# Multitherm Bandage

## Thermal Insulation

**European**
**Technical Assessment**
**ETA 20/1320**


## Technical Data Sheet

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Pragmatic, effective and applicable solutions

# Table of Content

# Multitherm Bandage

Thermal Insulation


**Fire resistance**
≤ 120 minutes

**Working life**
30 years

**Use**
Indoor use

**Speed**
Fast installation

## Thermal Insulation

Multitherm Bandage is a self-adhesive thermal insulation product on a roll, especially developed for the thermal and fire-resistant insulation of, for instance, metal pipes at short distances from the fire-resistant partition.
Multitherm Bandage absorbs the temperature of the pipe, so that no temperature to adjacent rooms can take place.

Multitherm Bandage forms part of the Mulcol® Penetration Seal System.

### Advantages

- Fire resistance ≤ 120 minutes
- CE-certified
- Simple and fast installation
- Insulation length from 150 mm
- A single product of pipes up to Ø 114,3 mm
- No waste
- Environmentally and user-friendly
- Permanently elastic
- Working life of 30 years

### Application

- Rigid floors
- Rigid walls
- Flexible walls
- Firestop boards
- 2 Components Fire Protection Foam

- Metal pipes up to Ø 114,3 mm
- Copper pipes up to Ø 88,9 mm
- Aluminium composite pipes up to Ø 75 mm

### Packaging

| | Dimensions | Box | Outer box | Pallet | Article number |
|---|---|---|---|---|---|
| Roll | 3000 x 150 x 3 mm | 1 piece | 8 pieces | 100 pieces | 205001300 |

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# 1. Technical Data

| | |
|---|---|
| **EAN-code** | 8719324470148 |
| **Colour** | Red/brown with light grey topcoat |
| **Shelf life** | Not applicable |
| **Transportation - storage temperature** | +5 °C to +30 °C (store dry and dustfree in the original packaging) |
| **Application temperature** | +5 °C to +30 °C |
| **Temperature resistance** | -20 °C to +60 °C |
| **Expansion pressure** | No expansion pressure measurable |
| **Expansion factor[3)]** | 6.0 x to 9.0 x |
| **Usage category** | Type $Z_1$ in accordance with EAD 350454-00-1104 |
| **Recoatable[1)]** | Yes |
| **Fire class[2)]** | E in accordance with EN 13501-1 |
| **Approvals** | ETA 20/1320 |

**[1)] Permissible environmental conditions**
Conduit seal for use in conditions with > 85% RV, protected from temperatures below 0 °C, and without exposure to rain and/or UV (TR024:2019, type $Z_1$). Limited contact with splash water tolerated. Lasting wetness, stagnant water and water pressure must be avoided.

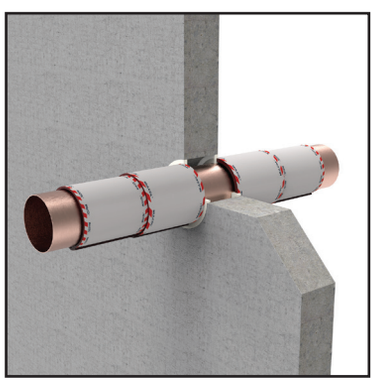
**[2)] Influence of finishing materials and chemicals**
The following paints and occasional brief influences from chemicals will not change the fire protection properties:

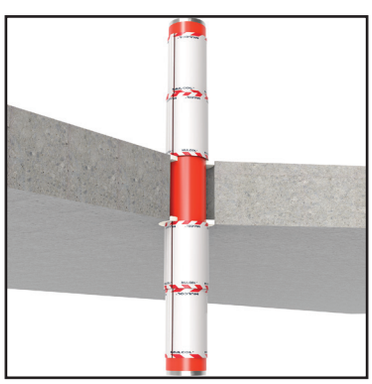
| | |
|---|---|
| **Coating materials:** | Dispersion paint, alkyd paint, polyurethane acrylic paint, epoxy resin paint (prior treatment with a primer is not obligatory, but it is recommended) |
| **Solvent / oil:** | Butyl acetate, butanol |
| **Gaseous chemicals:** | Brief storage with concentrated ammonium hydroxide solution |

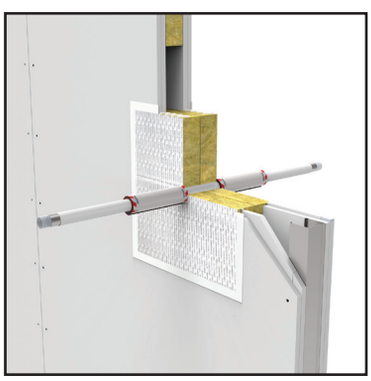
**Remark**
Environmental conditions with high humidity levels and/or some coating materials and chemicals may change the colour or reduce colour changes.

**[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 plastics of polyethylene and polyvinyl chloride is not negatively affected by contact with Multitherm Bandage.







## 2. Performance

### Multilayer Pipe Penetrations through Flexible and Rigid Walls — EN 1366-3

| Multilayer Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Aluminium composite pipes | ≤ 26 x 3.0 | 1 | fig. 1 and 2 | ✓ | ✓ | | ≤ EI 120-U/C |

### Multilayer Pipe Penetrations through Flexible Walls, Rigid Walls and Floors Combined with Multifoam 2K (Depth ≤ 144 mm) — EN 1366-3

| Multilayer Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Aluminium composite pipes | ≤ 75 x 3.0 | 1 | fig. 7 and 8 | ✓ | ✓ | | ≤ EI 120-U/C |
| | | | | | | ✓ | ≤ EI 90-U/C |

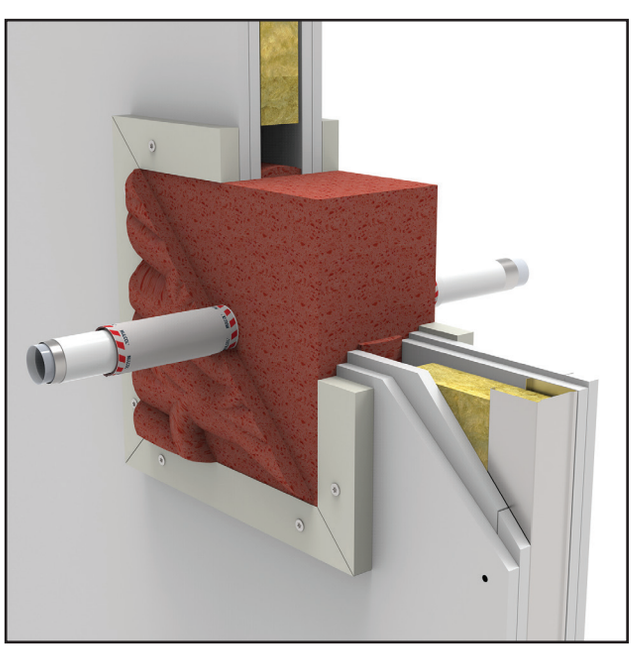
### Multilayer Pipe Penetrations through Coated Batts (2 x 50 mm) — EN 1366-3

