# **Nultimortar** Firestop Mortar

European Technical Assessment ETA 16/0566



# **Technical Data Sheet**



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Pragmatic, effective and applicable solutions



Firestop Mortar

Multimortar is a dry white powder consisting of non-organic compounds and perlite. When these are mixed with water, the compounds form a strongly thermal and insulating fire-resistant mass. In the event of fire, this mortar prevents fire and smoke from spreading through fire-resistant walls and floors. After having sealed openings with Multimortar, the wall or floor will retain its excellent acoustic properties.

Multimortar forms part of the Mulcol<sup>®</sup> Penetration Seal System. The Multimortar can be used in combination with the Multicollar Slim, Multiwrap and Multimastic FB firestop boards.

# **Advantages**

- ✓ Fire resistance ≤ 240 minutes
- CE-certified
- Very high acoustic insulation
- Easy to install
- Smooth finish
- High degree of mechanical resistance
- Suitable for most surfaces
- Opening size floors and walls: 2400 x 1200 mm

# **Applications**

- Rigid floors and walls
- Flexible walls
- Metal pipes up to Ø 324 mm with insulation
- Cable trays, cable ladders, electric cables and cable bundles
- Plastic pipes up to Ø 40 mm without fire collar
- Blank seals

# Packaging

	Contents	Pallet	Pallet	Article number
Bag	20 litres	63 bags	1260 litres	209001020



# 1. Technical data

EAN-code	8719324470223
Condition	Powder ready to mix with water
Colour	Off-white
Shelf life	12 months or longer if stored in an unopened bag in a dry place above 5 $^\circ \! C$
Transportation storage temp.	+5 °C to +30 °C (store dry and dustfree in the original packaging)
Application temperature	0 °C to +40 °C
Temperature resistance	-20 °C to +70 °C
Fully Hardened	Less than 1 hour, depending on the local climate
Fully cured	Till 30 days depending on the thickness and the temperature
Flexibility	None
Dry density	Approx. 900 kg/m <sup>3</sup> when fully hardened
Thermal conductivity	0.051 W/mK
Flash point	None
Category of use <sup>1)</sup>	Type $\rm Z_{2}$ in accordance with EAD 350454-00-1104 & EAD 350454-00-1106
Recoatable <sup>2)</sup>	Yes
Fire class	A1 in accordance with EN 13501-1
LEED VOC	10 g/l
Approvals	ETA 16/0566
Compatibility	Suitable for use with most materials, but should not be used in direct contact with metals
	that can corrode
Pestrictions	Must not be used in permanently humid areas or in parts that regularly move. Metals that
Restretions	make contact with Multimortar must be resistant to corrosion.
Function retention	30 years
Product consumption at	Approx. 3.42 bags per m <sup>2</sup> (with a depth of 50 mm)
mixing ratio 2:1	Approx. 6.86 bags per m <sup>2</sup> (with depth of 100 mm)
Bag capacity 20 litres	14,8 kg

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

Conduit seal for use in conditions with  $\ge$  85% RH, protected from temperatures below 0 °C, and without exposure to rain and/or UV (TR 024:2009, type Z<sub>2</sub>).

# <sup>2)</sup> 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
	(prior treatment with a primer is not mandatory, but it is recommended)
Solvent / oil	: Butyl acetate, butanol
Gaseous chemicals	: Brief storage with concentrated ammonium hydroxide solution



# 2. Acoustic properties

Multimortar has been tested at BM Trada (UKAS accredited); according to EN ISO 10140-2: 2010. The same or higher sound insulation can be achieved by applying Multimortar with more depth. The sound insulation value only applies to the sealant and not to other elements in the building structure.

Rw 64 dB

Rw 64 dB

Rw 48 dB

Rw 48 dB

- ✓ Single-sided application over a depth of at least 50 mm as a linear seal:
- Double-sided application over a depth of at least 25 mm as a linear seal:
- ✓ Single-sided installation over a depth of at least 50 mm as a recess seal:
- ✓ Double-sided application over a depth of at least 25 mm as a recess seal :







# 3. General product description

Multimortar is a dry white powder that consists of inorganic substances and perlite. After curing of the mortar, it will have an off-white colour, which can be painted over. Multimortar is easy to sand and can also be drilled in. When mixed with water, the Multimortar compounds form a highly thermal, insulating and fire-retardant composition to prevent the spread of fire, flammable gases and smoke. This applies to use in combination with floors, walls and seals of openings around penetrations. Multimortar restores the acoustic values of separation structures. The mortar expands by approx. 1% due to its hydraulic action during the curing process. This will result in a tight seal around penetrations and surrounding recesses.

