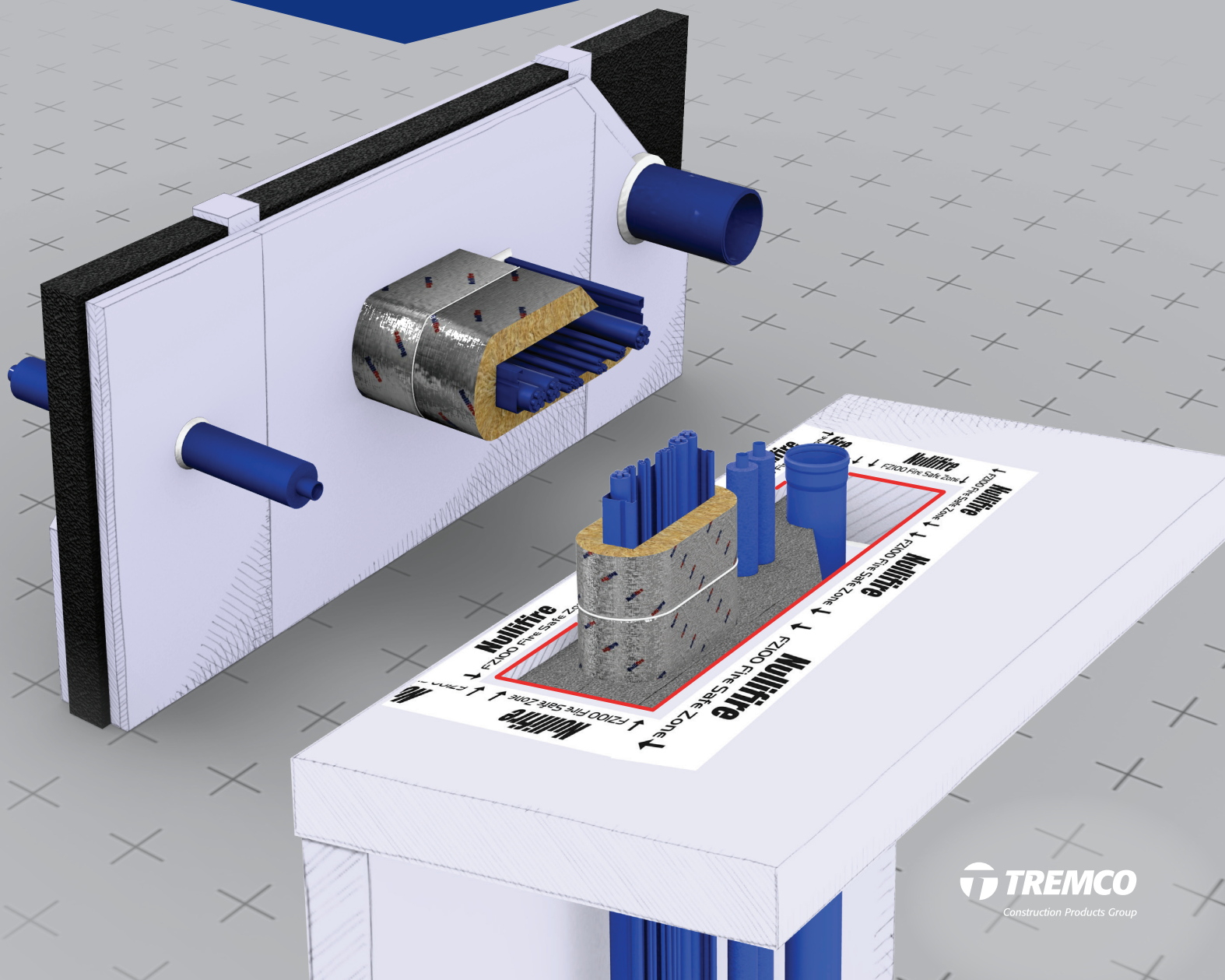




# FZ100 FIRE SAFE ZONE

## TECHNICAL HANDBOOK





# INTELLIGENT ENGINEERED PASSIVE FIRE PROTECTION

We are specialists, with one focus that has not and will not change – to protect people and buildings from fire. For 50 years, Nullifire has been a market leader in the Passive Fire Protection industry.

Passive fire protection is highly complex but crucially important, especially as buildings become more sophisticated and with the introduction of new legislation and laws, such as the Building Safety Act in the UK. At Tremco CPG, we understand the need to have confidence in fire protection. So our systems perform when they are called upon.

With a unique team of technical experts, everything is focused on providing what our customers need at every stage of their project.

Nullifire is a brand of Tremco CPG (Construction Products Group), a manufacturer and service provider of high performance building materials.



|    |                                                |    |                          |
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## ASSISTANCE WHEN REQUIRED

Our targeted approach allows you to access answers to all of your questions - quickly, simply and at any stage of the design, build and installation process.

Regardless of the complexity of a project, you can turn to the team here at Tremco CPG. Our trained expert team support architects, specifiers, main contractors and installers in product selection, specification writing and industry best practices. Involving us at the early stages of a project can help you save money and time, as well as the assurance that the products selected are fully compatible and ideal for the job at hand.

Whilst choosing the right product is vitally important, the application is equally as critical. To optimise this process, we are able to supply the field teams data on formulations, installation specifications and technical drawings to ensure the correct application of our products. Bespoke manuals and instructions can be prepared by our technical teams for specific situations. Our extensive online and face-to-face training ensures Nullifire products are applied professionally and efficiently, whilst giving installers and contractors access to new technologies and solutions.

All of our product data sheets, technical notes and additional product information can be downloaded from [www.nullifire.com](http://www.nullifire.com).

**Technical  
Fire Stopping:  
01942 251400**

# NULLIFIRE INNOVATION FZ100 FIRE SAFE ZONE

FZ100 Fire Safe Zone is a revolutionary fire protection system, and a single product solution tested to cover many fire stopping requirements. Nullifire has developed a ground breaking and unique fire stopping technology: GXT (Graphite eXpansion Technology). GXT has been incorporated within FZ100, encompassing the ability of many fire protection products within a single sheet.



Up to 2 hours fire resistance-  
tested to EN 1366-3



Unique GXT technology



Fire stopping of existing &  
future service penetrations



Quick and easy to install: dry,  
easy to cut, lightweight



Fibre free, no odour



Simple service installation



Allows building service  
movement



Fully breathable, does not  
absorb moisture

|                                     |                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Composition</b>                  | Graphite impregnated polyurethane foam                                                         |
| <b>Acoustic Rating</b>              | Up to 66 dB                                                                                    |
| <b>Density</b>                      | 127 kg/m <sup>3</sup> (±20)                                                                    |
| <b>Durability</b>                   | Type X: intended for use at conditions exposed to weathering (also covers type Y1, Y2, Z1, Z2) |
| <b>Thermal Conductivity</b>         | 0.08 W/(m·K)                                                                                   |
| <b>Service Temperature</b>          | -40°C to +90°C                                                                                 |
| <b>Environmental Classification</b> | LEED, EMICODE EC1+, Eurofins Indoor Air Comfort GOLD                                           |
| <b>Storage</b>                      | Store in dry shaded conditions between -10°C and +70°C                                         |
| <b>Shelf Life</b>                   | Unlimited when stored as recommended                                                           |
| <b>Product codes:</b>               | Dimensions / Supply                                                                            |
| FZ100511224                         | 1000 (L) x 620 (W) x 50 (T) mm / 15 slabs per pallet box                                       |
| FZ100511183                         | 3000 x 100 x 50 mm / 18 rolls per pallet box                                                   |
| FZ100513173                         | 3000 x 350 x 50 mm / 12 rolls per pallet box                                                   |
| FZ100510358                         | Identification tape, 50 mm (W) / 66 m on a tape roll                                           |

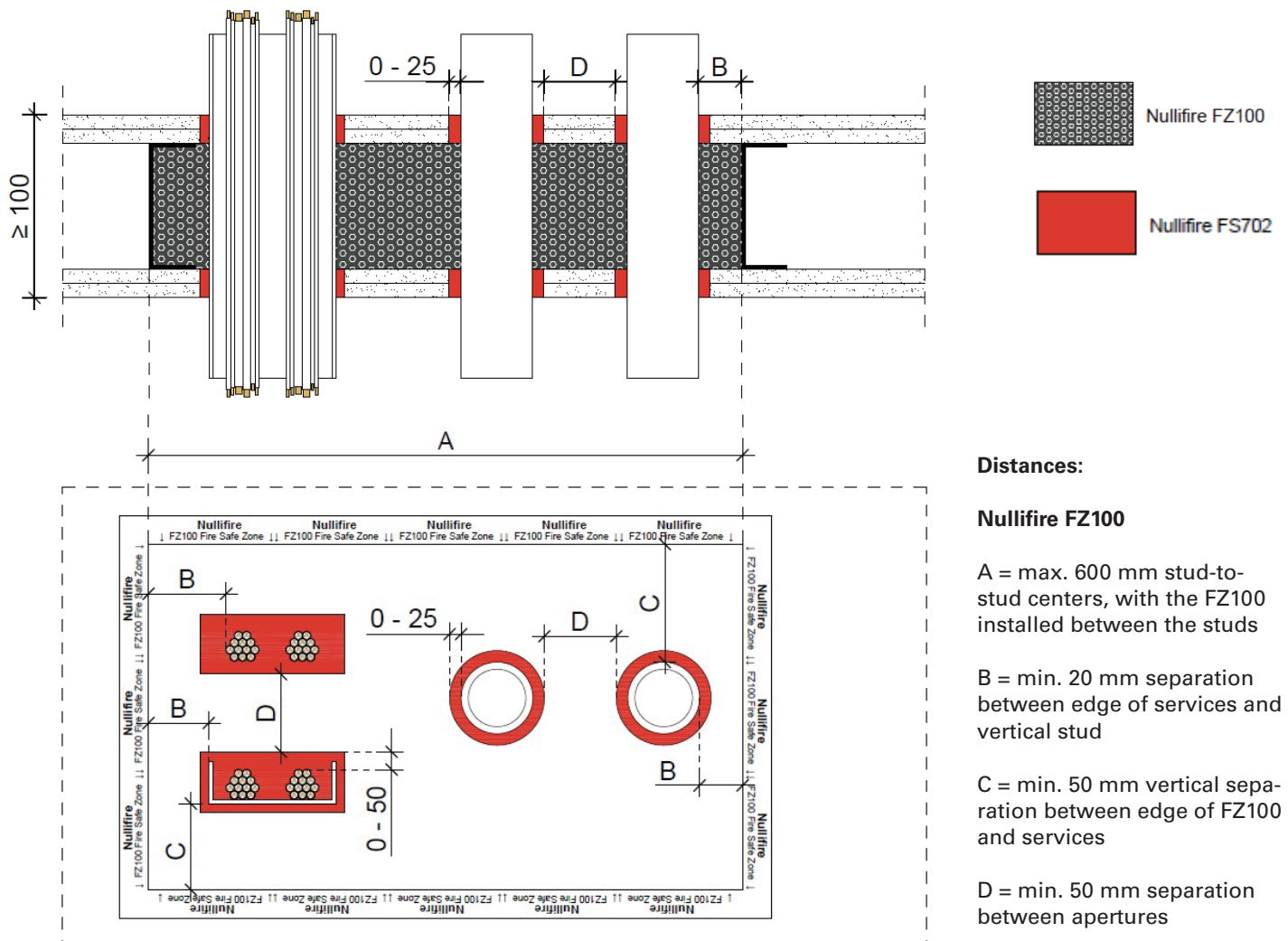




# CONSTRUCTION DETAILS

|                                  | Wall                                                                                                                                                             | Floor                                                                                                                                                                                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Substrate material and thickness | Fire rated Plasterboard $\geq 95$ mm within FZ100 compliant apertures                                                                                            | CLT $\geq 120$ mm<br>Plasterboard Timber Frame $\geq 150 \times 45$ mm<br>Plasterboard Steel Frame $\geq (2 \times) 120 \times 60 \times 4$ mm<br>AAC / Concrete $\geq 120$ mm                                                                           |
| Construction                     | Integrated in flexible walls only: minimum 1 layer of 12.5 mm plasterboard installed to each side of stud (for more details see Wall Configurations pages 10-11) | Variety of different constructions and substrates as above (for more details see Floor Configurations pages 26-28)                                                                                                                                       |
| Maximum aperture                 | Depending on the height of the wall ( $\leq 3000$ mm) and the distance stud-to-stud ( $\leq 600$ mm) and limited to below details                                | CLT $\geq 140$ mm $\leq 1,04$ m <sup>2</sup><br>CLT $\geq 120$ mm $\leq 0,66$ m <sup>2</sup><br>Plasterboard Timber Frame $\leq 0,36$ m <sup>2</sup><br>Plasterboard Steel Frame $\leq 0,66$ m <sup>2</sup><br>AAC / Concrete $\leq 0,48$ m <sup>2</sup> |
| Location first service support   | 200 mm from the face of the partition                                                                                                                            | 250 mm above the floor                                                                                                                                                                                                                                   |
| Classification                   | EN 13501-2, tested to EN 1366-3                                                                                                                                  |                                                                                                                                                                                                                                                          |

## Minimum aperture distances in Wall construction



# SERVICE DISTANCES

## WALL

Min. distance  
mm

|                                               | Cable | Cable carrier | Tied cable bundle | Conduit combustible | Conduit combustible<br>Ø≤28mm | Conduit non-combustible | Metal pipe + combustible<br>insulation | Metal pipe + non<br>combustible insulation | Combustible pipe | Combustible pipe Ø≤28mm | MLCP (Al-comp.) pipe, non-<br>insulated | MLCP (Al-comp.) pipe<br>Ø≤28mm, non-insulated | MLCP pipe + combustible<br>insulation | Combustible air transfer pipe |
|-----------------------------------------------|-------|---------------|-------------------|---------------------|-------------------------------|-------------------------|----------------------------------------|--------------------------------------------|------------------|-------------------------|-----------------------------------------|-----------------------------------------------|---------------------------------------|-------------------------------|
| Cable                                         | 0     | 0             | 0                 | 100                 | 100                           | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Cable carrier                                 | 0     | 0             | 0                 | 100                 | 100                           | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Tied cable bundle                             |       |               | 100               | 100                 | 100                           | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Conduit combustible                           |       |               |                   | 100                 | 100                           | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Conduit combustible Ø≤28mm                    |       |               |                   |                     | 0                             | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Conduit non-combustible                       |       |               |                   |                     |                               | 100                     | 100                                    | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Metal pipe + combustible insulation           |       |               |                   |                     |                               |                         | 0                                      | 100                                        | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Metal pipe + non combustible insulation       |       |               |                   |                     |                               |                         |                                        | 0                                          | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Combustible pipe                              |       |               |                   |                     |                               |                         |                                        |                                            | 100              | 100                     | 100                                     | 100                                           | 100                                   | 100                           |
| Combustible pipe Ø≤28mm                       |       |               |                   |                     |                               |                         |                                        |                                            |                  | 0                       | 100                                     | 100                                           | 100                                   | 100                           |
| MLCP (Al-comp.) pipe, non-insulated           |       |               |                   |                     |                               |                         |                                        |                                            |                  |                         | 100                                     | 100                                           | 100                                   | 100                           |
| MLCP (Al-comp.) pipe Ø≤28mm, non-insulated    |       |               |                   |                     |                               |                         |                                        |                                            |                  |                         |                                         | 0                                             | 100                                   | 100                           |
| MLCP (Al-comp.) pipe + combustible insulation |       |               |                   |                     |                               |                         |                                        |                                            |                  |                         |                                         |                                               | 100                                   | 100                           |
| Combustible air transfer pipe                 |       |               |                   |                     |                               |                         |                                        |                                            |                  |                         |                                         |                                               |                                       | 100                           |

## FLOOR

Min. distance  
mm

|                                                | Cable | Cable carrier | Tied cable bundle | Conduit combustible | Conduit non-combustible | Metal pipe + combustible<br>insulation | Metal pipe + non<br>combustible insulation | Metal pipe Ø≤35mm + non<br>combustible insulation | Combustible pipe | MLCP pipe, non-insulated | MLCP pipe + combustible<br>insulation | Combustible air transfer pipe | Edge of aperture |
|------------------------------------------------|-------|---------------|-------------------|---------------------|-------------------------|----------------------------------------|--------------------------------------------|---------------------------------------------------|------------------|--------------------------|---------------------------------------|-------------------------------|------------------|
| Cable                                          | 0     | 0             | 0                 | 100                 | 100                     | 100                                    | 100                                        | 100                                               | 100              | 100                      | 100                                   | 100                           | 25               |
| Cable carrier                                  | 0     | 0             | 0                 | 100                 | 100                     | 100                                    | 100                                        | 100                                               | 100              | 100                      | 100                                   | 100                           | 30               |
| Tied cable bundle                              |       |               | 100               | 100                 | 100                     | 100                                    | 100                                        | 100                                               | 100              | 100                      | 100                                   | 100                           | 25               |
| Conduit combustible                            |       |               |                   | 100                 | 100                     | 100                                    | 100                                        | 100                                               | 35               | 100                      | 100                                   | 100                           | 20               |
| Conduit non-combustible                        |       |               |                   |                     | 100                     | 100                                    | 100                                        | 100                                               | 35               | 100                      | 100                                   | 100                           | 20               |
| Metal pipe + combustible insulation            |       |               |                   |                     |                         | 25                                     | 100                                        | 100                                               | 100              | 100                      | 100                                   | 100                           | 20               |
| Metal pipe + non combustible insulation        |       |               |                   |                     |                         |                                        | 20                                         | 20                                                | 70               | 100                      | 100                                   | 100                           | 0                |
| Metal pipe Ø≤35mm + non combustible insulation |       |               |                   |                     |                         |                                        |                                            | 0                                                 | 70               | 100                      | 100                                   | 100                           | 0                |
| Combustible pipe                               |       |               |                   |                     |                         |                                        |                                            |                                                   | 68               | 100                      | 100                                   | 100                           | 20               |
| MLCP pipe, non-insulated                       |       |               |                   |                     |                         |                                        |                                            |                                                   |                  | 100                      | 100                                   | 100                           | 20               |
| MLCP pipe + combustible insulation             |       |               |                   |                     |                         |                                        |                                            |                                                   |                  |                          | 100                                   | 100                           | 20               |
| Combustible air transfer pipe                  |       |               |                   |                     |                         |                                        |                                            |                                                   |                  |                          |                                       | 60                            | 25               |



# FREQUENTLY ASKED QUESTIONS (FAQ)

## **What is FZ100 Fire Safe Zone?**

FZ100 Fire Safe Zone is a fire barrier which has been designed specifically for off-site construction. FZ100 allows for both instant and future fire protection and is an innovation to current traditional solutions offered by Nullifire.