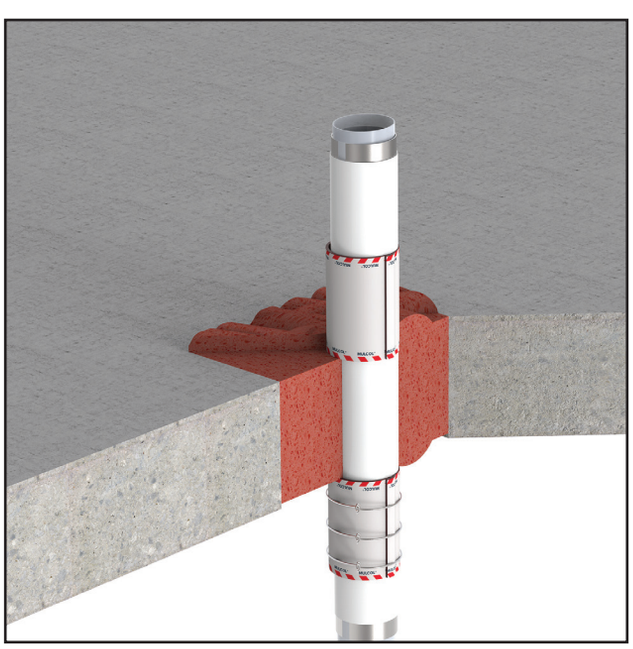
| Multilayer Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Aluminium composite pipes | ≤ 26 x 3.0 | 2 | fig. 5 and 6 | ✓ | ✓ | | ≤ EI 120-U/C |

*Allowed multilayer pipes*
- *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)*

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

*E: Integrity*
*I: Thermal insulation*





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## Metal pipes through Flexible Walls, Rigid Walls and Floors

**EN 1366-3**

| Metal Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Copper pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ✓ | | ≤ EI 120-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | | | ≤ EI 30-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 54 x 1.0 - 14.2 | 2 | | | | ✓ | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| (Stainless) steel pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ✓ | | ≤ EI 120-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 | | | | | ≤ EI 30-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | | ✓ | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | | | | | | ≤ EI 60-C/U |
| Cast Iron pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ✓ | | ≤ EI 120-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 | | | | | ≤ EI 30-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | | ✓ | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | | | | | | ≤ EI 60-C/U |

## Metal pipes through Rigid Walls ≥ 150 mm

**EN 1366-3**

| Metal Pipes | Seal size Ø x s [mm] | Number of layers 150m | Spacing | Construction RW-150 | Classification minutes |
|---|---|---|---|---|---|
| Copper pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ≤ EI 120-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | ≤ EI 90-C/U |
| (Stainless) steel pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ≤ EI 120-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 | | | ≤ EI 30-C/U |
| Cast Iron pipes | ≤ 22 x 1.0 - 14.2 | 2 | fig. 1 and 2 | ✓ | ≤ EI 30-C/U |
| | ≤ 54 x 1.0 - 14.2 | | | | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 | | | ≤ EI 60-C/U |

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

*E: Integrity*
*I: Thermal insulation*

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## Metal pipes in Rigid Walls and Floors
## Combined with Multisealant GR, annular gap minimal 15 mm and maximum 75 mm

**EN 1366-3**

| Metal Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Copper pipes | ≤ 22 x 1.0 - 14.2 | 3 | fig. 3 and 4 | | | ✓ | ≤ EI 60-C/U |
| (Stainless) steel pipes | | | | | | | |
| Cast Iron pipes | | | | | | | |
| Copper pipes | ≤ 35 x 1.0 - 14.2 | 1 | fig. 3 and 4 | ✓ | ✓ | | ≤ EI 60-C/U |
| (Stainless) steel pipes | | | | | | | |
| Cast Iron pipes | | | | | | | |

## Metal pipes through Flexible Walls, Rigid Walls and Floors

**EN 1366-3**

| Metal Pipes | Size Ø x s [mm] | Number of layers 150m | Spacing | Construction | | | Classification minutes |
|---|---|---|---|---|---|---|---|
| | | | | FW-100 | RW-100 | RF-150 | |
| Copper pipes | ≤ 22 x 1.0 - 14.2 | 2 + 1 | fig. 5 and 6 | ✓ | ✓ | | ≤ EI 120-C/U |
| | ≤ 54 x 1.0 - 14.2 | 2 | | | | | ≤ EI 30-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 54 x 1,0 - 14.2 | 2 | | | | ✓ | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| (Stainless) steel pipes | ≤ 22 x 1.0 - 14.2 | 2 + 1 | fig. 5 and 6 | ✓ | ✓ | | ≤ EI 120-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 30-C/U |
| | ≤ 54 x 1.0 - 14.2 | 2 | | | | ✓ | ≤ EI 90-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| Cast Iron pipes | ≤ 114.3 x 1.0 - 14.2 | 2 + 1 | fig. 5 and 6 | ✓ | ✓ | | ≤ EI 60-C/U |
| | ≤ 22 x 1.0 - 14.2 | 2 | | | | | ≤ EI 120-C/U |
| | ≤ 88.9 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |
| | ≤ 114.3 x 1.0 - 14.2 | 2 | | | | ✓ | ≤ EI 30-C/U |
| | ≤ 54 x 1.0 - 14.2 | 2 + 1 | | | | | ≤ EI 90-C/U |

*FW-100: Flexible wall, 100 mm thick*
*RW-100: Rigid wall, 100 mm thick*
*RF-150 Rigid floor, 150 mm thick*
*RF-200: Rigid floor, 200 mm thick*

*E: Integrity*
*I: Thermal insulation*

## 3. Actually tested solutions

All the latest tested solutions with the Multiwrap 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.

MultiSelector

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).