# 4. Gap dimensions, in floors and walls

In accordance with EN 1366-3, the test results in floors with a minimum gap width of 1 m up to any length, as long as the ratio between the length of the circumference and the area to be sealed is not smaller than the test specimen.

The following gap dimensions are therefore permitted where  $2400 \times 1200$  mm is described in this TDS and in the installation instructions.

Gap dimensions, in floors or between floors and walls			
Max. width [mm]	Max. length [mm]		
≤ 1200	≤ 2400		
≤ 1100	≤ 2900		
≤ 1000	≤ 4000		
≤ 900	≤ 7000		
≤ 800	∞ (Unlimited length)		

Gab dimensions, in lightweight solid partitions			
Max. width [mm]	Max. height [mm]		
≤ 2400	≤ 1200		









# 5. Load-bearing capacity (floors)

Multimortar for floors has been subjected to point loads and impact tests, according to EAD 350454-00-1104, EAD 350454-00-1106 and EOTA TR001 clause 2

he tests were carried out at a minimum depth of 100 mm.

Test frame: 1500 x 1000 mm	Results
Impact of soft mass, usability	500 Nm
Impact of soft mass, safety of use	700 Nm
Impact of hard mass, usability	6 Nm
Impact of hard mass, safety of use	10 Nm
Concentrated point load according to:	
<ul> <li>EAD 350454-00-1104</li> </ul>	
✓ EAD 350454-00-1106	
✓ EOTA TR001 clause 2	

According to the load limits in the table below, reinforcement is not necessary, but it is strongly recommended that the edges of the recess are dust-free, that loose particles are brushed away and that contamination is washed away with clean water. Before casting, the edges must be well wetted in advance, which will improve adhesion.

The Multimortar should not be cast into treated surface concrete. The mortar must be mixed to a thick liquid mass with a mixing ratio of approx. 2 parts powder to 1 part water. Maximum load bearing performance will be reached 28 days after casting.

# 6. Curing times

Application	Temperature	Hardening time
	D° 0	19 minutes
<b>As a filling material</b> Powder to water mixing ratio: 3.5 - 1 (by weight)	10 °C	18 minutes
	20 °C	17 minutes
	30 °C	16 minutes
	40 °C	15 minutes
	0°0	40 minutes
As a casting agent	10 °C	35 minutes
Powder to water mixing ratio: 2 - 1 (by weight)	20 °C	30 minutes
	30 °C	25 minutes
	40 °C	20 minutes

Multimortar should be mixed with an electric mixer with a paddle with a diameter 100 mm for 90 seconds at 750 rpm. Note that the greater the agitation/transparency generated in the mixing process, the faster the mortar will dry. Multimortar is designed as a fast hardening system for professional installers where fast installation times are very important.









# 7. Performance

#### Cable trays and ladders ≤ 500 mm through Rigid Floors

Cable trays and ladders	Size [w / mm]	Multimortar [d / mm]	Backing required <sup>(1)</sup>	Spacing	Construction RF-150	Classification minutes
Including bundled electric cables $\leq 0$ 80 mm, electric cables $\leq 0$ 21 mm, max. bundled up to 0 100 mm , electric cables $\leq 0$ 17 mm without sheathing and PVC tubes $\leq 0$ 16 mm	≤ 500	≥ 100	No	fig. 7 and 8	~	≤ El 60
Including electric cables $\leq 0$ 21 mm, max. bundled up to $0$ 100 mm and electric cables $\leq 0$ 24 mm without sheathing	≤ 500	≥ 150	No	fig. 3 and 4	~	≤ El 120

#### Cable trays and ladders $\leq$ 500 mm through Flexible Walls, Rigid Walls and Floors EN 1366-3 Size Multimortar Backing Classification Cable trays and ladders Spacing [w / mm] Including bundled electric cables $\leq$ Ø 80 mm, electric cables $\leq$ Ø 21 mm, max. bundled up ≤ EI 60 ≤ 500 ≥ 2 x 25 Yes fig. 5 and 6 $\checkmark$ to Ø 100 mm, electric cables and PVC tubes $\leq 0.16$ mm Including electric cables $\leq Ø$ 21 mm, max. bundled up to Ø 100 mm, ≥1x25 fig. 3 and 4 ≤ EI 60 ≤ 500 Yes electric cables $\leq 0$ 17 mm and PVC tubes ≤ Ø 16 mm