## **Why should FZ100 Fire Safe Zone be used within off-site construction?**

Our ground-breaking technology provides off-site construction with an easy to install, compliant and cost-effective solution to speed up the manufacturing process of fire stopping within modules. The technology allows for the compliant substitution of a variety of products, to a single product within this area of application.

## **Do Nullifire have any future tests scheduled for FZ100 Fire Safe Zone?**

As a leading product manufacturer our solutions are continuously being tested to comply with upcoming building regulations and our customers' requirements. To learn more about our testing or share your needs, please don't hesitate to contact us.

## **Do I require training to install FZ100 Fire Safe Zone?**

As a responsible manufacturer we will be offering installation training to ensure that those working with the product understand the requirements, the product itself and how to install. Visit [www.nullifire.com](http://www.nullifire.com) to learn more about upcoming training in your area.

## **Does FZ100 Fire Safe Zone require a wet or dry installation?**

FZ100 Fire Safe Zone is a dry install – making the installation process quick, simple, and easy to complete. Why not check out our videos for an insight into how to install this product.

## **How does the fire inspector know whether FZ100 Fire Safe Zone is installed into the wall?**

To identify whether FZ100 Fire Safe Zone is installed as marked out, simply drill a small hole through the identified plasterboard wall and complete a visual check. Please ensure that upon inspection completion, the drilled hole is filled with Nullifire FS702.

## **Where should I apply the FZ100 identification tape?**

Nullifire FZ100 identification tape must be used to identify the Fire Safe Zone area. The tape should be applied evenly over the FZ100 boundary edge.

## **Can FZ100 Fire Safe Zone accommodate future service changes (e.g. remove or remove & replace)?**

Existing penetration openings within FZ100 Fire Safe Zone may be reused when services are replaced or modified, provided the FZ100 material remains intact and has not been removed. Any existing sealant should be removed and the new service penetration sealed in accordance with the applicable Nullifire installation instructions. The suitability and fire performance of the revised penetration arrangement must always be verified for the specific service configuration being installed.

## **If the Service is to be changed:**

If the FZ100 has not been removed from the seal, any service maybe reinstated into the same or larger opening, provided the required distances and installation methods are adhered to, and the smoke seal is reinstated. If the FZ100 has been removed from the seal around non-combustible services such as metal pipes with/without non-combustible insulation, an equal or larger service of the same material type may use the same opening, provided the required distances and installation methods are adhered to, and the smoke seal is reinstated.

## **If the service is to be removed and omitted completely:**

If the FZ100 has not been removed from the seal, you would be required to reinstate the smoke seal. If the FZ100 has been removed from the seal, you would need to reinstate the FZ100 material and reinstate the smoke seal: FZ100 may be used for the material reinstatement, which should be installed under 5 mm compression.

## **Can FZ100 Fire Safe Zone be used to future-proof my building?**

FZ100 Fire Safe Zone is designed to future-proof buildings. Simply define areas of the builds where future trades are likely to require access for data / telecoms, electrical additions or plumbing changes and identify the area using the FZ100 identification tape. This can be added to the project documentation (e.g. O&M manual) and provides clear locations for the addition of the extensively tested service range, to be added at a later date.

## **Notes**

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**WALL  
SOLUTIONS**

# WALL APPLICATION



**FZ100** is typically installed during the drywall construction phase. One side of the partition may be fully constructed prior to the application of **FZ100**.



**FZ100** should be compressed between two vertical studs at the expected service locations (e.g. above door head). Horizontally, **FZ100** must be supported from below (and from the top, ensuring no void is left) using either studs or mineral wool boards ( $\geq 100 \text{ kg/m}^3$ ).



Close the partition wall with the required plasterboard system to manufacturer's tested recommendations.



Externally identify the Fire Safe Zone area using **FZ100** identification tape.



In the required locations, and within the **FZ100** perimeter identification, mark out and identify your service requirements (ensuring to avoid stud locations).



**For square or rectangular services**, drill directly through the partition at the 4 corners in the required service location. Plasterboard can now be cut to each side individually without removing **FZ100** infill.



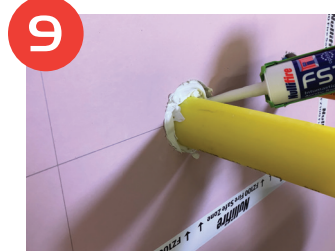
**For circular services**, drill a pilot hole directly through the partition at the centre of the required service location. Using a suitable core drill bit, plasterboard can now be cut to each side individually **without removing FZ100 infill**.



Once **FZ100** is revealed, cross cut using a suitable cutting knife, creating 4 slits from the centre of the opening to the corners of the opening (rectangular type aperture), or at centre point to perimeter at  $90^\circ$  (circular type aperture). Alternatively use a horseshoe cut for pipes.



Once cross cut, gently push back **FZ100** within cavity space to reveal your required opening, and pass the required service through the now revealed opening (**FZ100** will over time form its original shape around the service).



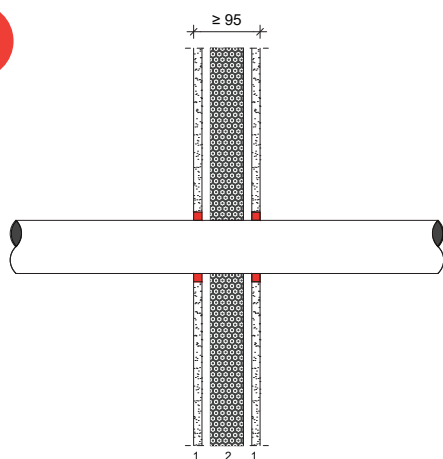
A cold smoke seal will be required on both sides of partition; we recommend the use of **FS702 Intumastic** (please read **FS702** TDS for limitations).

Plasterboard openings are required to be either the same dimensions as the services, or can be up to 25mm larger to all sides of the service dimensions (building conditions may require the increased opening size, e.g. building movement tolerances).



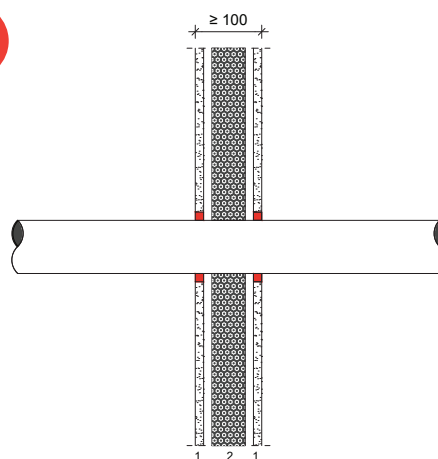
# WALL CONFIGURATIONS

**A1**



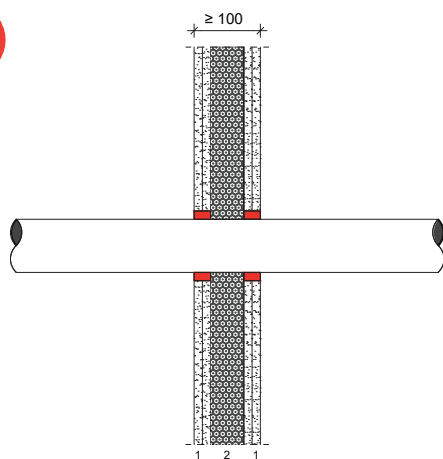
- 1 - 12.5 mm Vinyl faced plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 70 mm timber stud

**A2**



- 1 - 12.5 mm Plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 75 mm metal stud

**A3**



- 1 - 2x 12.5 mm Plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 50 mm metal stud

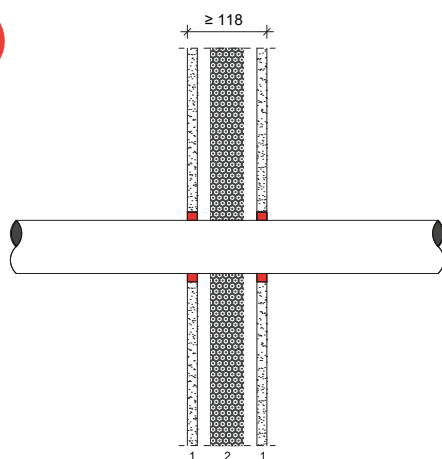


Nullifire FZ100



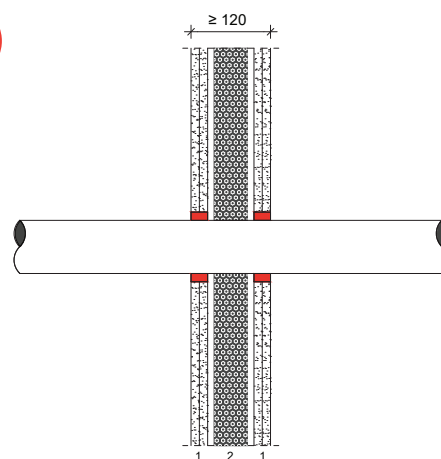
Nullifire FS702

BI



- 1 - 15 mm Vinyl faced plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 88 mm timber stud

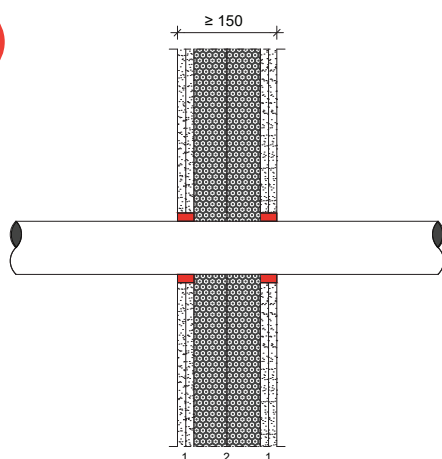
B2



- 1 - 2x 12.5 mm Plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 70 mm metal stud

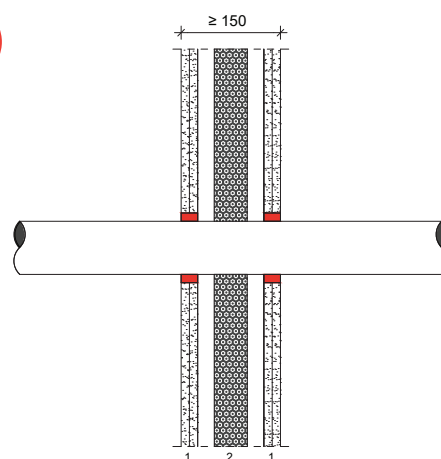
1 12.5 + 12.5 mm Plasterboard

CI



- 1 - 2x 12.5 mm Plasterboard
- 2 - 2x 50 mm FZ100 Fire Safe Zone; within 100 mm metal stud

C2



- 1 - 2x 12.5 mm Plasterboard
- 2 - 50 mm FZ100 Fire Safe Zone; central within 100 mm metal stud



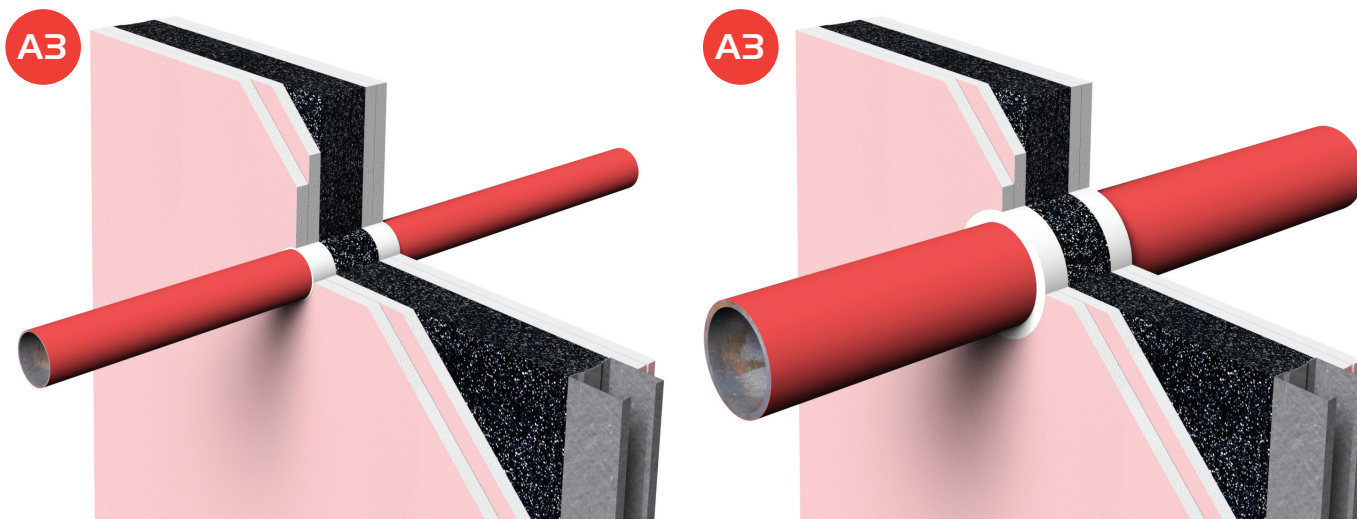
Nullifire FZ100



Nullifire FS702

# NON-COMBUSTIBLE PIPES

## Copper and Steel Pipes

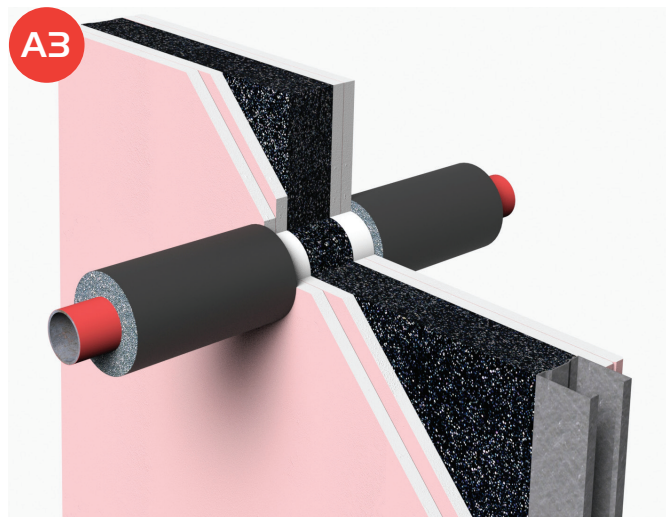
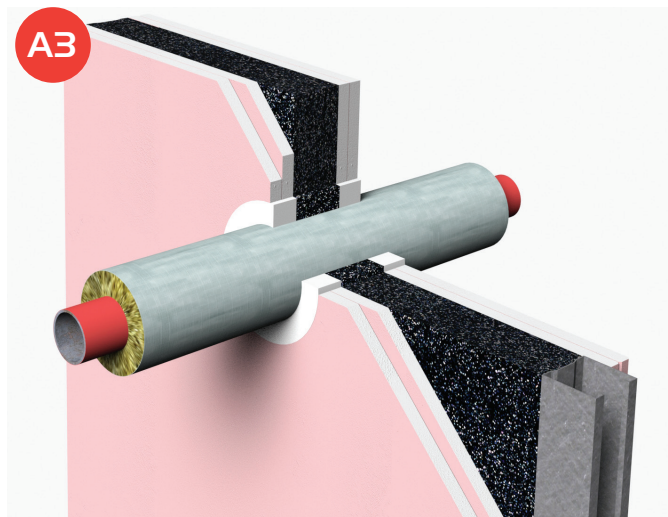