App Store Google Play

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# 4. Spacing

**Figure 1**
**A1:** Distance between the seal and penetration ≤ 20 mm
**A2:** Spacing ≥ 100 mm

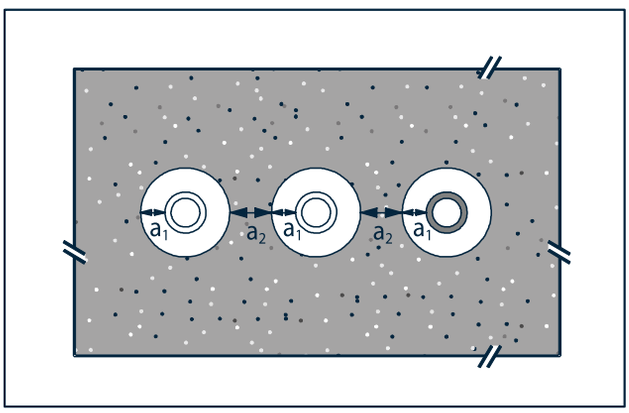


**Figure 2**
**A1:** Distance between the seal and penetration ≤ 20 mm
**A2:** Spacing ≥ 100 mm

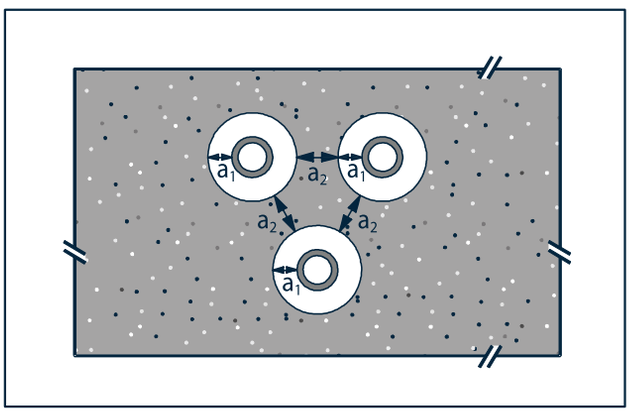


**Figure 3**
**A1:** Distance between the seal and penetration ≤ 75 mm
**A2:** Spacing ≥ 100 mm

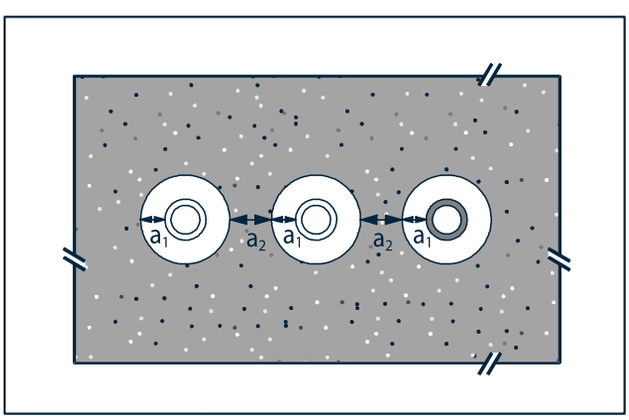


**Figure 4**
**A1:** Distance between the seal and penetration ≤ 75 mm
**A2:** Spacing ≥ 100 mm

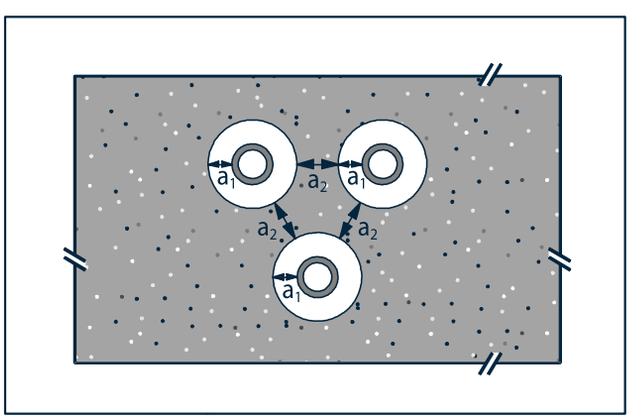




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**Figure 5**
**A1:** Distance between penetration and top of the seal ≥ 50 mm
**A2:** Distance between penetration and side of the seal ≥ 50 mm
**A3:** Spacing ≥ 100 mm

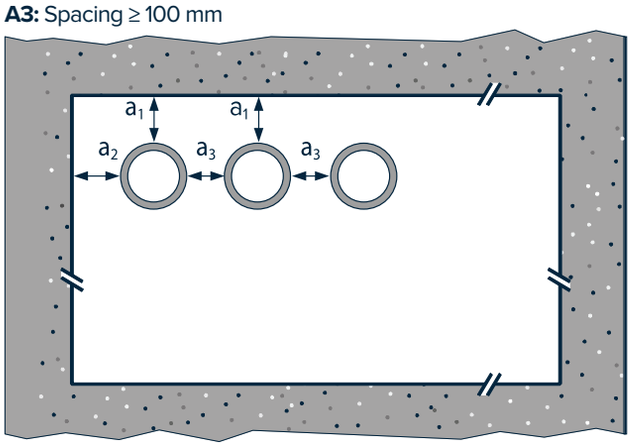



**Figure 6**
**A1:** Distance between penetration and top of the seal ≥ 50 mm
**A2:** Distance between penetration and side of the seal ≥ 50 mm
**A3:** Spacing ≥ 100 mm

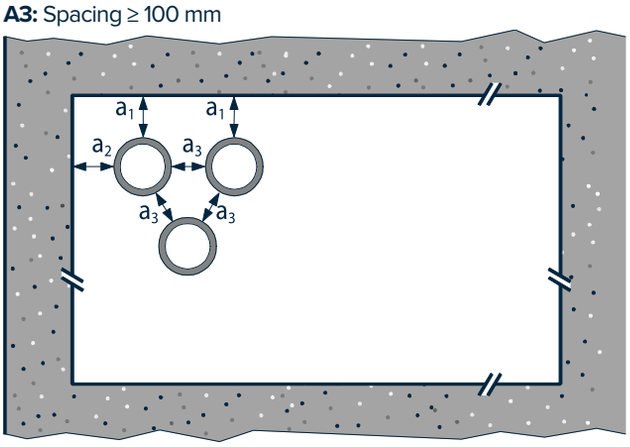



**Figure 7**
**A1:** Distance between penetration and top of the seal ≥ 30 mm
**A2:** Distance between penetration and side of the seal ≥ 30 mm
**A3:** Spacing ≥ 30 mm