<sup>(1)</sup>rock wool backing 150 kg/m<sup>3</sup>

### Uninsulated Metal Pipe Penetrations through Flexible and Rigid Walls

Motol pipes	Size Mul	Multimortar Backing	Backing		Construction		Classification
metal pipes	Ø [mm]	[d / mm]	required <sup>(1)</sup>	Spacing	FW-100	RW-100	minutes
Copper pipes							≤ EI 45-C/U
(Stainless) steel pipes	≤ 16	5 ≥ 2 x 25	Yes	fig. 5 and 6	d 6 🗸	~	≤ EI 60-C/U
Cast iron pipes							≤ EI 60-C/U

<sup>(1)</sup>rock wool backing 150 kg/m<sup>3</sup>

# Insulated Metal Pipe Penetrations through Flexible Walls, Rigid Walls and Floors

# i.c.w. Multiwrap, Fire Wrap

#### Elastomeric insulation, Fire Class B, -s3, d0 of B-s3, d0, in accordance with EN 13501-1 Thickness: > 13 mm

Metal pipes	Size Multimortar Ø x s [mm] [d / mm]	Multimortar	Number	Spacing	Construction			Classification
		of winds	5	FW-100	RW-100	RF-150	minutes	
(Stainless) steel pipes	≤ 165 × 1,0 - 14,2	100	2 x 2	fig. 3 and 4	~	~		≤ EI 60-C/U
	≤ 165 x 14,2		1 x 1	fig E and G				< EI 120 C/U
	≤ 165 x 14,2		1 x 2	lig. 5 and 6				≤ EI 120-C/0



#### E: Integrity 1:

Thermal insulation

Flexible wall, 100 mm thick
Rigid wall, 100 mm thick
Rigid floor, 150 mm thick

Ø x S [mm]: [d / mm]: [w / mm]: config. / L [mm]:

FW-100:

RW-100:

RF-150:

ck ick Diameter x wall thickness of the penetration

depth / mm . width / mm Configuration / insulation length



EN 1366-3

EN 1366-3

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

Plastic pipes	Size Ø x s [mm]	Multimortar [d / mm]	Backing required <sup>(1)</sup>	Spacing	Construction			Classification
					FW-100	RW-100	RF-150	minutes
PVC-U / PVC-C	≤ 32 x 1,6 - 2,4	≥ 2 x 25	Yes	fig. 1 and 2	~	~		≤ EI 120-U/C
	≤ 40 x 1,6 - 3,0	≥1x 50					~	≤ EI 120-C/U
PP	≤ 32 x 1,9 - 4,4	≥ 2 x 25	Yes	fig. 1 and 2	~	~		≤ EI 120-U/C
PE / PE-HD / ABS / SAN+PVC	≤ 32 x 1,9 - 4,4	≥ 2 x 25	Yes	fig. 1 and 2	~	~		≤ EI 120-U/C

<sup>(1)</sup> rock wool backing 150 kg/m<sup>3</sup>

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

i.c.w. Multiwrap, Fire Wrap

Plastic pipes	Size	Multimortar [d / mm]	Number of winds	Spacing	Construction		Classification
Flastic pipes	Ø x s [mm]				FW-100	RW-100	minutes
PVC-U / PVC-C	≤ 160 x 3,2 - 9,5	≥ 2 x 25	2 x 4	fig. 1 and 2	~	~	≤ EI 60-U/C
	≤ 125 x 3,7 - 7,4		2 x 3				≤ EI 120-U/C
	≤ 110 x 2, 7 - 6,6		2 x 2				≤ EI 90-U/C
	≤ 40 × 3,0 - 4,3		2 x 1				≤ EI 60-U/C
	≤ 160 x 21,9	≥ 2 x 25	2 x 4	fig. 1 and 2	~	~	≤ EI 60-U/C
חח	≤ 125 x 17,1		2 x 3				≤ EI 90-U/C
ΡΡ ΡΡ	≤ 110 x 6,6		2 x 2				≤ EI 60-U/C
	≤ 40 x 3,0		1 x 2				≤ EI 120-U/C
PE / PE-HD / ABS / SAN+PVC	≤ 160 x 12,0	· ≥ 2 x 25	2 x 4	fig. 1 and 2	~	~	≤ EI 90-U/C
	≤ 125 x 12,0		2 x 3				≤ EI 120-U/C
	≤ 110 x 4,2 x 10,0		2 x 2				≤ EI 60-U/C
	≤ 40 x 3,2 x 3,7		2 x 1				≤ EI 120-U/C

Ø x S [mm]: Diameter x wall thickness of the penetration [d / mm]: depth / mm [w / mm]: . width / mm config. / L [mm]: Configuration / insulation length

FW-100: RW-100:

F٠

1:

Integrity Thermal insulation

RF-150:

Flexible wall, 100 mm thick Rigid wall, 100 mm thick Rigid floor, 150 mm thick







# 8. Actually tested solutions

All the latest tested solutions with the Multimortar 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.