### FZ100 Fire Safe Zone and copper pipe

| Service Material                                         | Service Diameter mm                                      | Wall Thickness mm  | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|----------------------------------------------------------|----------------------------------------------------------|--------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Copper and steel pipes (including cast iron)             | ≤15                                                      | 1-14.2             | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E190 E90    | A3, C1, C2                   |
|                                                          | ≤42<br>≤160                                              | 1-14.2 /<br>2-14.2 | -                   | -                       | -                        | C/U                              | C/U, C/C                            | - E90       |                              |
|                                                          | ≤15                                                      | 1.5-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E130 E90    | B1, B2, (C2)                 |
|                                                          | ≤42                                                      | 1-14.2             | -                   | -                       | -                        | C/U                              | C/U, C/C                            | - E90       |                              |
|                                                          | ≤15 running into the wall                                | 1-14.2             | -                   | -                       | -                        | C/U, U/C                         | C/U, U/C, C/C                       | E120 E120   | B2, (C2)                     |
|                                                          | ≤160                                                     | 2-14.2             | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E145 E120   |                              |
|                                                          | ≤12<br>up to 3 pipes each in 28mm PVC sleeve (150x0.8mm) | 1.5-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E120 E120   | C1, C2                       |
|                                                          | ≤15<br>up to 3 pipes each in 28mm PVC sleeve (150x0.8mm) | 0.8-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E120 E120   |                              |
|                                                          | ≤22<br>up to 3 pipes each in 28mm PVC sleeve (150x0.8mm) | 1.2-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E130 E120   |                              |
|                                                          | ≤15<br>up to 3 pipes each in 28mm PVC sleeve (150x0.8mm) | 0.8-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E120 E120   |                              |
|                                                          | ≤22<br>up to 3 pipes each in 28mm PVC sleeve (150x0.8mm) | 1.2-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E190 E120   |                              |
|                                                          | ≤25                                                      | 1.8-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E160 E90    | A3, C1, C2                   |
| Steel pipes (including cast iron)                        | ≤89                                                      | 5-14.2             | -                   | -                       | -                        | C/U                              | C/U, C/C                            | - E90       |                              |
|                                                          | ≤25                                                      | 1.8-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E160 E90    | B1, B2, (C2)                 |
| Steel pipes (including cast iron) spiral air ventilation | ≤103                                                     | 0.8-14.2           | -                   | -                       | -                        | C/U                              | C/U, C/C                            | E190 E90    | B1, B2, (C2)                 |



## Copper and Steel Pipes with insulation



### FZ100 Fire Safe Zone and metal pipe with non-combustible insulation

### FZ100 Fire Safe Zone and copper pipe with combustible insulation

| Service Material                                           | Service Diameter mm                                        | Wall Thickness mm      | Insulation Material                                   | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|------------------------------------------------------------|------------------------------------------------------------|------------------------|-------------------------------------------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Copper and steel pipes (including cast iron)               | ≤20                                                        | 1.2-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI60 E60    | A2, A3, C1, C2               |
|                                                            | ≤42                                                        | 1-14.2                 | Phenolic (500mm long)                                 | 20                      | LI                       | C/U                              | C/U, C/C                            | EI90 E90    |                              |
|                                                            | ≤24                                                        | 1.2-14.2               | Glass fibre                                           | ≥25                     | CI                       | U/C                              | U/C, C/U, C/C                       | EI60 E120   |                              |
|                                                            | ≤42                                                        | 1-14.2                 | Glass wool (80 kg/m³)                                 | ≥20                     | CI                       | C/U                              | C/U, C/C                            | EI60 E90    | A3, C1, C2                   |
|                                                            | ≤64                                                        | 2-14.2                 | Elastomeric (K-Flex)                                  | 19                      | CS                       | C/U                              | C/U, C/C                            | EI60 E60    |                              |
|                                                            | ≤89                                                        | 2-14.2                 | Elastomeric (200mm long)                              | 50                      | LI                       | C/U                              | C/U, C/C                            | EI45 E120   |                              |
|                                                            | ≤160                                                       | 2-14.2                 | Anaconda (500mm long)                                 | 50                      | LI                       | C/U                              | C/U, C/C                            | EI30 E90    |                              |
|                                                            | ≤42                                                        | 1.2-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI90 E90    | B1, B2, (C2)                 |
|                                                            | ≤40<br>≤160                                                | 1.5-14.2 /<br>2.0-14.2 | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/C                              | C/C                                 | EI60 E90    | B2, (C2)                     |
|                                                            | ≤22                                                        | 1.2-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI90 E120   | C1, C2                       |
| Copper and Steel (including cast iron) air con combination | ≤22                                                        | 1.2-14.2               | Phenolic                                              | 20                      | CS                       | C/U                              | C/U, C/C                            | EI120 E120  | C1, C2                       |
|                                                            | ≤22                                                        | 1.2-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI120 E120  | C2                           |
|                                                            | ≤12.7 +<br>≤6.35<br>up to 2 pipes; PVC<br>19x2mm, 1x cable | 3-14.2                 | Ruberoid (around copper)<br>FI025 (1 row, both sides) | 13<br>≥25               | CS<br>LI                 | C/C;<br>U/C                      | C/C;<br>U/C, C/C                    | EI90 E90    | B1, B2, (C2)                 |
|                                                            | ≤110                                                       | 1.2-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI60 E60    | A2, A3, C1, C2               |
|                                                            | ≤89                                                        | 2-14.2                 | Elastomeric (200mm long)                              | 50                      | LI                       | C/U                              | C/U, C/C                            | EI90 E120   | A3, C1, C2                   |
|                                                            | ≤28*                                                       | 1.2-14.2               | Mineral wool                                          | ≥30                     | CS                       | C/U                              | C/U, C/C                            | EI60 E60    |                              |
|                                                            | ≤25                                                        | 1.8-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI90 E90    | B1, B2, (C2)                 |
|                                                            | ≤103                                                       | 0.8-14.2               | FI025 (1 row, both sides)                             | ≥25                     | LI                       | C/U                              | C/U, C/C                            | EI90 E90    | B1, B2, (C2)                 |
|                                                            |                                                            |                        |                                                       |                         |                          |                                  |                                     |             |                              |
|                                                            |                                                            |                        |                                                       |                         |                          |                                  |                                     |             |                              |

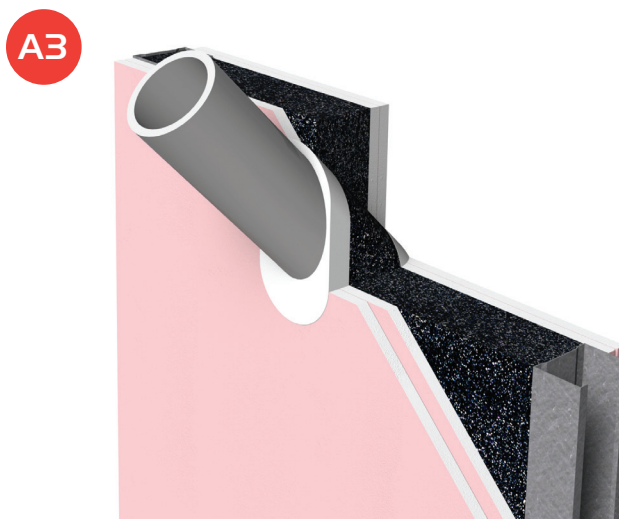
\*FZ100 may be removed from the penetration area up to Ø92 mm.

# COMBUSTIBLE PIPES

## PE Pipes



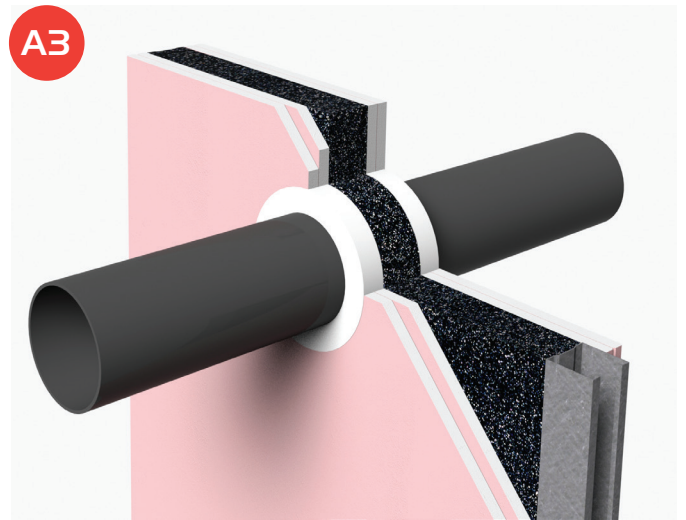
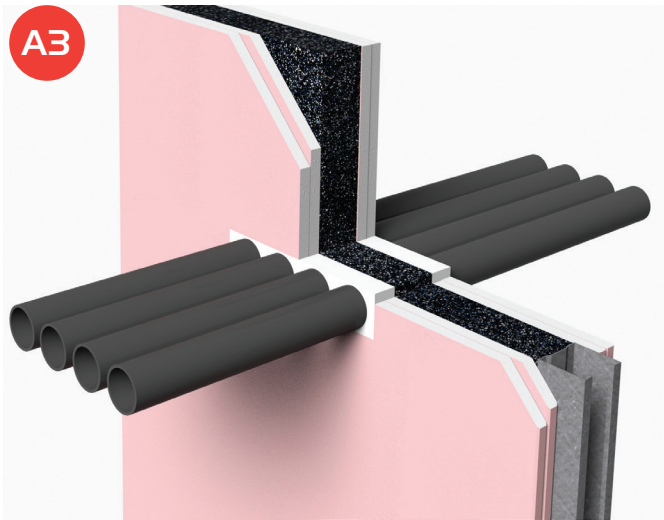
FZ100 Fire Safe Zone and combustible pipes



FZ100 Fire Safe Zone and combustible pipe at 45°

| Service Material                  | Service Diameter mm      | Wall Thickness mm   | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|-----------------------------------|--------------------------|---------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| PE (including HDPE, ABS, SAN+PVC) | ≤50                      | 4                   | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    | A2, A3, C1, C2               |
|                                   | ≤110                     | 8                   | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E130 E30    |                              |
|                                   | ≤50 ≤110                 | 4-8                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E30       |                              |
|                                   | ≤40                      | 2.4                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    | A3, C1, C2                   |
|                                   | ≤125                     | 17.1                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    |                              |
|                                   | ≤110                     | 10                  | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E120 E120   |                              |
|                                   | ≤40<br>≤125              | 2.4-17.1 / 3.7-17.1 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E160 E60    |                              |
|                                   | ≤63<br>up to 3 pipes     | 3.7                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E160 E60    | B2, (C2)                     |
|                                   | ≤40                      | 3.7                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E160 E120   |                              |
|                                   | ≤63 ≤110<br>at 45° angle | 3.2-10              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E120 E120   |                              |
|                                   | ≤40<br>up to 4 pipes     | 2.3                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E190 E120   |                              |
|                                   | ≤110                     | 10                  | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E190 E90    | C1, C2                       |
|                                   | ≤110                     | 10                  | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E145 E120   |                              |
|                                   | ≤40<br>≤110              | 2.3-10 / 3.2-10     | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E130 E30    |                              |
|                                   | ≤110                     | 10                  | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E120 E120   | A3, C1, C2                   |
|                                   | ≤40<br>up to 3 pipes     | 1.9                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E160 E60    |                              |
|                                   | ≤50<br>≤110              | 1.9-11.2 / 3.4-11.2 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E160 E60    |                              |
| Geberit Silent db20 (PE-S2)       | ≤110                     | ≤6                  | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    | A3, C1, C2                   |

## PP Pipes



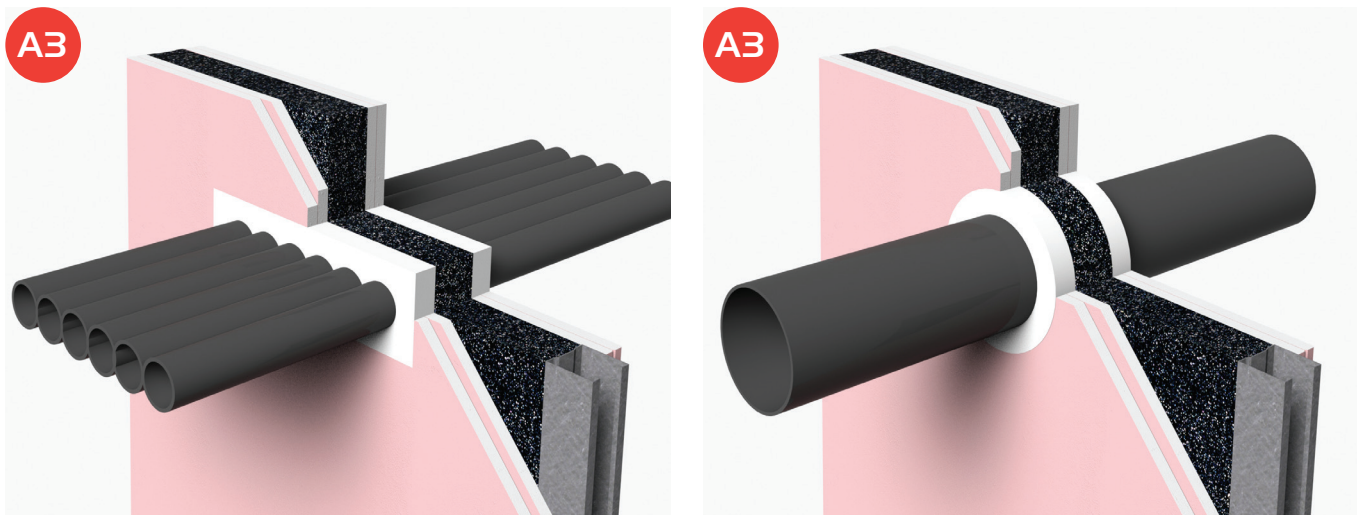
FZ100 Fire Safe Zone and a row of combustible pipes

FZ100 Fire Safe Zone and combustible pipe

| Service Material              | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|-------------------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| PP                            | ≤50                 | 4                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A2, A3, C1, C2               |
|                               | ≤40                 | 1.9               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    |                              |
|                               | ≤40                 | 1.9               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E120   | A3, C1, C2                   |
|                               | ≤40 up to 4 pipes   | 1.9               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                              |
| Poloplast POLO-KAL NG/XS (PP) | ≤50                 | ≤2                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A3, C1, C2                   |
| Geberit Silent PP (PP-MD)     | ≤110                | ≤3.6              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A3, C1, C2                   |
| Geberit Silent Pro (PP-MX)    | 50                  | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A3, C1, C2                   |
| REHAU Raupiano plus (PP)      | 50                  | 1.8               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    |                              |
|                               | 90                  | 2.2               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A3, C1, C2                   |
|                               | ≤90                 | ≤2.2              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60       |                              |
| Wavin AS+ (PP)                | 50                  | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    |                              |
|                               | ≤75                 | ≤3.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60       | A3, C1, C2                   |
| Wavin SiTech+ (PP)            | ≤75                 | ≤2.6              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A3, C1, C2                   |

# COMBUSTIBLE PIPES

## PVC Pipes



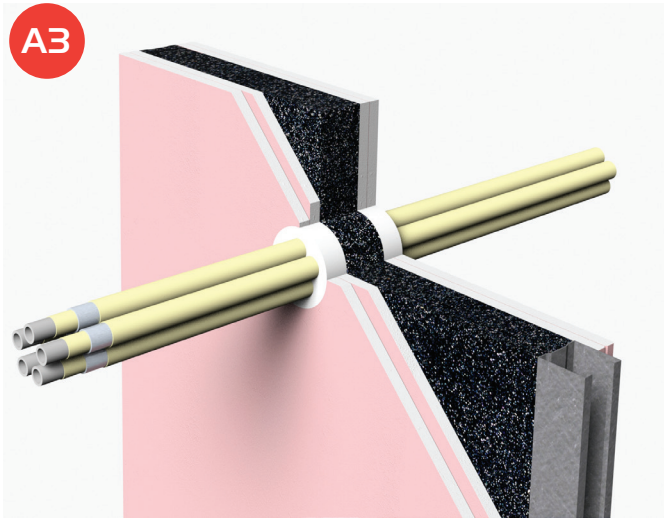
FZ100 Fire Safe Zone and row of combustible pipes