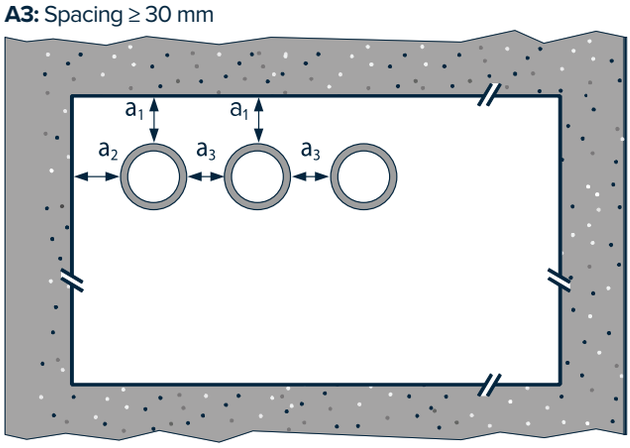
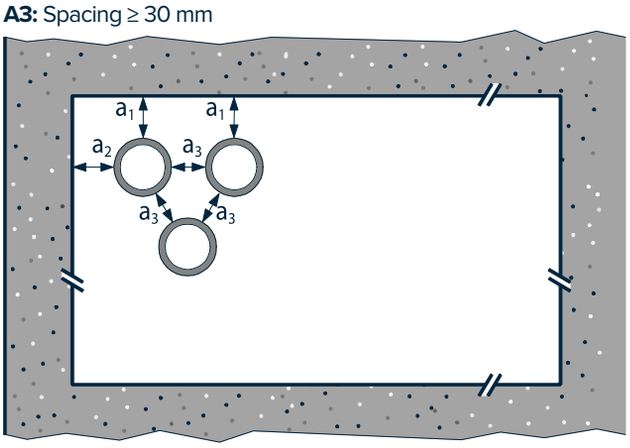



**Figure 8**
**A1:** Distance between penetration and top of the seal ≥ 30 mm
**A2:** Distance between penetration and side of the seal ≥ 30 mm
**A3:** Spacing ≥ 30 mm

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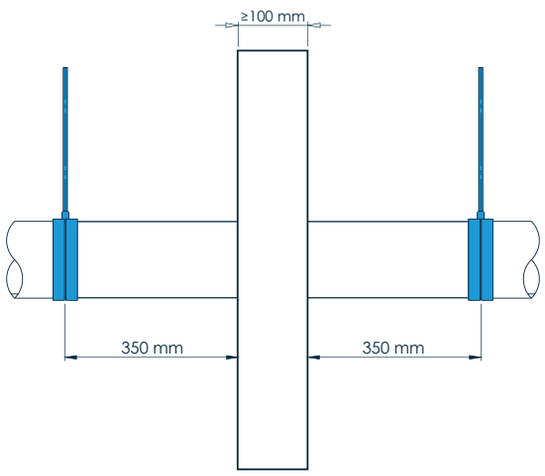
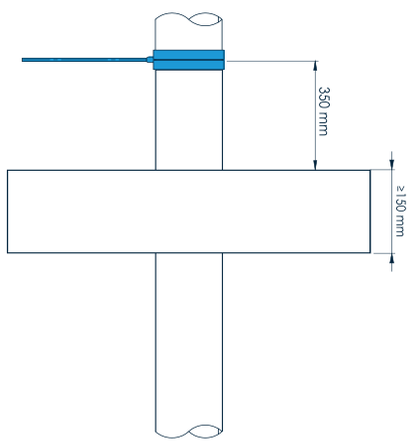
# 5. Assembly Instructions

## Pipe Support Penetrations

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

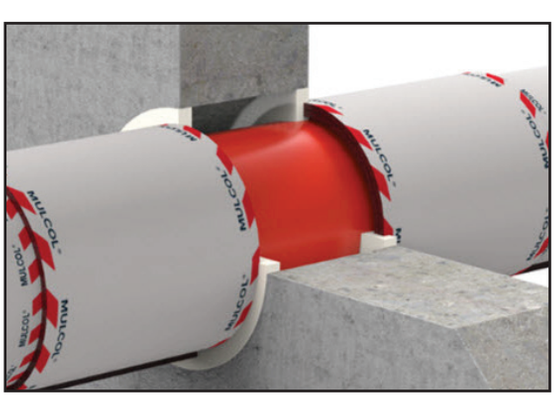



## Joint Sealings in Rigid Walls

The minimum wall thickness is 100 mm and the wall must consist of concrete, aerated concrete or brickwork, with a minimum density of 400 kg/m$^3$.

Joints around service penetrations, with or without insulation, must have a fire-resistant seal to prevent the passage of smoke and hot gases. Multisealant A or Multimastic SP should be used for this purpose. Combinations are also possible with Multisealant GR (Firestop Intumescent Graphite) and Multifoam 2K (2 Component Fire Protection Foam). For more information, see: ETA 20/1320.



| Permissible filling materials for joints around pipe penetrations | | | |
|---|---|---|---|
| Multisealant GR,<br>Firestop Intumescent Graphite | Multifoam 2K<br>2 Component Fire Protection Foam | Multisealant A,<br>Firestop Acrylic Sealant | Multimastic SP,<br>Firestop Mastic |
| Joint width:<br>≥ 15 mm - ≤ 20 mm[1)] | Seal size:<br>≤ 450 x 500 mm (wxh) | Joint width: ≤ 20 mm | |
| Depth: ≥ 15 mm,<br>on both sides of the wall | Foaming depth:<br>≥ 144 mm | Depth: ≥ 10 mm, on both sides of the wall | |

[1)] For joints of between 21 mm and 75 mm, apply a Multitherm Backing, Multimastic FB1 firestop board, or a mineral wool backing of 35 kg/m$^3$.

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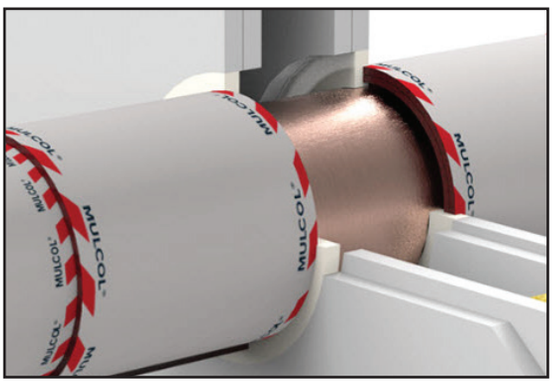
## Joint Sealings in Flexible Walls

The minimum wall thickness must be 100 mm and the wall must consist of steel or timber studs with at least 2 layers of cladding on both sides with a thickness of 12.5 mm. When using timber studs, 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).