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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).









EN 1366-3

# 9. Spacing

#### Figure 1

A1: Distance between penetration and top of the seal  $\geq$  30 mm A2: Distance between penetration and side of the seal  $\geq$  30 mm A3: Spacing  $\geq$  30 mm



### Figure 2

**A1:** Distance between penetration and top of the seal  $\geq$  30 mm **A2:** Distance between penetration and side of the seal  $\geq$  30 mm **A3:** Spacing  $\geq$  30 mm



#### Figure 3

**A1:** Distance between penetration and side of the seal  $\geq$  30 mm **A2:** Spacing  $\geq$  0 mm



## Figure 4

**A1:** Distance between penetration and side of the seal  $\geq$  30 mm **A2:** Spacing  $\geq$  0 mm





# Figure 5

**A1:** Distance between penetration and side of the seal  $\ge 25$  mm **A2:** Spacing  $\ge 100$  mm



#### Figure 7

**A1:** Distance between penetration and side of the seal  $\ge 0 \text{ mm}$ **A2:** Spacing $\ge 100 \text{ mm}$ 



# Figure 6

**A1:** Distance between penetration and side of the seal  $\ge 25$  mm **A2:** Spacing  $\ge 100$  mm



# Figure 8

**A1:** Distance between penetration and side of the seal  $\ge 0 \text{ mm}$ **A2:** Spacing  $\ge 100 \text{ mm}$ 





# 10. 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:



# **11. Permitted Insulation Materials**

Multimortar, Firestop Mortar 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 report: ETA 16/0566

Insulation type	Pipe types	Permitted <sup>(1)</sup>		
<b>Stone wool insulation</b> Fire class A1, in accordance with EN 13501-1	<ul> <li>(Stainless) steel pipes</li> <li>Cast iron pipes</li> </ul>	✓ Rockwool 810		
Elastomeric insulation Fire class BL-s3, d0 or B-s3, d0, in accordance with EN 13501-1	<ul> <li>Multilayer pipes</li> <li>Copper pipes</li> <li>(Stainless) steel pipes</li> <li>Cast iron pipes</li> </ul>	<ul> <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 ST</li> <li>K-Flex ST</li> <li>K-Flex ST Frigo</li> <li>K-Flex SRC</li> <li>K-Flex SRC Eco</li> </ul>		

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

# **12. 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.



# 13. Installation Manual



Make sure that the service penetration and the gap are free from dust, dirt and grease. Wet the gap with water for better adhesion.



When the desired consistency has been reached, apply the Multimortar with a trowel or pump, and make sure that it runs into all corners and around the service penetration. Firmly push the mortar into the gap to eliminate any air bubbles.



Pour clean water into a suitable mixing container and add sufficient Multimortar fire stop mortar to obtain the required consistency. See the package for the correct mixing ratio.



Fill in the conformity statement and paste it next to the fireproof seal.



minutes at 750 rpm (the higher the mixing speed, the faster the

The Multimortar has been tested in many applications i.a. in combination with rock wool Multimastic FB firestop board, Multiwrap, Multicollar Slim fire collar and Multisealant GR. For more information about all the solutions available, see our website at www.mulcol.com

#### Attention:

If the mortar seal is required to have bearing capacity, refer to the instructions in the Technical Data Sheet. Untreated metal service penetrations that pass through a fireproof seal must be protected against corrosion with a suitable primer/protection system.

Combined with rock wool Multimastic FB firestop boards the firestop board, outside fire resistance, serves as a formwork. The Multimastic FB firestop boards must be applied carefully. Small openings can be sealed with Multimastic SP firestop mastic. If you need to apply Multimortar in hollow floorboards, the cavity can be fitted with a formwork or it can be closed off with rock wool.





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 For professional use only.



# 14. 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	×	~	~	<ul> <li></li> </ul>	
	U/C	Uncapped	Capped	×	×	~	~	
	C/C	Capped	Capped	×	×	×	~	

#### Table 2 - Test configuration metal pipes

Test setup	Pipe end In the oven Outside the oven		<b>Per</b> U/C	mitted ( C/U	use C/C
U/C *	Uncapped	Capped	~	~	~
C/U	Capped	Uncapped	×	~	~
C/C	Capped	Capped	×	×	<ul> <li></li> </ul>

\* 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	Test setup	
. She ei bibe	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	<b>Constr</b> In the oven	r <b>uction</b> Outside the oven	Test setup			
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)						



# **15. 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,  $2 \times 50$  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

# **16. 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 350454-00-1104/1106
- ETA report 16/0566
- Declaration of Performance (DoP)

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



For help in finding the right fire-retardant finish 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).











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.

Virtual





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