FZ100 Fire Safe Zone and combustible pipe

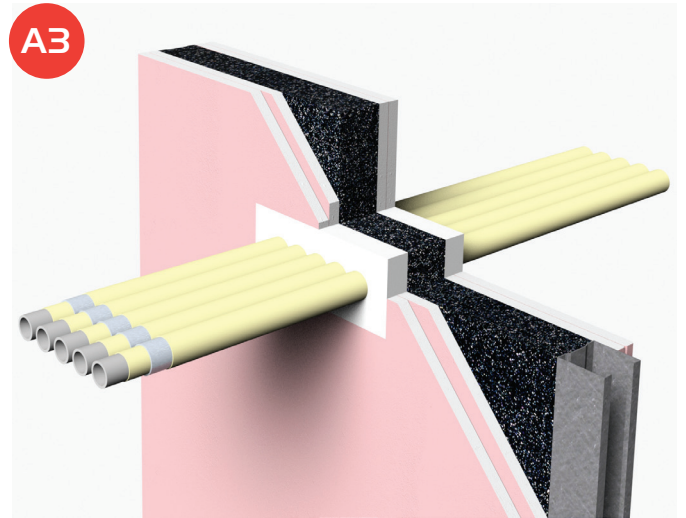
| Service Material | Service Diameter mm   | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|------------------|-----------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| PVC              | ≤36                   | 1.5-3.4           | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    | A1, A2, A3, C1, C2           |
|                  | ≤43                   | 2-3.4             | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                              |
|                  | ≤110                  | 3.4               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                              |
|                  | ≤20<br>up to 5 pipes  | 1.2               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | A2, A3, C1, C2               |
|                  | ≤40<br>incl. 28mm PEX | 1.2               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    |                              |
|                  | ≤40                   | 1.2               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI30 E30    |                              |
|                  | ≤110                  | 4.2-6.6           | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI120 E120  | A3, C1, C2                   |
|                  | ≤40                   | 1.9-6.6 / 4.2-6.6 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    |                              |
|                  | ≤40                   | 1.9-6.6 / 3.1-6.6 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E45       |                              |
|                  | ≤40<br>up to 3 pipes  | 1.9               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                              |
|                  | ≤40<br>≤110           | 1.9-7.4 / 4.2-7.4 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                              |
|                  | ≤40<br>≤125           | 1.9-7.4 / 4.8-7.4 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                              |
|                  | ≤50                   | 2-3.2             | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI120 E120  | C1, C2                       |
|                  | ≤110                  | 3.2               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI120 E120  |                              |
| PVC-C Spears     | ≤90                   | 7.5               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI120 E120  | B2, (C2)                     |



## MLCP Pipes



FZ100 Fire Safe Zone and bundle of PEX multilayer pipes

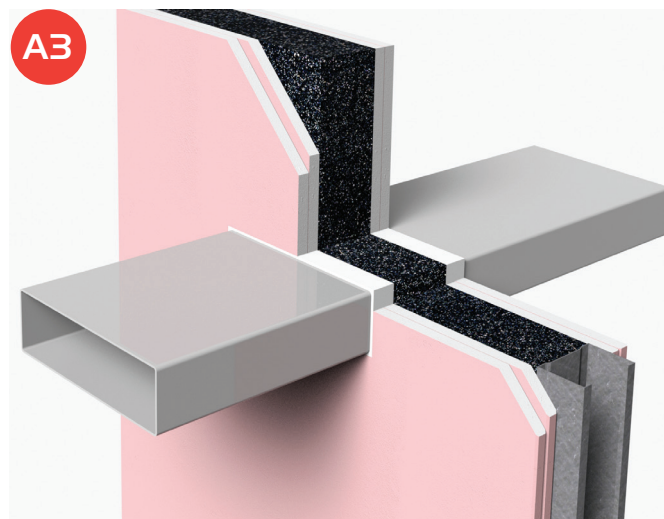


FZ100 Fire Safe Zone a row of PEX multilayer pipes

| Service Material                         | Service Diameter mm  | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating     | Wall Configuration Permitted |
|------------------------------------------|----------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-----------------|------------------------------|
| PEX                                      | ≤22                  | 1.9               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI30</b> E30 | A1, A2, A3, C1, C2           |
|                                          | ≤60<br>up to 2 pipes | 4                 | Ruberoid            | 15                      | CS                       | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI60</b> E60 | A2, A3, C1, C2               |
|                                          | ≤22<br>up to 5 pipes | 1.5-10            | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI60</b> E60 | A3, C1, C2                   |
|                                          | ≤110                 | 10                | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI45</b> E60 |                              |
| MLCP<br>Wavin Tigris<br>(PE-HD/Al/PE-Xc) | ≤50                  | ≤4.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI60</b> E60 | A3, C1, C2                   |

# COMBUSTIBLE PIPES

## PVC Ducts

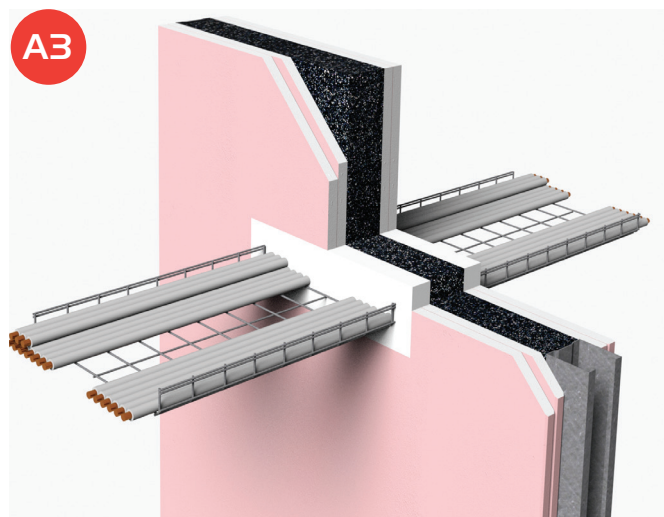


**FZ100 Fire Safe Zone and rectangular PVC duct**

| Service Material           | Service Dimensions mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating  |      | Wall Configuration Permitted |
|----------------------------|-----------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|--------------|------|------------------------------|
| PVC duct                   | 205x55                | -                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI30</b>  | E30  | A1, A2, A3, C1, C2           |
| PVC duct sealed with FS709 | 200x60                | ≤1.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI30</b>  | E30  | A2, A3, C1, C2               |
|                            | 204x60                | ≤1.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI60</b>  | E120 | B2, (C2)                     |
| PVC duct                   | 220x90                | ≤1.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI60</b>  | E60  | C2                           |
|                            | 220x90                | ≤1.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI120</b> | E120 |                              |
|                            | 204x60                | ≤1.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI120</b> | E120 |                              |

# CABLE AND CABLE CARRIERS

## Cable and Cable Bundles

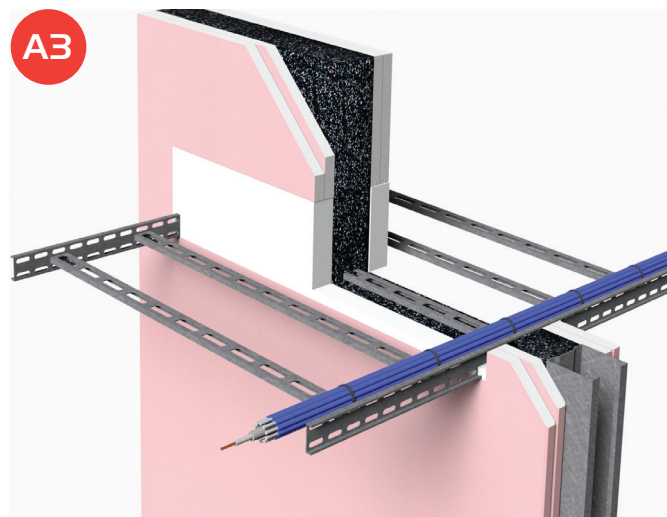


FZ100 Fire Safe Zone and cable ladder with cables

| Service Material                                                                                                           | Service Diameter mm | Wall Thickness mm | Insulation Material          | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|----------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|------------------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Non-sheathed cables                                                                                                        | ≤24                 |                   | FI025 (1 row, both sides)    | ≥25                     | LI                       |                                  |                                     | EI60 E60    | A2, A3, C1, C2               |
|                                                                                                                            | ≤24                 |                   | FI025 (1 row, non fire side) | ≥25                     | LI                       |                                  |                                     | EI120 E120  | B2, (C2)                     |
| Coaxial sheathed cables                                                                                                    | ≤10                 |                   | -                            | -                       | -                        |                                  |                                     | EI120 E120  | A3, C1, C2                   |
| in a bundle                                                                                                                | ≤80                 |                   | -                            | -                       | -                        |                                  |                                     |             |                              |
| Misc sheathed cables<br>4x T&E cables: 16 x 8mm dia<br>1x Earth cable: 8mm dia                                             | 8-16                |                   | -                            | -                       | -                        |                                  |                                     | EI30 E30    | A1, A2, A3, C1, C2           |
| Misc sheathed cables incl.<br>32x TV coaxial cables,<br>26x Twin and Earth 2.5 mm cables,<br>80x Cat 5 cables              | ≤10                 |                   | -                            | -                       | -                        |                                  |                                     | EI90 E90    |                              |
| Misc sheathed cables incl.<br>5x Fibre optic cables                                                                        | ≤10                 |                   | -                            | -                       | -                        |                                  |                                     | EI60 E90    |                              |
|                                                                                                                            |                     |                   |                              |                         |                          |                                  |                                     |             | A3, C1, C2                   |
| Misc sheathed cables incl.<br>10x Fibre optic cables                                                                       | ≤10                 |                   | -                            | -                       | -                        |                                  |                                     | EI45 E90    |                              |
| Misc sheathed cables incl.<br>308x Fibre optic cables                                                                      | ≤10                 |                   | -                            | -                       | -                        |                                  |                                     | EI30 E90    |                              |
| Misc sheathed cables incl. 2x T&E Electric cable ≤6mm, PVC sheathed copper core, 3-17x Cat 6 cables ≤7mm, 2x Type F cables | ≤12                 |                   | FI025 (1 row, both sides)    | ≥25                     | LI                       |                                  |                                     | EI90 E90    |                              |
| Misc sheathed cables incl. 2x T&E Electric cable ≤6mm, PVC sheathed copper core, 3-17x Cat 6 cables ≤7mm, 2x Type F cables | ≤12                 |                   | -                            | -                       | -                        |                                  |                                     | EI60 E90    | B1, B2, (C2)                 |

# CABLE AND CABLE CARRIERS

## Cable and Cable Bundles (continuation)

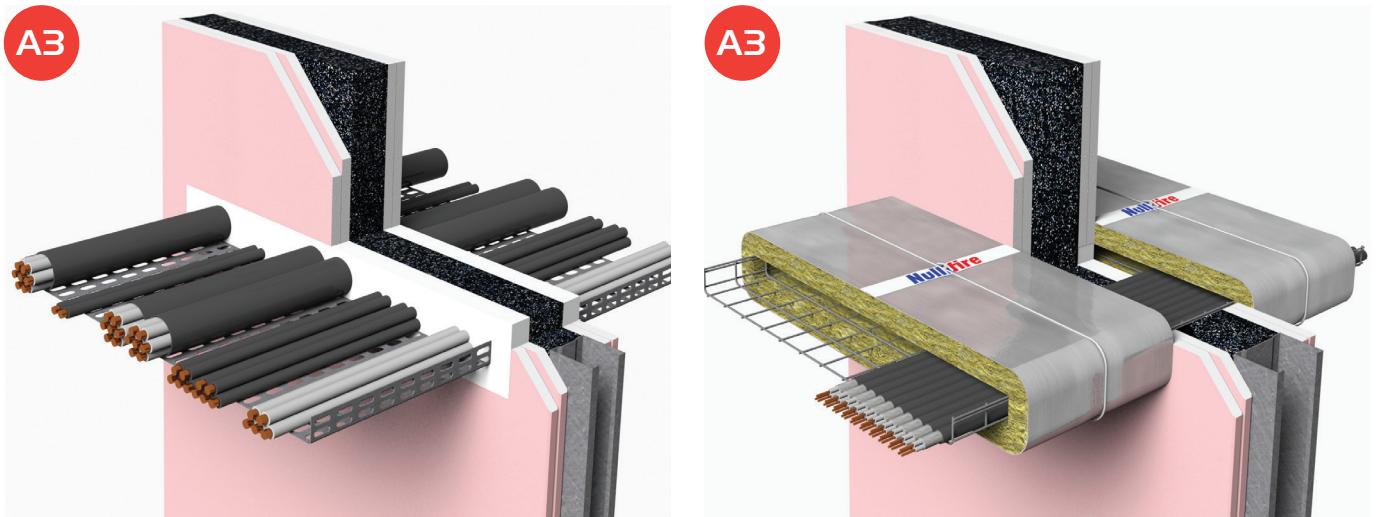


**FZ100 Fire Safe Zone and cable tray with cable bundle**

| Service Material                                                                                    | Service Diameter mm | Wall Thickness mm | Insulation Material       | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|-----------------------------------------------------------------------------------------------------|---------------------|-------------------|---------------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Cable bundles incl. 32x TV coaxial cables                                                           | ≤80                 |                   | -                         | -                       | -                        |                                  |                                     | EI120 E120  |                              |
| Sheathed cables in a bundle 125x Cat 5 cables sealed with FP170 collar                              | ≤125                |                   | -                         | -                       | -                        |                                  |                                     | EI90 E120   |                              |
| Misc cable bundles incl. 26x Twin and Earth 2.5 mm cables, 80x Cat 5 cables                         | ≤100<br>≤80         |                   | -                         | -                       | -                        |                                  |                                     | EI90 E90    | A3, C1, C2                   |
| Misc cable bundles incl. 10x Fibre optic cables                                                     | ≤10                 |                   | -                         | -                       | -                        |                                  |                                     | EI45 E90    |                              |
| Misc cable bundles incl. 308x Fibre optic cables                                                    | ≤100                |                   | -                         | -                       | -                        |                                  |                                     | EI30 E90    |                              |
| Cable bundles incl. 13x PVC sheathed copper core                                                    | ≤45                 |                   | FI025 (1 row, both sides) | ≥25                     | LI                       |                                  |                                     | EI90 E90    |                              |
| Cable bundles incl. 13x PVC sheathed copper core                                                    | ≤45                 |                   | -                         | -                       | -                        |                                  |                                     | EI90 E90    |                              |
| Cable bundles incl. PVC sheathed copper core 5x 11mm Ø x 5 mm, 10x 9.5mm Ø x 6 mm, 4x 12mm Ø x 7 mm | ≤23                 |                   | FI025 (1 row, both sides) | ≥25                     | LI                       |                                  |                                     | EI90 E90    | B1, B2, (C2)                 |
| Cable bundles incl. PVC sheathed copper core 5x 11mm Ø x 5 mm                                       | ≤23                 |                   | -                         | -                       | -                        |                                  |                                     | EI90 E90    |                              |
| Cable bundles incl. PVC sheathed copper core 10x 9.5mm Ø x 6 mm, 4x 12mm Ø x 7 mm                   | ≤23                 |                   | -                         | -                       | -                        |                                  |                                     | EI60 E90    |                              |
| Cable bundles incl. Cat 7 cables                                                                    | ≤50                 |                   | -                         | -                       | -                        |                                  |                                     | EI120 E120  | C1, C2                       |



## Cable and Cable Bundles (continuation)



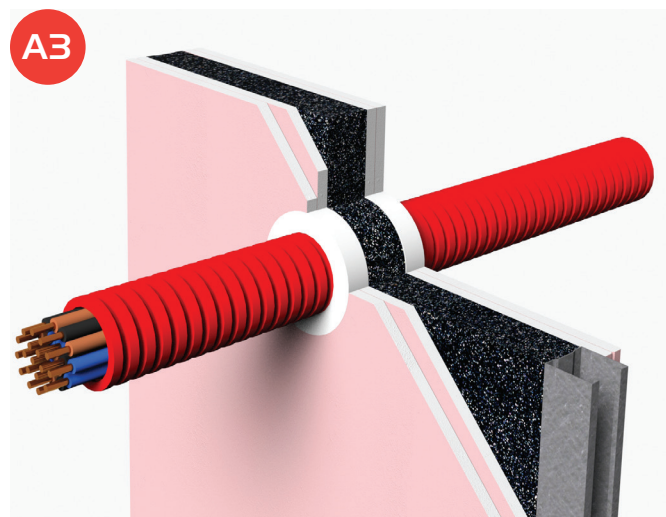
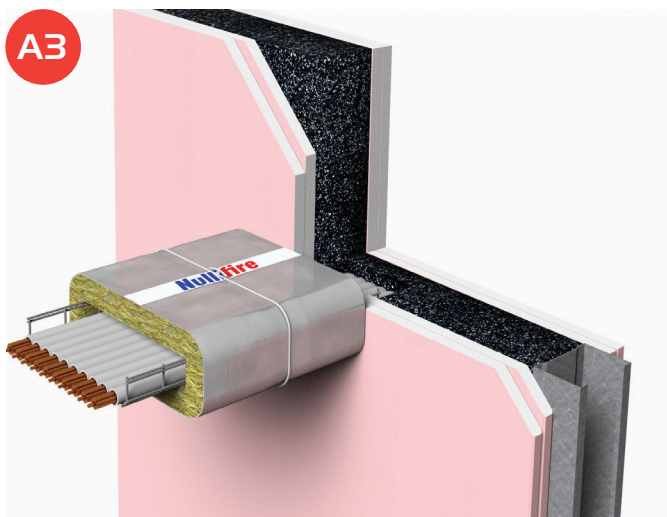
FZ100 Fire Safe Zone and cable tray with cables