Joints around service, with or without insulation, must have a fire-resistant seal to prevent the passage of smoke and hot gases. Multisealant A or Multimastic SP should be used for this purpose. Combinations are also are also possible with Multisealant GR (fire-resistant and intumescent sealant) and Multifoam 2K (intumescent 2-component foam). See for more information: ETA 23/0055 Intumescent Graphite and ETA 17/0977 Multifoam 2K.



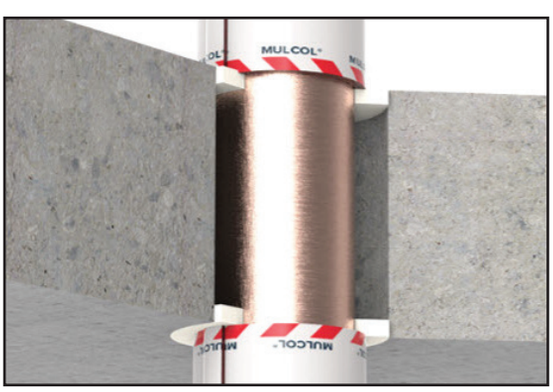

| Permissible filling materials for joints around pipe penetrations | | | |
|---|---|---|---|
| Multisealant GR,<br>Firestop Intumescent Graphite | Multifoam 2K<br>2 Component Fire Protection Foam | Multisealant A,<br>Firestop Acrylic Sealant | Multimastic SP,<br>Firestop Mastic |
| Joint width:<br>≥ 15 mm - ≤ 20 mm[1)] | Seal size:<br>≤ 450 x 500 mm (wxh) | Joint width: ≤ 20 mm | |
| Depth: ≥ 15 mm,<br>on both sides of the wall | Foaming depth:<br>≥ 144 mm | Depth: ≥ 10 mm, on both sides of the wall | |

[1)] For joints of between 21 mm and 75 mm, apply a Multitherm Backing, Multimastic FB1 firestop board, or a mineral wool backing of 35 kg/m$^3$.

## Joint Sealings in a Rigid Floor

The minimum floor thickness is 150 mm and the floor must consist of concrete or aerated concrete, with a minimum density of 400 kg/m$^3$.

Joints around service, with or without insulation, must have a fire-resistant seal to prevent the passage of smoke and hot gases. Multisealant A or Multimastic SP should be used for this purpose. Combinations are also possible with Multisealant GR (Firestop Intumescent Graphite) and Multifoam 2K (2 Component Fire Protection Foam). For more information, see: ETA 20/1320




| Permissible filling materials for joints around pipe penetrations | | | |
|---|---|---|---|
| Multisealant GR,<br>Firestop Intumescent Graphite | Multifoam 2K<br>2 Component Fire Protection Foam | Multisealant A,<br>Firestop Acrylic Sealant | Multimastic SP,<br>Firestop Mastic |
| Joint width:<br>≥ 15 mm - ≤ 20 mm[1)] | Seal size:<br>≤ 450 x 500 mm (wxh) | Joint width: ≤ 20 mm | |
| Depth: ≥ 15 mm,<br>on both sides of the wall | Foaming depth:<br>≥ 144 mm | Depth: ≥ 10 mm, on both sides of the wall | |

[1)] For joints of between 21 mm and 75 mm, apply a Multitherm Backing, Multimastic FB1 firestop board, or a mineral wool backing of 35 kg/m$^3$.

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## Joint Sealings in Coated Batts

Coated batts can be used in combination with flexible walls, rigid walls and rigid floors. The fire barriers must have a minimum thickness of 100 mm (2x50 mm), with a density of at least ≥ ~ 150 kg/m$^3$.

Joints around service penetrations, with or without insulation, must have a fire-resistant seal to prevent the passage of smoke and hot gases. Multimastic SP fire stopping mastic should be used for this purpose. When the ducts are completely enclosed by fire-stopping rock wool, fire stopping mastic is not required. For more information, see ETA report 20/1320

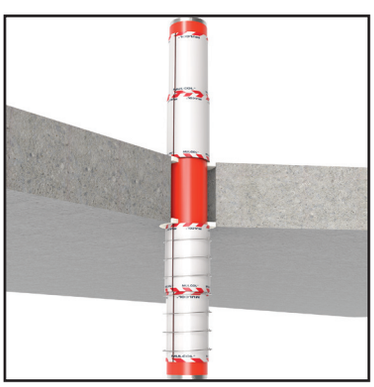
| Permissible filling materials for joints around pipe penetrations |
|---|
| Multimastic SP, fire stopping mastic |
| Joint width: ≤ 20 mm |
| Depth: ≥ 10 mm, on both sides of the coated batts |

## Use of ≥ 0.6 mm iron wire for floors

When using the Multitherm Bandage in combination with floors, it will in some cases be necessary to use iron wire with a thickness of at least 0.6mm. The iron wire must then only be applied on the underside of the floor. For every 150 mm of Multitherm Bandage, at least 3 iron wires will be needed. Check the tables below to see when to use iron wires.

