at www.mulcol.com or download the **Mulcol Fire Protection App** in the **App Store** (iOS) or **Google Play Store** (Android).



For the digital registration of firestopping in your buildings, you can use the **Mulcol Datamanager** free of charge. For registration on site, use our **Mulcol Fire Protection App**.



Make your project unique with the help of **Mulcol Project Manager**. In order to save costs, you can create a clear Project Book in the design phase, with cut-off details and relevant data for all firestop penetration seals on your construction project.



Mulcol International BV has compiled the technical data of this sheet with the utmost care and reserves the right to change product properties without prior notice. The user of this data remains responsible at all times for its correct application. In case of ambiguities or doubts, we advise you to consult with Mulcol International BV to ascertain whether this data meets the required application.

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