FZ100 Fire Safe Zone, FI025 Insulation Wrap and a cable tray with cables

| Service Material                                               | Service Diameter mm | Wall Thickness mm | Insulation Material             | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|----------------------------------------------------------------|---------------------|-------------------|---------------------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Misc sheathed cables<br>2x G, 8x A1, B, E, D1                  | ≤52                 |                   | -                               | -                       | -                        |                                  |                                     | EI30 E30    | A1, A2, A3, C1, C2           |
| Misc sheathed cables<br>C1, C2                                 | 40-47               |                   | FI025<br>(1 row, both sides)    | ≥25                     | LI                       |                                  |                                     | EI60 E60    | A2, A3, C1, C2               |
| Sheathed cables<br>D2                                          | ≤52                 |                   | -                               | -                       | -                        |                                  |                                     | EI90 E90    | A3, C1, C2                   |
| Sheathed cables<br>10 cables A1<br>running into the wall       | ≤14                 |                   | FI025<br>(1 row, both sides)    | ≥25                     | LI                       |                                  |                                     | EI120 E120  |                              |
| Sheathed cables<br>1 cable D2                                  | ≤52                 |                   | FI025<br>(1 row, non fire side) | ≥25                     | LI                       |                                  |                                     | EI120 E120  | B2, (C2)                     |
| Sheathed cables<br>10 cables A1<br>1 cable D2                  | ≤14<br>≤52          |                   | FI025<br>(1 row, both sides)    | ≥25                     | LI                       |                                  |                                     | EI90 E120   |                              |
| Sheathed cables<br>14x A1, 13x A2, 13x<br>A3, C1, C2<br>D1, D3 | ≤14<br>40-47<br>≤52 |                   | -                               | -                       | -                        |                                  |                                     | EI90 E120   |                              |
| Sheathed cables<br>1 cable D2                                  | ≤52                 |                   | -                               | -                       | -                        |                                  |                                     | EI60 E120   | C1, C2                       |
| Cable bundles<br>made of F cables<br>≤Ø21mm                    | ≤100                |                   | -                               | -                       | -                        |                                  |                                     | EI60 E120   |                              |

# CABLE AND CABLE CARRIERS

## Cable Carriers and Cable Conduits



**FZ100 Fire Safe Zone and cable carrier with FI025 Insulation Wrap**

**FZ100 Fire Safe Zone and flexible pipe with cables**

| Service Material                                                                     | Service Dimension / Diameter mm | Wall Thickness mm            | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Wall Configuration Permitted |
|--------------------------------------------------------------------------------------|---------------------------------|------------------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|------------------------------|
| Cable carriers                                                                       | ≤300x50                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI30 E30    | A1, A2, A3, C1, C2           |
|                                                                                      | ≤215x60                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI30 E30    |                              |
|                                                                                      | ≤330x50                         | FI025 (1 row, both sides)    | ≥25                 | LI                      | -                        | -                                | -                                   | EI60 E60    | A2, A3, C1, C2               |
|                                                                                      | ≤450x25                         | FI025 (1 row, both sides)    | ≥25                 | LI                      | -                        | -                                | -                                   | EI60 E120   |                              |
|                                                                                      | ≤450x25                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI60 E90    | A3, C1, C2                   |
|                                                                                      | ≤450x57                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI30 E60    |                              |
|                                                                                      | ≤340x27mm                       | FI025 (1 row, both sides)    | ≥25                 | LI                      | -                        | -                                | -                                   | EI90 E90    | B1, B2, (C2)                 |
|                                                                                      | ≤340x27mm                       | -                            | -                   | -                       | -                        | -                                | -                                   | EI90 E90    |                              |
|                                                                                      | ≤150x55                         | FI025 (1 row, non fire side) | ≥25                 | LI                      | -                        | -                                | -                                   | EI120 E120  | B2 (C2)                      |
|                                                                                      | ≤400x25                         | FI025 (1 row, both sides)    | ≥25                 | LI                      | -                        | -                                | -                                   | EI90 E120   |                              |
|                                                                                      | ≤450x25                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI90 E120   | C1, C2                       |
|                                                                                      | ≤350x50                         | -                            | -                   | -                       | -                        | -                                | -                                   | EI60 E120   |                              |
| Electrical conduits PEX incl. 1x Cat 5 cable 1xTV coaxial cable 1x fibre optic cable | ≤28                             | -                            | -                   | -                       | -                        | -                                | -                                   | EI120 EI120 | A3, C1, C2                   |
| Electrical flexible conduits                                                         | ≤40                             | 0.5-1.5                      | -                   | -                       | -                        | -                                | -                                   | EI120 E120  | B2, (C2)                     |
|                                                                                      | ≤100                            | 0.5-1.5                      | -                   | -                       | -                        | -                                | -                                   | EI90 E120   |                              |
|                                                                                      | ≤40 running into the wall       | 0.5-1.5                      | -                   | -                       | -                        | -                                | -                                   | EI90 E90    |                              |
| PVC Trunking Lidded, Marco Apollo incl. 5x Data cables: Ø8mm 1xT&E Cables: 6x8mm     | 115 x 50                        | 1.6                          | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    | A1, A3, C1, C2               |
| PVC Trunking Lidded, Bendex incl. 5x Data cables: Ø8mm 7xT&E Cables: 16x8mm          | 170 x 50                        | -                            | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                              |
| PVC Trunking Marshall Tufflex incl. 5x Data cables: Ø8mm 2xT&E Cables: 16x8mm        | 100 x 45                        | -                            | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                              |

# CABLE SOCKET BOXES

## Cable Socket Boxes

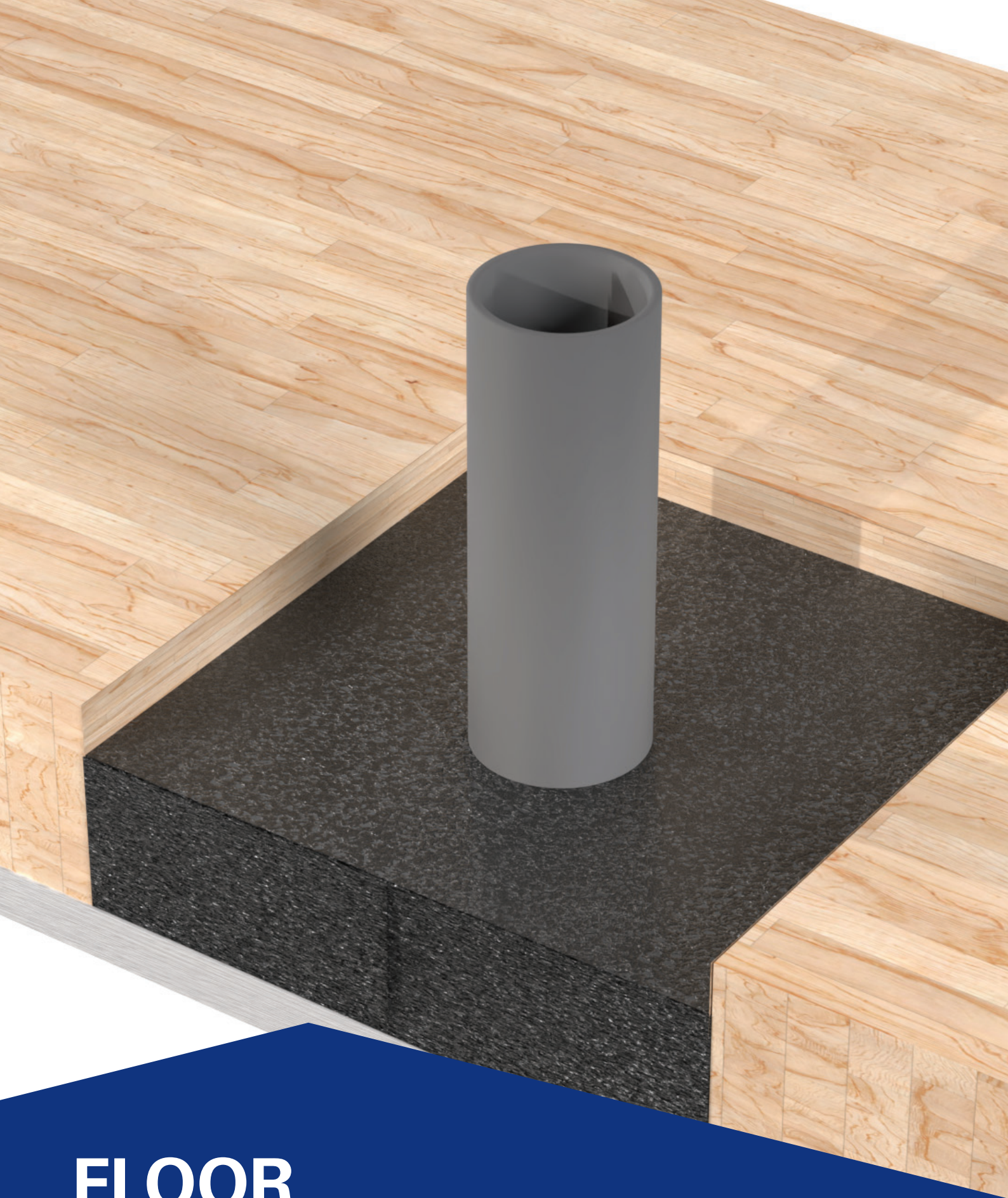


**FZ100 Fire Safe Zone and gang socket box with twin and earth cables**

**FZ100 Fire Safe Zone and fuse box with twin and earth cables**

| Service Material                                                                    | Service Dimensions<br>mm | Wall Thickness<br>mm | Insulation<br>Material | Insulation<br>Thickness<br>mm | Insulation<br>Configuration | Service End<br>Configuration<br>Tested | Service End<br>Configuration<br>Permitted | Fire Rating       | Wall<br>Configuration<br>Permitted |
|-------------------------------------------------------------------------------------|--------------------------|----------------------|------------------------|-------------------------------|-----------------------------|----------------------------------------|-------------------------------------------|-------------------|------------------------------------|
| Electrical socket<br>boxes, single sided<br>≤147x87x48mm                            | ≤147x87x48               |                      | -                      | -                             | -                           |                                        |                                           | <b>EI60</b> EI60  | A2, A3, C1, C2                     |
| Electrical socket<br>boxes, back to back                                            | ≤147x87x33               |                      | -                      | -                             | -                           |                                        |                                           | <b>EI30</b> E30   | A2, A3, C1, C2                     |
| Electrical socket<br>boxes, single sided                                            | ≤147x87x48               |                      | -                      | -                             | -                           |                                        |                                           | <b>EI120</b> E120 | B2, (C2)                           |
| Steel and plastic fuse<br>box, single sided<br>(British General, 12<br>ways)        | 231x389x115              |                      | -                      | -                             | -                           |                                        |                                           | <b>EI120</b> E120 | B2, (C2)                           |
| PVC UK Double<br>socket box, back to<br>back<br>(BG 900 Series, 2<br>gang)          | 146x86x48                |                      | -                      | -                             | -                           |                                        |                                           | <b>EI120</b> E120 | B2, (C2)                           |
| Timber and PVC<br>Double socket box,<br>back to back<br>(MK Timber face, 2<br>gang) | 143x83x49                |                      | -                      | -                             | -                           |                                        |                                           | <b>EI120</b> E120 | B2, (C2)                           |
| PVC UK Multimedia<br>socket box, back to<br>back<br>(Prysmian, 3 gang)              | 228x86x35                |                      | -                      | -                             | -                           |                                        |                                           | <b>EI120</b> E120 | B2, (C2)                           |
| PVC UK Double<br>socket box, back to<br>back<br>(MK Logic Plus)                     | 146x86x40                |                      | -                      | -                             | -                           |                                        |                                           | <b>EI90</b> E90   | B2, (C2)                           |

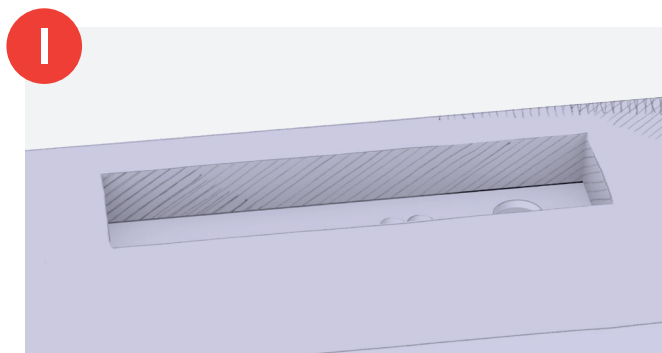




**FLOOR  
SOLUTIONS**



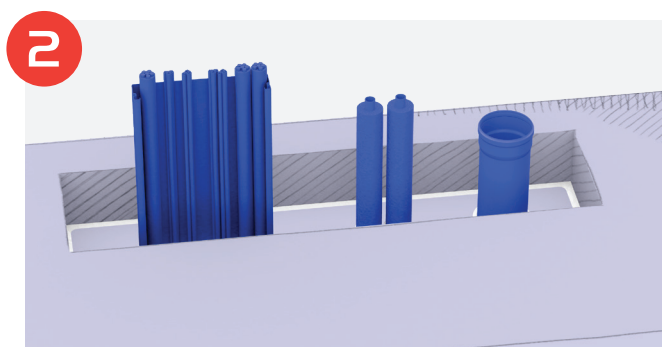
# CEILING / FLOOR APPLICATION



Fix the board underneath the opening allowing for an overlap of 70 mm for concrete/AAC and 80 mm for CLT. This creates the **framework for the installation of FZ100**.

The board will be fixed using metal screws/anchors that are suitable for the substrate (e.g. wood screws 120x8 mm for CLT, screw/impact anchors 6x70 mm for AAC or concrete).

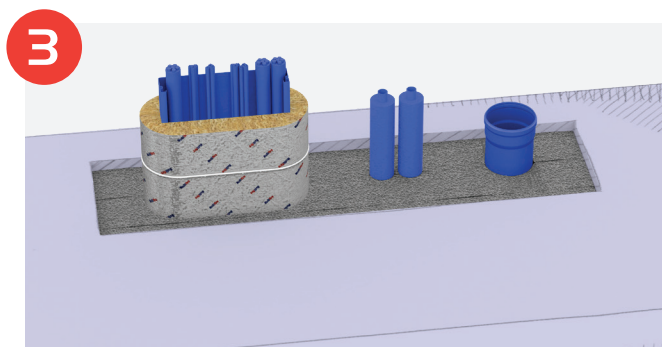
**Alternatively, a formwork box can be created** and integrated into the floor (or poured into concrete). For further details please see configuration details on the following pages.



**Drill into the cement board** and install all services penetrating the floor.

Clean the surface from dust and debris.

**Apply FS702 smoke seal** around all services to the cement board and to the edges of the board/opening.

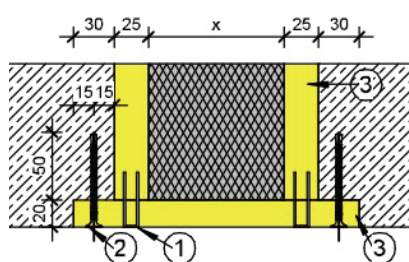


**Install two layers of 50 mm thick FZ100** around the services (we recommend stripes for better handling).

The overall amount of **FZ100** to be used in the opening, is the length of the opening plus min. 5 mm, or alternatively the width of the opening plus min. 5 mm.

After the first layer of **FZ100** has been worked around the service penetrations fill all voids using cut pieces of **FZ100**. Repeat the same for the second layer.