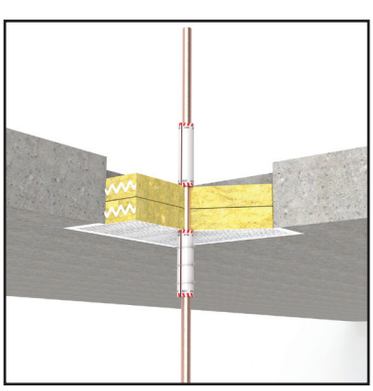
## Rigid Floor ≤ 150 mm

| Pipe types | Pipe Ø [mm] | Insulationlength Bandage [mm] | Classification [min] |
|---|---|---|---|
| Copper | ≤ 35 | ≤ 150 | ≤ 60 |
| | ≤ 54 | | ≤ 90 |
| | ≤ 88.9 | ≤ 300 | > 60 |
| (Stainless), Steel, Cast Iron | ≤ 35 | ≤ 150 | ≤ 60 |
| | ≤ 54 | | ≤ 90 |
| | ≤ 88.9 | ≤ 300 | ≤ 60 |
| | ≤ 114.3 | | ≤ 60 |
| Aluminium composite | ≤ 75 | ≤ 150 | ≤ 90 |



## Multimastic C system 2 x 50 mm through Rigid Floor ≤ 150 mm

| Pipe types | Pipe Ø [mm] | Insulationlength Bandage [mm] | Classification [min] |
|---|---|---|---|
| (Stainless), Steel, Cast Iron | ≤ 22 | ≤ 150 | ≤ 60 |
| | ≤ 54 | ≤ 300 | ≤ 60 |
| Aluminium composite | ≤ 22 | ≤ 150 | > 60 |
| | ≤ 54 | ≤ 300 | ≤ 60 |



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# 6. Installation Manual Multitherm Bandage

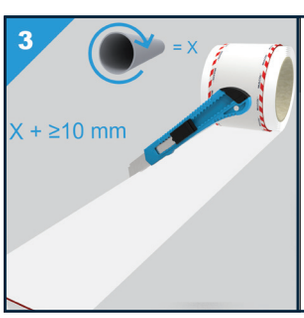
1


Seal the opening around the service penetration, according to the sealing method installation instructions. Openings up to 20 mm can easily be sealed with Multimastic SP firestop mastic, over a depth of 10 mm.

2

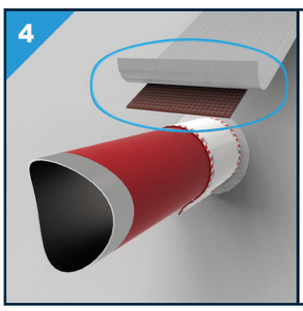
Make sure the service penetration is free from dust, dirt and grease.

3



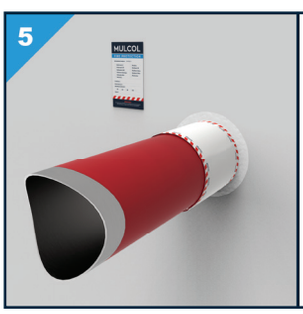

Measure the circumference of the service penetration and cut the Multitherm Bandage to size with a knife, as per the installation overview in the box. Remember to keep an extra length of at least 10 mm to create an overlap.

4



Remove the protective film at the back and wrap the Multitherm Bandage around the service penetration. Make sure that the closing side is at the bottom of the service penetration and that the Bandage has a minimum overlap of 10 mm. Press everything down firmly.

5




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

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## 7. Usage Tables

Multitherm Bandage has been specially developed for the thermal insulation of pipe penetrations through lightweight partitions, solid walls and floors. The following tables show the total cut-off length per line diameter. See the pages that follow for the images (1 to 4).

### (Stainless) steel pipes

| Pipe Ø | | Total length Multitherm Bandage | | | |
|---|---|---|---|---|---|
| [mm] | [ " ] | Fig. 1 | Fig. 2 | Fig. 3 | Fig. 4 |
| | | 1x150 mm | 2x150 mm | 3x150 mm | 2x150 mm + 1x150 mm |
| | | [mm] | [mm] | [mm] | [mm] |
| 10.2 | 1⁄8 | 66 | 151 | 241 | 217 |
| 13.5 | 1⁄4 | 76 | 171 | 272 | 248 |
| 17.2 | 3⁄8 | 88 | 195 | 307 | 283 |
| 21.3 | 1⁄2 | 101 | 215 | 341 | 316 |
| 26.9 | 3⁄4 | 115 | 248 | n.a. | 363 |
| 33.7 | 1 | 137 | 288 | | 425 |
| 42.4 | 1 ¼ | n.a. | 341 | | 505 |
| 48.3 | 1 ½ | | 378 | | 561 |
| 60.3 | 2 | | 453 | | 674 |
| 76.1 | 2 ½ | | 552 | | 822 |
| 88.9 | 3 | | 632 | | 942 |
| 114.3 | 4 | | 792 | | 1182 |

### Cast iron pipes

| Pipe Ø [mm] | Total length Multitherm Bandage | | | |
|---|---|---|---|---|
| | Fig. 1 | Fig. 2 | Fig. 3 | Fig. 4 |
| | 1x150 mm | 2x150 mm | 3x150 mm | 2x150 mm + 1x150 mm |
| | [mm] | [mm] | [mm] | [mm] |
| 48 | n.a. | 376 | n.a. | 558 |
| 58 | | 439 | | 652 |
| 78 | | 564 | | 840 |
| 83 | | 595 | | 887 |
| 110 | | 765 | | 1141 |

## Copper pipes

| Pipe Ø | Total length Multitherm Bandage | | | |
|---|---|---|---|---|
| | Fig. 1 | Fig. 2 | Fig. 3 | Fig. 4 |
| | 1x150 mm | 2x150 mm | 3x150 mm | 2x150 mm + 1x150 mm |
| | [mm] | [mm] | [mm] | [mm] |
| 10 | 65 | 149 | 239 | 215 |
| 12 | 72 | 162 | 258 | 233 |
| 15 | 81 | 181 | 286 | 262 |
| 18 | 90 | 200 | 315 | 290 |
| 22 | 103 | 220 | 347 | 323 |
| 28 | 119 | 254 | n.a. | 373 |
| 35 | 141 | 296 | | 437 |
| 42 | n.a. | 338 | | 501 |
| 54 | | 414 | | 614 |
| 64 | | | | 708 |
| 76.1 | | | | 822 |
| 88.9 | | | | 942 |

## Multilayer pipes

| Pipe Ø [mm] | Total length Multitherm Bandage | | | |
|---|---|---|---|---|
| | Fig. 1 | Fig. 2 | Fig. 3 | Fig. 4 |
| | 1x150 mm | 2x150 mm | 3x150 mm | 2x150 mm + 1x150 mm |
| | [mm] | [mm] | [mm] | [mm] |
| 16 | 84 | 187 | n.a. | n.a. |
| 18 | 90 | 200 | | |
| 20 | 97 | 214 | | |
| 26 | 113 | 247 | | |
| 32 | 131 | n.a. | | |
| 40 | 157 | | | |
| 50 | 188 | | | |
| 63 | 229 | | | |
| 75 | 266 | | | |

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**Figure 1 (1x150 mm)**
**a:** Minimum of 10 mm overlay
**b:** Mulcol Multitherm Bandage