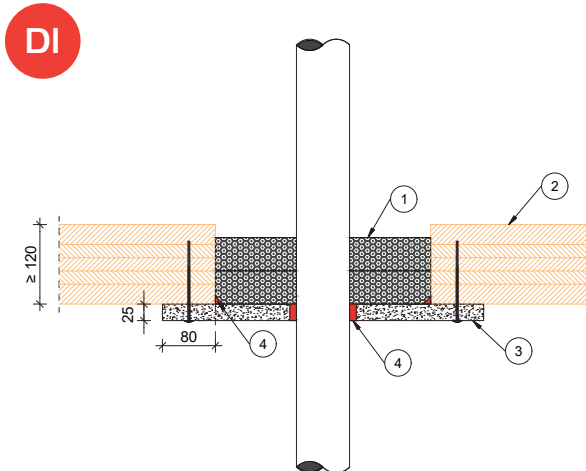
## EXAMPLE OF A FORMWORK BOX FOR CONCRETE



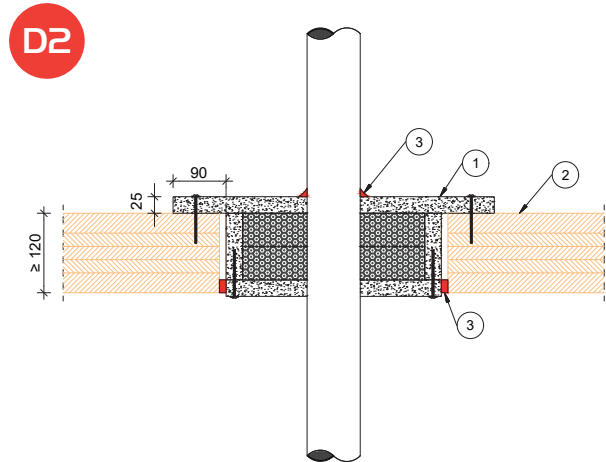
For more information please refer to our Safety and Technical Datasheet.



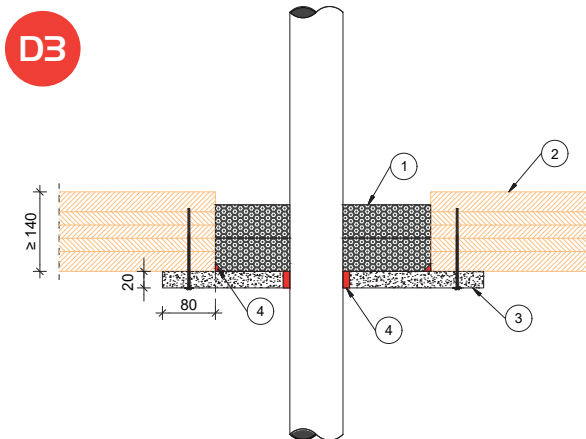
# FLOOR CONFIGURATIONS



- 1 - 2x 50 mm FZ100 Fire Safe Zone
- 2 - 120 mm CLT floor
- 3 - 25 mm Cement board
- 4 - Nullifire FS702 to seal around services and at the junction between floor opening and cement board



- 1 - FZ100 Fire Safe Zone box made of 25 mm cement board; 90 mm overlap to floor opening; fixed with silicate adhesive (e.g. Nullifire FO143) and screws ~4.5x70 mm; 2x 50 mm FZ100 Fire Safe Zone inside cement board box
- 2 - 120 mm CLT floor
- 3 - Nullifire FS702 to seal around services and the gap between cement board box and floor opening



- 1 - 2x 50 mm FZ100 Fire Safe Zone
- 2 - 140 mm CLT floor
- 3 - 20 mm Cement board
- 4 - Nullifire FS702 to seal around services and at the junction between floor opening and cement board

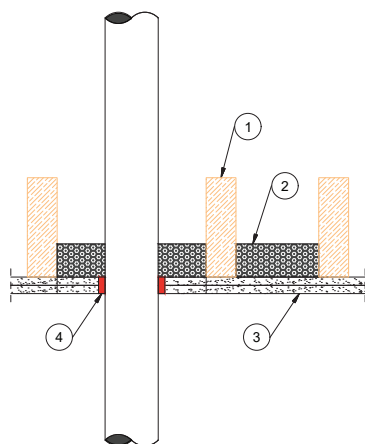


Nullifire FZ100



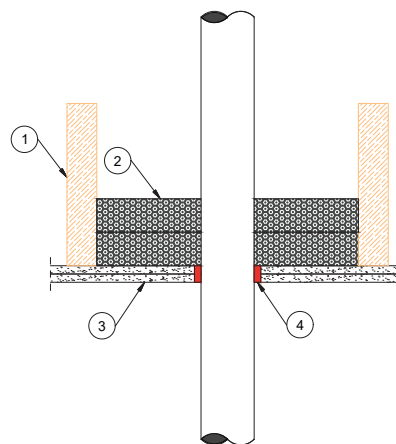
Nullifire FS702

E1



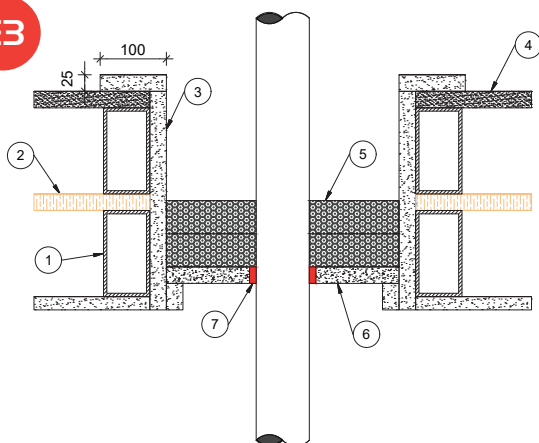
- 1 - 150x45 mm Timber frame
- 2 - 50 mm FZ100 Fire Safe Zone;  
1.2 mm Nullifire FS712 coated on top of FZ100
- 3 - 2x 12.5 mm Plasterboard
- 4 - Nullifire FS702 to seal around services

E2



- 1 - 245x45 mm Timber frame
- 2 - 2x 50 mm FZ100 Fire Safe Zone
- 3 - 2x 12.5 mm Plasterboard
- 4 - Nullifire FS702 to seal around services

E3



- 1 - 2x 120x60x4 mm Steel frame
- 2 - 22 mm Chipboard
- 3 - 25 mm Cement board or plasterboard
- 4 - 28 mm Cement board
- 5 - 2x 50 mm FZ100 Fire Safe Zone
- 6 - 20 or 25 mm Cement board or plasterboard
- 7 - Nullifire FS702 to seal around services

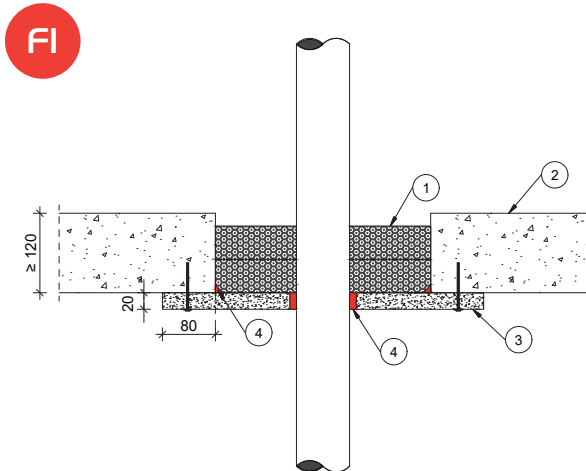


Nullifire FZ100

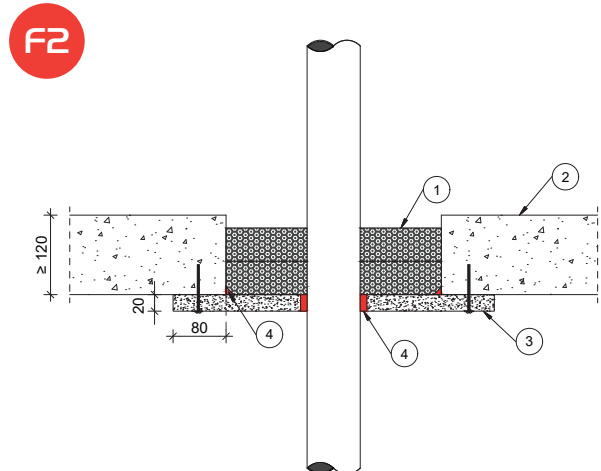


Nullifire FS702

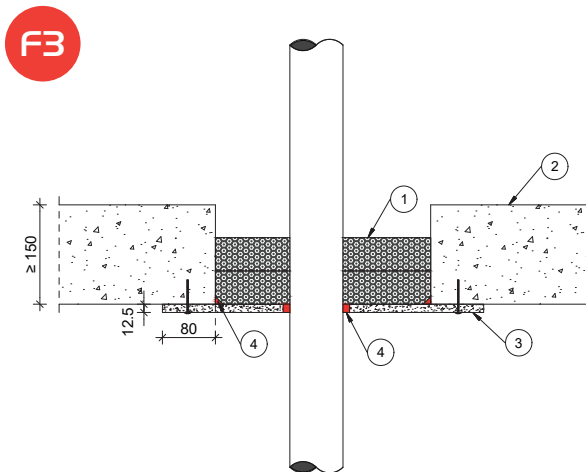
# FLOOR CONFIGURATIONS



- 1 - 2x 50 mm FZ100 Fire Safe Zone
- 2 - 120 mm AAC floor
- 3 - 20 mm Cement board
- 4 - Nullifire FS702 to seal around services and at the junction between floor opening and cement board



- 1 - 2x 50 mm FZ100 Fire Safe Zone
- 2 - 120 mm Concrete floor
- 3 - 20 mm Cement board
- 4 - Nullifire FS702 to seal around services and at the junction between floor opening and cement board



- 1 - 2x 50 mm FZ100 Fire Safe Zone
- 2 - 150 mm Concrete floor
- 3 - 12.5 mm Plasterboard
- 4 - Nullifire FS702 to seal around services and at the junction between floor opening and cement board



Nullifire FZ100



Nullifire FS702



# NON-COMBUSTIBLE PIPES

## Copper Pipes with insulation

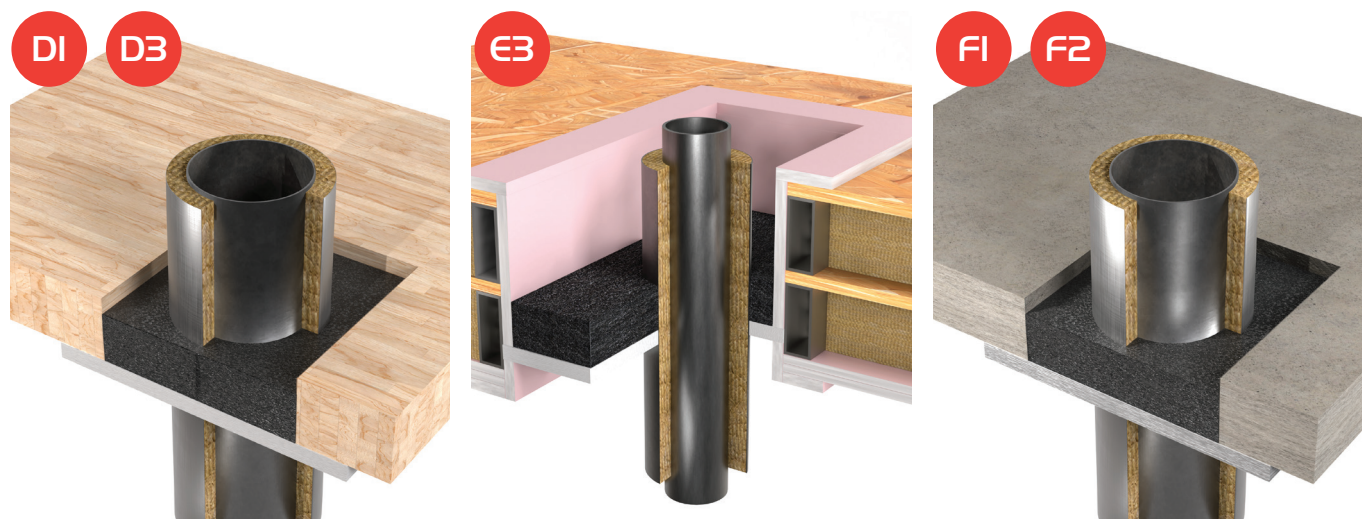


## FZ100 Fire Safe Zone and copper pipe with combustible insulation

| Service Material                             | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|----------------------------------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| Copper and steel pipes (including cast iron) | ≤15                 | 1-7.5             | Elastomeric         | 10-32                   | CS                       | C/U                              | C/U, C/C                            | E190        | E90                           |
|                                              | ≤42                 | 1.2-14.2          | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | E160        | E90                           |
|                                              | ≤42                 | 1.2-14.2          | Elastomeric         | 10-32                   | CS                       | C/U                              | C/U, C/C                            | E130        | E90                           |
|                                              | ≤15                 | 0.7-7.5           | PVC                 | 2                       | CS                       | C/U                              | C/U, C/C                            | E145        | E90                           |
|                                              | ≤15                 | 0.7-7.5           | PVC                 | 2                       | CS                       | C/U                              | C/U, C/C                            | E190        | E90                           |
|                                              | ≤64                 | 2-14.2            | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | E160        | E60                           |
|                                              | ≤15                 | 1-7.5             | Elastomeric         | 20                      | CS                       | U/C                              | U/C, C/U, C/C                       | E160        | E60                           |
|                                              | ≤28                 | 1-14.2            | Elastomeric         | 20                      | CS                       | U/C                              | U/C, C/U, C/C                       | E145        | E60                           |
|                                              | ≤40                 | 1-14.2            | -                   | -                       | -                        | U/C                              | U/C, C/U, C/C                       | -           | E60                           |
|                                              | ≤15                 | 1-7.5             | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | E160        | E90                           |
|                                              | ≤15                 | 1-7.5             | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | E130        | E90                           |
|                                              | ≤64                 | 2-14.2            | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | E130        | E90                           |
|                                              | ≤18                 | 1-9               | Elastomeric         | 25                      | CS                       | C/U                              | C/U, C/C                            | -           | E90                           |
|                                              | ≤64                 | 2-14.2            | Elastomeric         | 25                      | CS                       | C/U                              | C/U, C/C                            | -           | E90                           |
|                                              | ≤108                | 2.5-14.2          | Elastomeric         | 32                      | CS                       | C/U                              | C/U, C/C                            | -           | E30                           |

# NON-COMBUSTIBLE PIPES

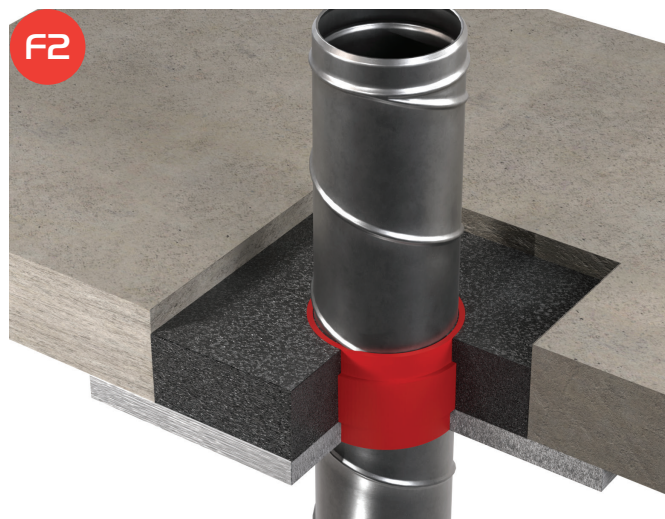
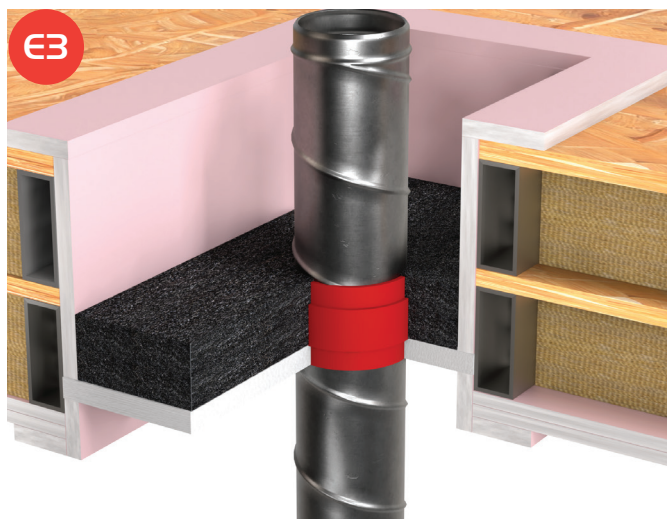
## Steel Pipes with insulation



## FZ100 Fire Safe Zone and steel pipe with non-combustible insulation

| Service Material                     | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating      | Floor Configuration Permitted |
|--------------------------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|------------------|-------------------------------|
| Steel pipes<br>(including cast iron) | ≤18                 | 1-9               | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E190</b> E90  | D1, D2, D3,<br>F1, F2         |
|                                      | ≤35                 | 1.5-14.2          | Mineral wool        | ≥50                     | CS                       | C/U                              | C/U, C/C                            | <b>E190</b> E90  |                               |
|                                      | ≤108                | 1.5-14.2          | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E90  |                               |
|                                      | ≤219                | 2-14.2            | Mineral wool        | ≥50                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E60  | D3, F1, F2                    |
|                                      | ≤63                 | 6.9-14.2          | PE                  | 2,5                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E60  | E2, E3                        |
|                                      | ≤89                 | 4-14.2            | FI025 (1 row)       | ≥25                     | LI                       | U/C                              | U/C, C/U, C/C                       | <b>E145</b> E60  | E2, E3                        |
|                                      | ≤18                 | 1-9               | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E90  | E3                            |
|                                      | ≤108                | 2.9-14.2          | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E90  |                               |
|                                      | ≤219                | 2-14.2            | Mineral wool        | ≥50                     | CS                       | C/U                              | C/U, C/C                            | <b>E145</b> E90  |                               |
|                                      | ≤28                 | 0.9-14.2          | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E120</b> E120 | F1, F2                        |
|                                      | ≤35                 | 1.2-14.2          | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E120</b> E120 |                               |
|                                      | ≤114.3              | 2-14.2            | Mineral wool        | ≥30                     | CS                       | C/U                              | C/U, C/C                            | <b>E190</b> E90  |                               |
|                                      | ≤159                | 2.9-14.2          | Mineral wool        | ≥50                     | CS                       | C/U                              | C/U, C/C                            | <b>E190</b> E90  | F2                            |
|                                      | ≤219                | 2-14.2            | Mineral wool        | ≥50                     | CS                       | C/U                              | C/U, C/C                            | <b>E160</b> E90  |                               |

## Steel Ducts

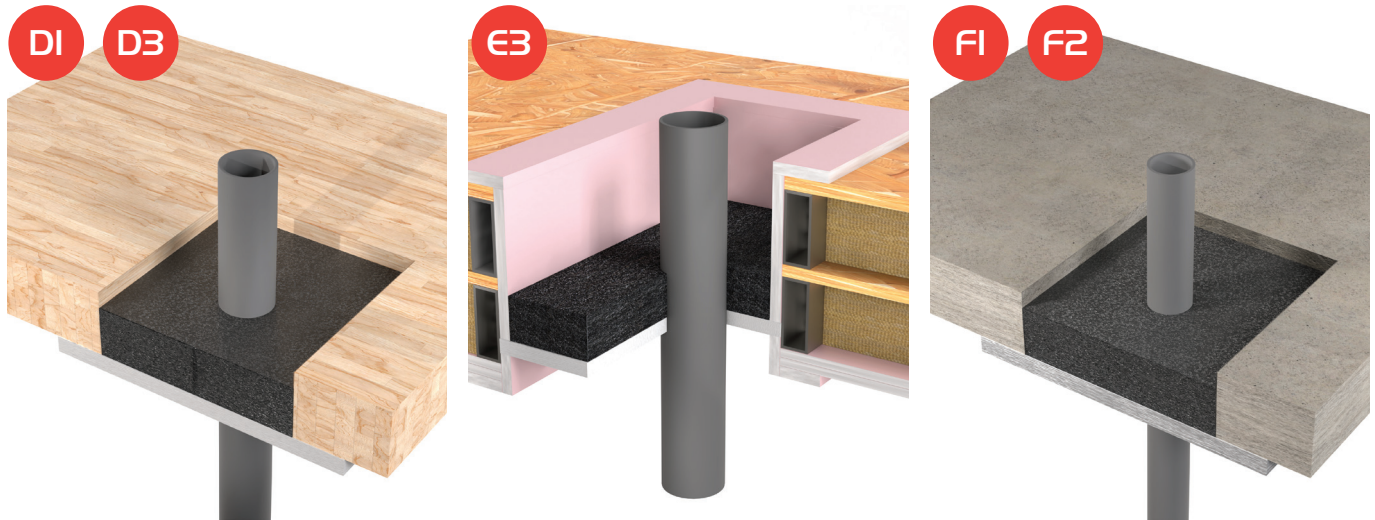


### FZ100 Fire Safe Zone and steel duct

| Service Material                                               | Service Diameter mm                      | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating     | Floor Configuration Permitted |
|----------------------------------------------------------------|------------------------------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-----------------|-------------------------------|
| Steel pipes<br>(including cast iron)<br>spiral air ventilation | ≤180<br>with<br>Wildeboer<br>TS18 damper | 0.7-14.2          | -                   | -                       | -                        | C/U                              | C/U, C/C                            | - E90           | E3                            |
|                                                                | ≤200<br>with<br>Wildeboer<br>TS18 damper | 0.7-14.2          | -                   | -                       | -                        | C/U                              | C/U, C/C                            | <b>E160</b> E90 | F2                            |

# COMBUSTIBLE PIPES

## PE Pipes

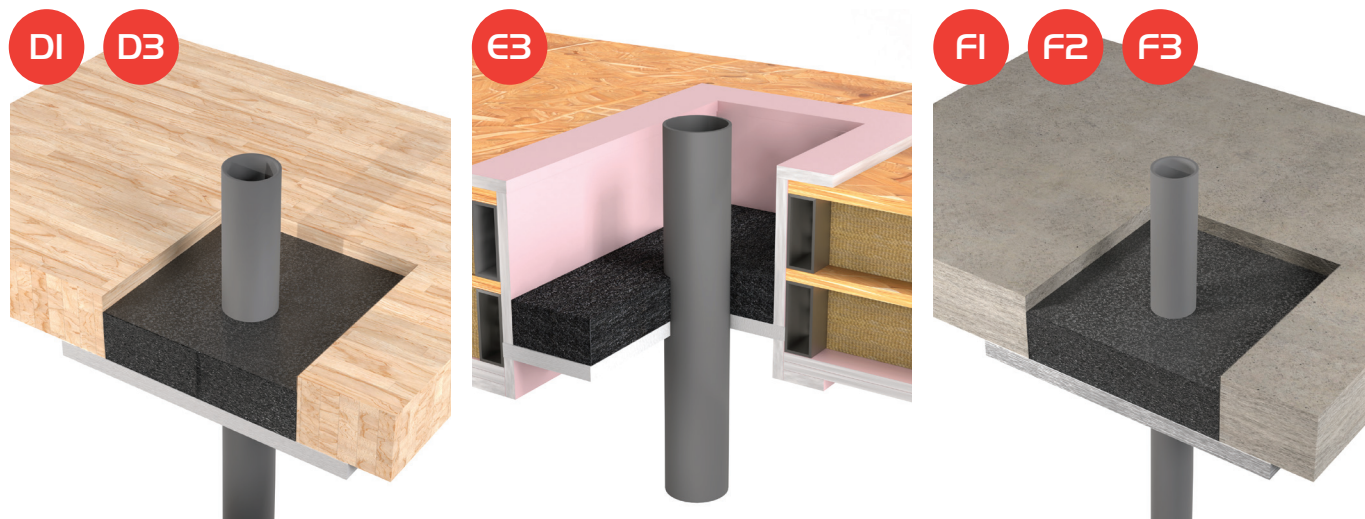


## FZ100 Fire Safe Zone and PE pipe

| Service Material                  | Service Diameter mm | Wall Thickness mm      | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|-----------------------------------|---------------------|------------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| PE (including HDPE, ABS, SAN+PVC) | ≤40                 | 2.4-3.1                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI30 E30    | D3, F1, F2                    |
|                                   | ≤125                | 3.1                    | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI30 E30    |                               |
|                                   | ≤40<br>≤125         | 2.4-17.1 /<br>3.1-17.1 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                               |
|                                   | ≤50                 | 2-12                   | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    | E1, E2, E3                    |
|                                   | ≤110                | 3.2-12                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    |                               |
|                                   | ≤125                | 12                     | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    |                               |
|                                   | ≤110                | 10                     | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | E2, E3                        |
|                                   | ≤50                 | 2.8-10                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI45 E60    |                               |
|                                   | ≤110                | 3.4-10                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI45 E60    |                               |
|                                   | ≤40                 | 3.2-10                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E45       | E3                            |
|                                   | ≤40                 | 2.4-17.1               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E90    |                               |
|                                   | ≤40<br>≤125         | 3.1-17.1               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E90    |                               |
|                                   | ≤32                 | 3.7                    | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E120   | F3                            |
| ABS (Durapipe super FLO)          | ≤110                | 5.4                    | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | E2, E3                        |
| Geberit Silent db20 (PE-S2)       | ≤110                | ≤6                     | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E60    | D3, F1, F2                    |
|                                   | ≤75                 | ≤3.6                   | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E90    | E3                            |
|                                   |                     | ≤6                     | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E90    |                               |
|                                   | ≤56                 | 3.2                    | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E90       | F2                            |



## PP Pipes

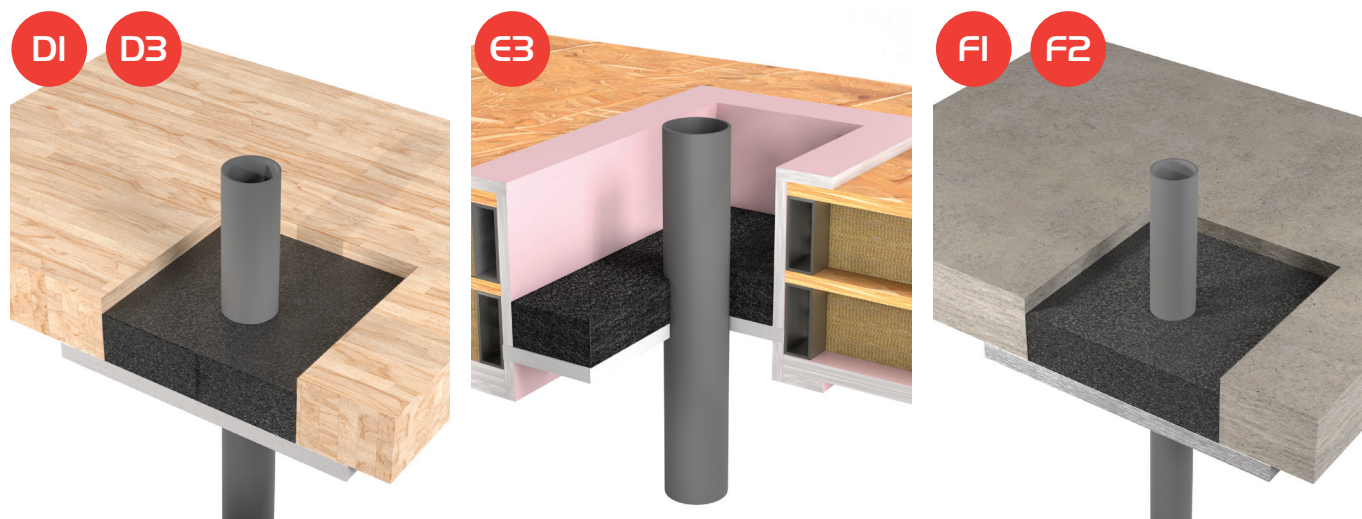


## FZ100 Fire Safe Zone and PP pipe

| Service Material              | Service Diameter mm | Wall Thickness mm   | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|-------------------------------|---------------------|---------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| PP                            | ≤125                | 17.1                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E190 E90    | D1, D2, D3, F1, F2            |
|                               | ≤40                 | 2.3-3.1             | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E130 E30    | D3, F1, F2                    |
|                               | ≤125                | 3.1                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E130 E30    |                               |
|                               | ≤40                 | 2.3-17.1 / 3.1-17.1 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | E130 E30    | E2, E3                        |
|                               | ≤75                 | 6.8                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    |                               |
|                               | ≤110                | 15.1                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E145 E60    |                               |
|                               | ≤40                 | 2.3-17.1            | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E190 E90    | E3                            |
|                               | ≤125                | 17.1                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E190 E90    |                               |
|                               | ≤40                 | 2.3-17.1 / 3.1-17.1 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E90    | F3                            |
|                               | ≤50                 | 1.8                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E190 E120   |                               |
| Poloplast POLO-KAL NG/XS (PP) | ≤110                | ≤3.4                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E60    | D3, F1, F2                    |
|                               | ≤125                | 3.9                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60       |                               |
|                               | ≤110                | ≤3.4                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E190 E90    | E3                            |
|                               |                     | ≤3.9                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E160 E90    |                               |
|                               | ≤32                 | 1.8                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | E145 E90    | F2                            |

# COMBUSTIBLE PIPES

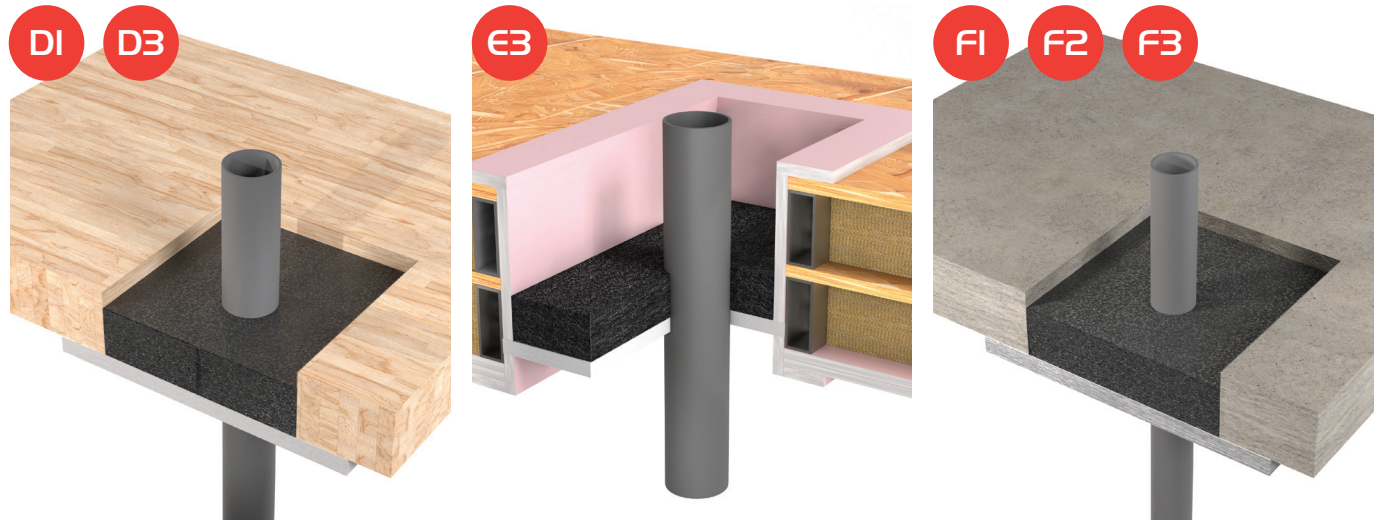
## PP Pipes (continuation)



## FZ100 Fire Safe Zone and PP pipes

| Service Material           | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating       | Floor Configuration Permitted |
|----------------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------------|-------------------------------|
| Geberit Silent PP (PP-MD)  | ≤110                | ≤3.6              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | D1, D2, D3, F1, F2            |
|                            | ≤125                | ≤4.2              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60             | D3, F1, F2                    |
|                            | ≤75                 | 2.6               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | E3                            |
|                            | ≤75                 | ≤2.6              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E90   |                               |
|                            | ≤32                 | 1.8               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E90   | F2                            |
|                            | ≤160                | 4.9               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E30             |                               |
| Geberit Silent Pro (PP-MX) | ≤110                | ≤4.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | D1, D2, D3, F1, F2            |
|                            | ≤125                | ≤5                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E145</b> E60   | D3, F1, F2                    |
|                            | ≤50                 | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | E3                            |
|                            | ≤110                | ≤4.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E90   |                               |
| REHAU Raupiano plus (PP)   | ≤110                | ≤4.5              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E1120</b> E120 | F1, F2                        |
|                            | ≤75                 | ≤1.9              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E60   | D3, F1, F2                    |
|                            | ≤125                | ≤3.1              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60             |                               |
|                            | ≤50                 | ≤1.8              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | E3                            |
|                            | ≤90                 | 2.2               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   |                               |
|                            | ≤125                | 3.1               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   |                               |
| UPONOR Decibel (PP-MD)     | ≤125                | ≤3.1              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E90   | D1, D2, D3, F1, F2            |
|                            | ≤110                | ≤3.8              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   |                               |
|                            | ≤50                 | ≤2.0              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E145</b> E60   | E2, E3                        |
|                            | ≤50                 | ≤2.0              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | E3                            |
|                            | ≤110                | 3.8               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   |                               |
| Pipelife Master 3 PLUS     | ≤110                | ≤3                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E190</b> E90   | D1, D2, D3, F1, F2            |
|                            | ≤125                | 5.3               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E145</b> E60   | D3, F1, F2                    |
| Wavin AS+ (PP)             | ≤50                 | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E130</b> E30   |                               |
|                            | ≤125                | ≤5.3              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60             | D3, F1, F2                    |
| Wavin SiTech+ (PP)         | ≤50                 | ≤2.1              | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>E160</b> E60   |                               |
|                            | ≤125                | ≤4                | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E60             |                               |