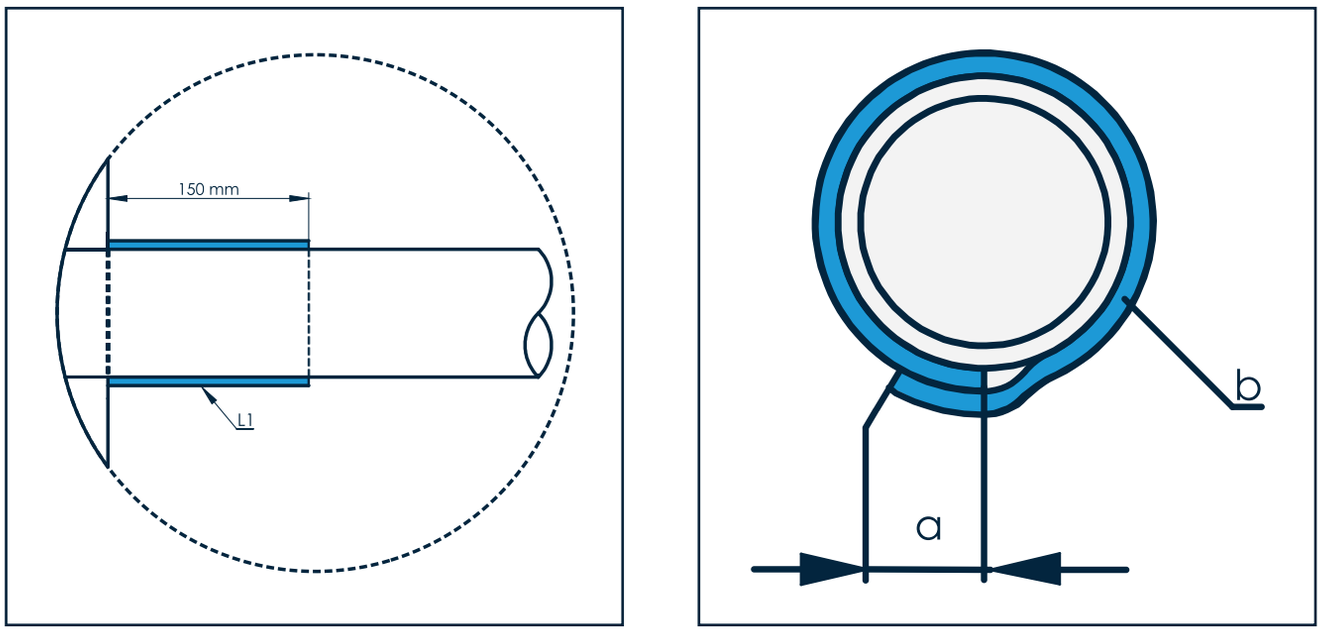



**Figure 2 (2x150 mm)**
**a:** Minimum of 10 mm overlay
**b:** Mulcol Multitherm Bandage

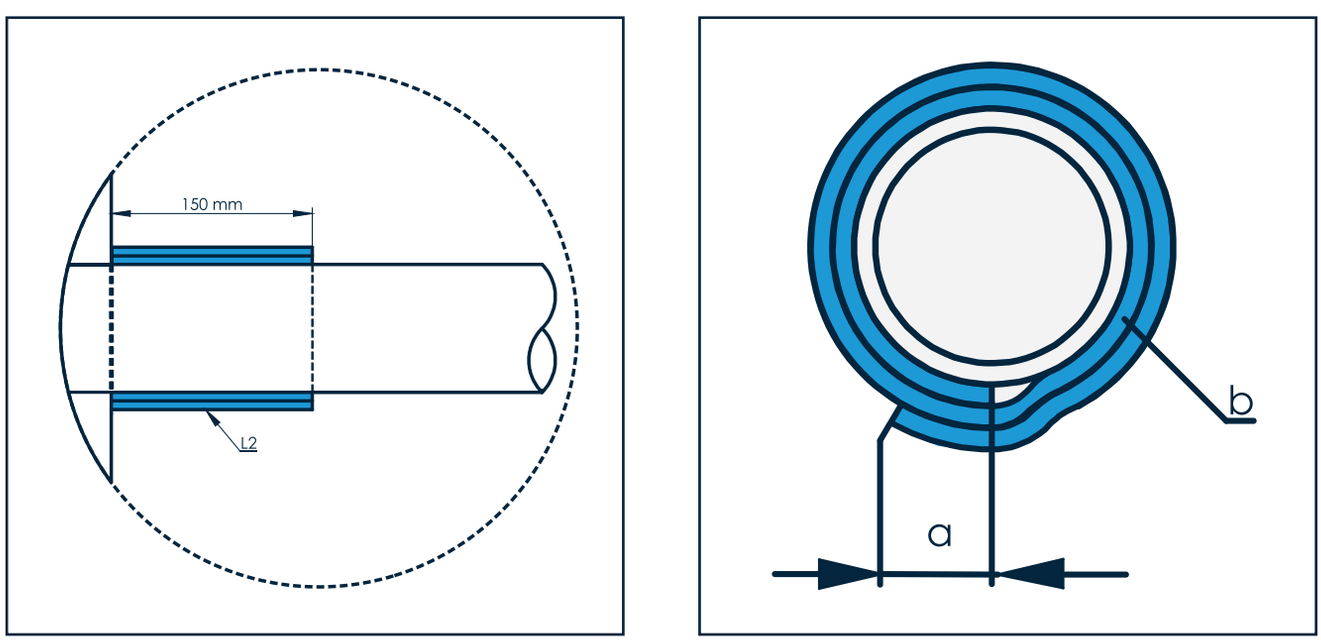


**Figure 3 (1x350 mm)**
**a:** Minimum of 10 mm overlay
**b:** Mulcol Multitherm Bandage

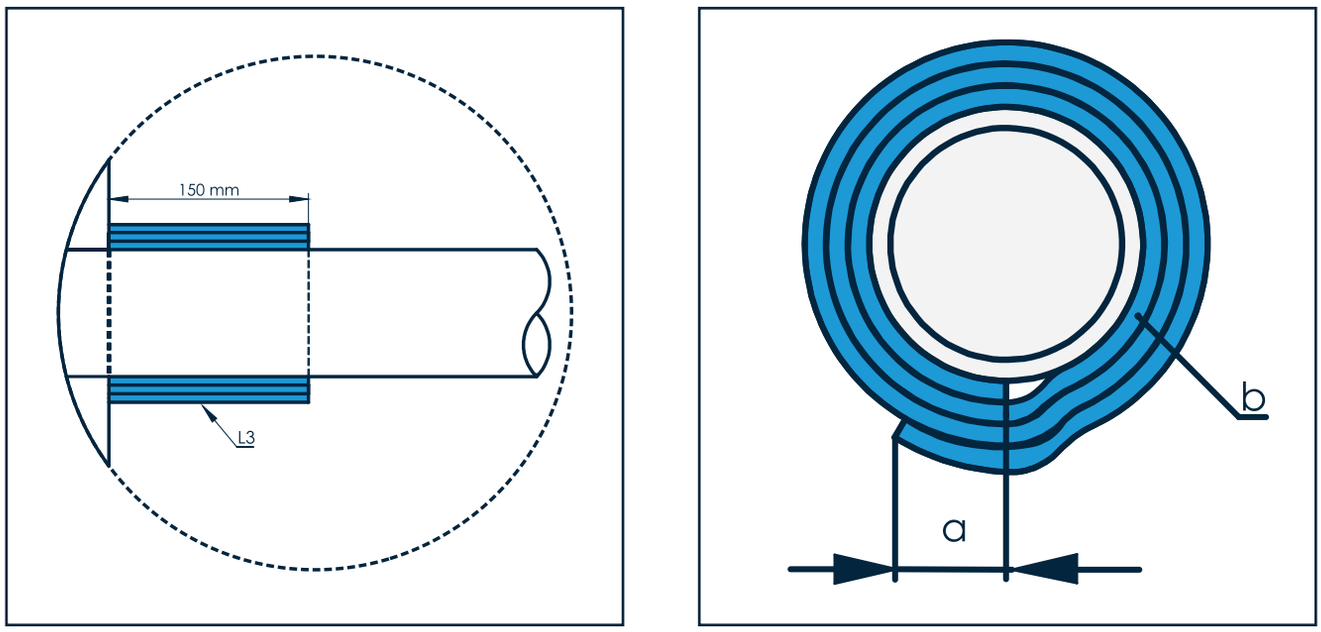
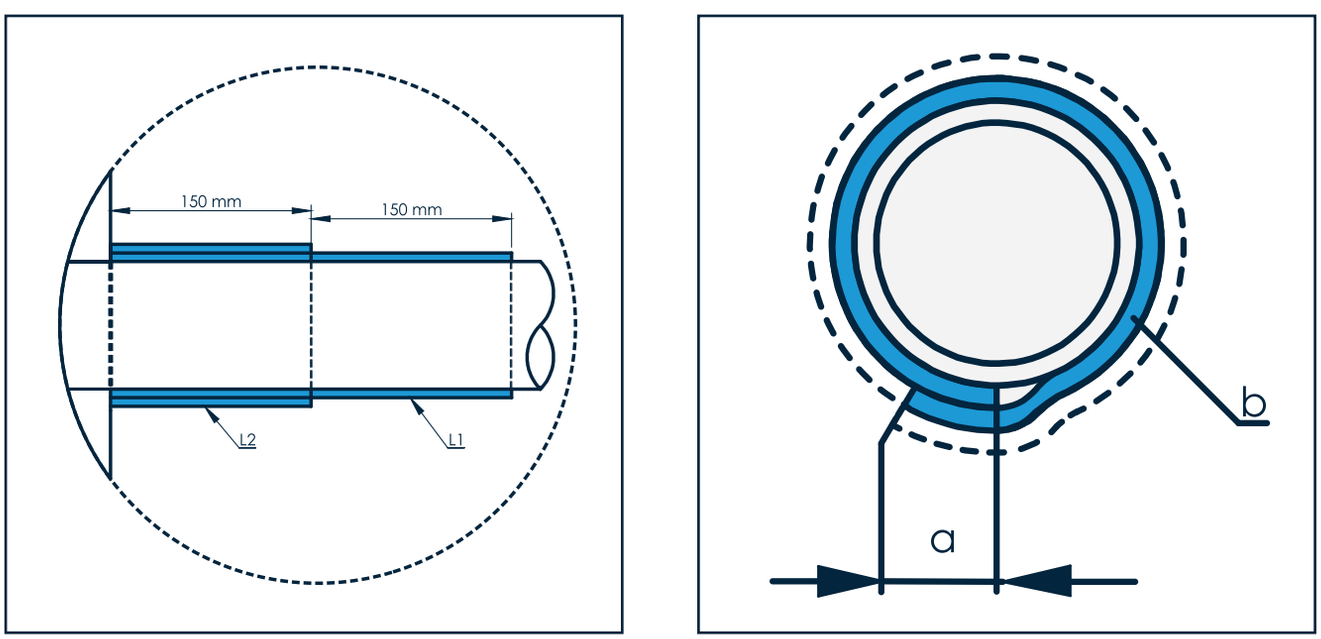



**Figure 4 (2x150 mm + 1x150)**
**a:** Minimum of 10 mm overlay
**b:** Mulcol Multitherm Bandage

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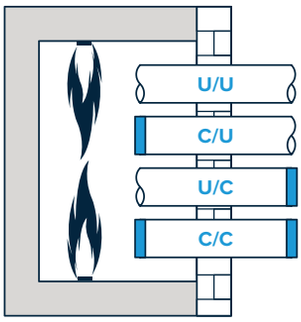
# 8. Test Configuration

**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[a] 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 |
| [a]confirmed by testing or calculations (e.g. Eurocodes) | | | |

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## 9. Building Element Properties

**Flexible walls**
The minimum wall thickness must be 100 mm and the wall must consist of metal or timber studs* 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 400 kg/m$^3$. 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 400 kg/m$^3$. 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 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 support structure must be classified in accordance with EN 13501-2 for the specified fire resistance.

## 10. Available Documents

**Technical documents available**
- Product Data Sheet (PDS)
- Technical Data Sheet (TDS)
- Safety Data Sheet (SDS)
- Installation Manual
- 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 20/1320
- Declaration of Performance (DoP)

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

**MultiSelector**

For help in finding the right fire-stopping 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).

**DataManager**

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

Available for Apple App Store | Available for Android Google play | YouTube | VR Virtual Reality | AR Augmented Reality | MultiSelector | DataManager



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