## PVC Pipes



## FZ100 Fire Safe Zone and pipe

| Service Material | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| PVC              | ≤40                 | 1.9               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI30 E30    | D3, F1, F2                    |
|                  | ≤125                | 3.1               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI30 E30    |                               |
|                  | ≤40                 | 1.9-9.2 / 3.1-9.2 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E30    |                               |
|                  | ≤33                 | 2-7.5 / 5-7.5     | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    | E1, E2, E3                    |
|                  | ≤90                 | 5-7.5             | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    |                               |
|                  | ≤34                 | 2.4-6.8           | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                               |
|                  | ≤60                 | 2.4-6.8           | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    | E2, E3                        |
|                  | ≤89                 | 6.8               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI60 E60    |                               |
|                  | ≤40                 | 2                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | - E45       |                               |
|                  | ≤40                 | 1.9-3.1           | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E90    | E3                            |
|                  | ≤125                | 3.1               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI60 E90    |                               |
|                  | ≤40                 | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E120   |                               |
|                  | ≤50                 | 2.4               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI90 E120   | F3                            |
|                  | ≤32 (WRAS)          | 2.4               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | EI20 E120   |                               |

# COMBUSTIBLE PIPES

## MLCP Pipes



## FZ100 Fire Safe Zone and MLCP pipe

| Service Material                       | Service Diameter mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating |     | Floor Configuration Permitted |
|----------------------------------------|---------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-----|-------------------------------|
| Wavin Tigris<br>PE-HD/Al/PE-Xc         | ≤50                 | ≤4.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E190</b> | E90 | D1, D2, D3, F1, F2            |
|                                        | ≤25                 | ≤2.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E160</b> | E90 | E3                            |
|                                        | ≤50                 | ≤4.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E160</b> | E60 |                               |
| Viega Raxofix<br>PE-RT/Al/PE-RT        | ≤32                 | ≤3.2              | PE-HD foam          | 9                       | CS                       | U/C                              | U/C, C/C                            | <b>E190</b> | E90 | D1, D2, D3, F1, F2            |
|                                        | >32<br>≤50          | ≤4                | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E190</b> | E90 |                               |
|                                        | 25                  | 2.5               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E190</b> | E90 | D1, D2, D3, F1, F2            |
| Uponor Uni Pipe Plus<br>PE-RT/Al/PE-RT | ≤25                 | ≤2.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E160</b> | E90 |                               |
|                                        | ≤25                 | ≤2.5              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E190</b> | E90 | D2                            |
| Uponor MLCP<br>PE-RT/Al/PE-RT          | 40                  | 4                 | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>E190</b> | E90 | D1, D2, D3, F1, F2            |
|                                        | 40                  | 4                 | -                   | -                       | -                        | U/U                              | U/C, C/C                            | -           | E45 | E2, E3                        |



## PVC Ducts

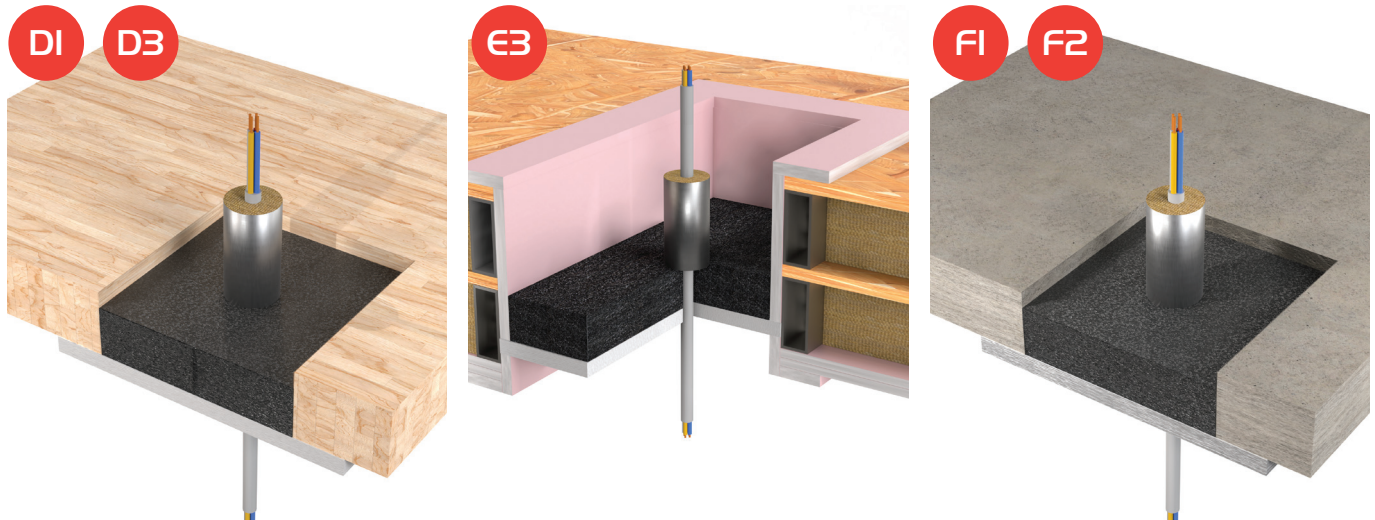


**FZ100 Fire Safe Zone and PVC duct**

| Service Material | Service Dimensions mm | Wall Thickness mm | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating     | Floor Configuration Permitted |
|------------------|-----------------------|-------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-----------------|-------------------------------|
| PVC Duct         | 204x60                | 1.5               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI45</b> E45 | E1, E2, E3                    |
|                  | 220x90                | 1.5               | -                   | -                       | -                        | U/C                              | U/C, C/C                            | <b>EI45</b> E45 |                               |
|                  | 205x60                | 3                 | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI60</b> E60 | E2, E3                        |
|                  | 225x90                | 1.8               | -                   | -                       | -                        | U/U                              | U/U, C/U, U/C, C/C                  | <b>EI60</b> E60 |                               |

# CABLE AND CABLE CARRIERS

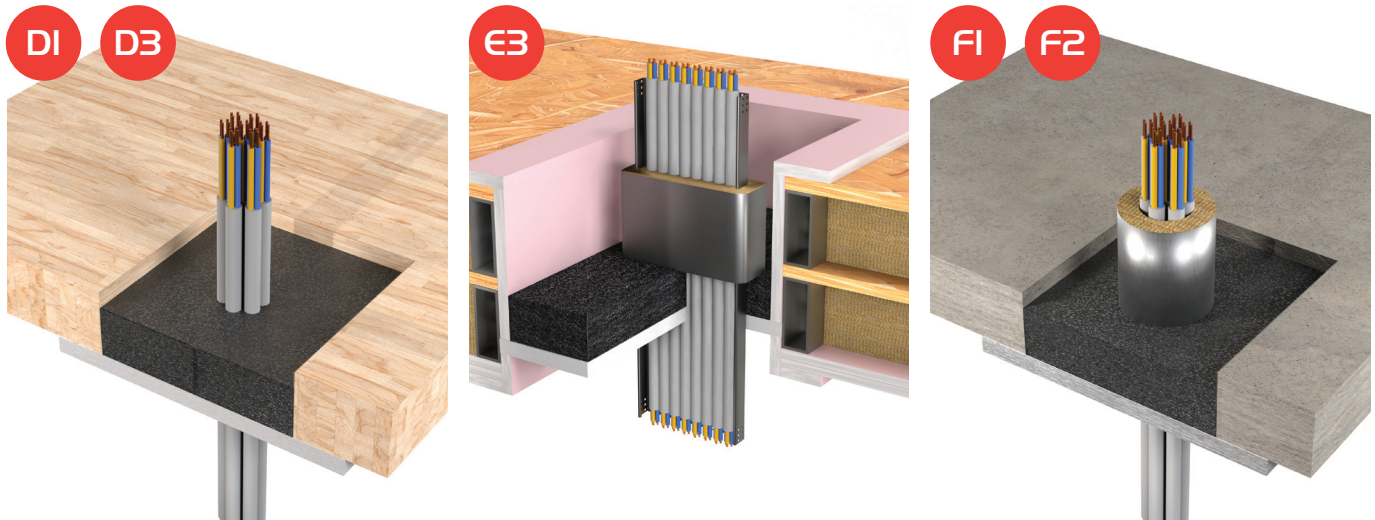
## Cables



## FZ100 Fire Safe Zone and cables

| Service Material         | Service Diameter mm | Insulation Material              | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|--------------------------|---------------------|----------------------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| Non-sheated cables       | ≤24                 | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E90    | D1, D2, D3, F1, F2            |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI45 E45    | E1, E2, E3                    |
|                          |                     | -                                | -                       | -                        |                                  |                                     | EI30 E45    | E2, E3                        |
|                          |                     | FI025<br>(2 rows, non fire side) | ≥25                     | LI                       |                                  |                                     | EI90 E90    | E3                            |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E90    | F2                            |
| Coaxial sheated cables   | ≤28                 | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E60    | D3, F1, F2                    |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI45 E45    | E1, E2, E3                    |
|                          |                     | FI025<br>(2 rows, non fire side) | ≥25                     | LI                       |                                  |                                     | EI90 E90    | E3                            |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E90    | F2                            |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E60    | D3, F1, F2                    |
| All other sheated cables | ≤80                 | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI45 E45    | E1, E2, E3                    |
|                          |                     | Nitrile rubber (150mm)           | ≥20                     | LI                       |                                  |                                     | EI30 E45    | E2, E3                        |
|                          |                     | FI025<br>(2 rows, non fire side) | ≥25                     | LI                       |                                  |                                     | EI90 E90    | E3                            |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI60 E90    | F2                            |
|                          |                     |                                  |                         |                          |                                  |                                     |             |                               |
| Misc sheated cables      | 18-21               |                                  |                         |                          |                                  |                                     |             |                               |
| B                        | 23-27               |                                  |                         |                          |                                  |                                     |             |                               |
| C3                       | 42                  |                                  |                         |                          |                                  |                                     |             |                               |
| D1, D3                   | 52-58               |                                  |                         |                          |                                  |                                     |             |                               |
| E                        |                     |                                  |                         |                          |                                  |                                     |             |                               |
| UC Home fibre            |                     |                                  |                         |                          |                                  |                                     |             |                               |
|                          |                     | FI025<br>(1 row, non fire side)  | ≥25                     | LI                       |                                  |                                     | EI90 E90    | F2                            |

## Cable bundles, trays and ladders



## FZ100 Fire Safe Zone and cable bundles, trays and ladders

| Service Material                                                                      | Service Diameter / Dimension mm | Wall Thickness mm                | Insulation Material | Insulation Thickness mm | Insulation Configuration | Service End Configuration Tested | Service End Configuration Permitted | Fire Rating | Floor Configuration Permitted |
|---------------------------------------------------------------------------------------|---------------------------------|----------------------------------|---------------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|-------------|-------------------------------|
| Cable bundles incl.<br>5x Ø6.2mm coaxial,<br>5x 3G Ø11.6mm-YMVK<br>5x 5G Ø11.7mm-YMVK | ≤50                             | -                                | -                   | -                       | -                        |                                  |                                     | EI90 E90    | D1, D2, D3, F1, F2            |
|                                                                                       | ≤80                             | -                                | -                   | -                       | -                        |                                  |                                     | EI90 E90    | D1, D2, D3, F1, F2            |
|                                                                                       | ≤100                            | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI45 E60    | D3, F1, F2                    |
|                                                                                       | ≤40                             | Nitrile rubber (150mm)           | ≥20                 | LI                      |                          |                                  |                                     | EI30 E45    | E2, E3                        |
|                                                                                       | ≤100                            | FI025<br>(2 rows, non fire side) | ≥25                 | LI                      |                          |                                  |                                     | EI60 E90    | E3                            |
| Cable bundles made of cables<br>≤Ø21mm                                                | ≤100                            | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI60 E90    | F2                            |
|                                                                                       | ≤500x60 perforated              | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI90 E90    | D1, D2, D3, F1, F2            |
|                                                                                       | ≤500x60 perforated              | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI60 E60    | D3, F1, F2                    |
|                                                                                       | ≤290x60x1.8                     | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI45 E45    | E1, E2, E3                    |
|                                                                                       | ≤450x25x1.5                     | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI45 E45    |                               |
|                                                                                       | ≤500x60                         | FI025<br>(2 rows, non fire side) | ≥25                 | LI                      |                          |                                  |                                     | EI60 E90    | E3                            |
|                                                                                       | ≤500x60 non-perforated          | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI90 E90    | F2                            |
|                                                                                       | ≤200x60                         | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI90 E90    |                               |
|                                                                                       | ≤500x60                         | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI60 E90    |                               |
|                                                                                       | ≤500x60                         | FI025<br>(1 row, non fire side)  | ≥25                 | LI                      |                          |                                  |                                     | EI60 E90    |                               |
| Electrical flexible conduits (empty)                                                  | ≤63                             | 0.5-1.5                          | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI90 E90    | D1, D2, D3, F1, F2            |
|                                                                                       | ≤75 incl. 2x A3                 | 2.5                              | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E45    | E1, E2, E3                    |
| Electrical flexible conduits                                                          | ≤20                             | -                                | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI45 E60    | F2                            |
|                                                                                       | ≤63                             | -                                | -                   | -                       | -                        | U/C                              | U/C, C/C                            | EI30 E90    |                               |

# ABBREVIATIONS

**GXT** – Graphite eXpansion Technology

**FZ100** – Nullifire FZ100 Fire Safe Zone

**FS702** – Nullifire FS702 Intumastic Fire Resistant Acrylic Sealant

**FS712** – Nullifire FS712 Intucoat Brush Coating (used on FZ100 in some configurations)

**FI025** – Nullifire FI025 Intuflex Insulation Wrap

**CLT** – Cross-Laminated Timber

**AAC** – Autoclaved Aerated Concrete

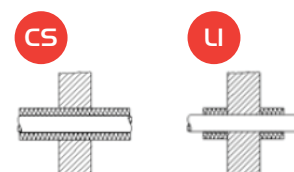
**PB** – Plasterboard

**Stud** – Metal or timber stud in wall construction

**A1, A2, A3, B1, B2, C1, C2, D1, D2, D3, E1, E2, E3, F1, F2, F3** – Configuration codes for wall and floor constructions (application-specific layouts)

**CS** – Continuous Sustained (insulation runs continuously along the pipe)

**LI** – Locally Interrupted insulation (not running through the fire seal)



**U/U, U/C, C/U, C/C** – Furnace exposure/capping conditions in fire testing

**U** = Uncapped

**C** = Capped

**First letter** = furnace side / **second letter** = ambient side

**EI** – Integrity & Insulation fire rating (EN 13501-2), duration measured in minutes

**E** = Étanchéité (from the French) = Integrity: prevents the passage of flames/hot gases

**I** = Insulation: limits temperature rise on the unexposed side to  $\leq 180$  K max for the classified duration

**PE** – Polyethylene pipe

**PP** – Polypropylene pipe

**PVC** – Polyvinyl chloride pipe

**PEX** – Cross-linked polyethylene pipe

**MLCP** – Multi-Layer Composite Pipe (aluminium-plastic multilayer pipe)

**HDPE** – High density polyethylene

**ABS** – Acrylonitrile butadiene styrene pipe

**SAN** – Styrene acrylonitrile pipe

## Cable Types (EN 1366-3)

| Cable and type        | Dimension             | Material  | Designation                                                                                      | Ø mm       |
|-----------------------|-----------------------|-----------|--------------------------------------------------------------------------------------------------|------------|
| A1 – Small sheathed   | 5x1.5 mm <sup>2</sup> | PVC/PVC   | E-YY-J 5x1,5 RE; NYY-J 5x1,5 RE; VV 5x1,5                                                        | 14         |
| A3 – Small sheathed   | 5x1.5 mm <sup>2</sup> | PE-X/EVAC | e.g. YMz1Kmbzh 0,6/1 kV 5G1,5 RM; PVIK-LS-HF 5x1,5; N2XH-J 5x1,5RE or N2XH-O 5x1,5RE             | 13 (≤14)   |
| B – Small sheathed    | 1x95 mm <sup>2</sup>  | PVC/PVC   | E-YY-J 1x95RM or E-YY-O 1x95RM; NYY-J 1x95RM or NYY-O 1x95RM; VV 1x95; TT 1x95 RM 0,6/1 kV       | 18-21      |
| C1 – Medium sheathed  | 4x95 mm <sup>2</sup>  | PVC/PVC   | E-YCWY 4x95SM/50; MCMK 4x95/50; NYCWY 4x95SM/50; PFSP CU 4x95/50; FKKJ 1 4x95/50 S               | 40-47      |
| C3 – Medium sheathed  | 4x95 mm <sup>2</sup>  | PE-X/EVAC | e.g. YMz1Kmbzh 0,6/1 kV 4G95; PVIK-LS-HF 4x95; N2XH-J 4x95SM or N2XH-O 4x95SM                    | 42 (≤45,5) |
| D1 – Large sheathed   | 4x185 mm <sup>2</sup> | PVC/PVC   | E-YCWY 4x185SM/95; MCMK 4x185/95; NYCWY 4x185SM/95; PFSP CU 4x185/95; FKKJ 4x185/95 S            | 52         |
| D3 – Large sheathed   | 4x185 mm <sup>2</sup> | PE-X/EVAC | e.g. YMz1Kmbzh 0,6/1 kV 4G185 svs; PVIK-LS-HF 4x185; N2XH-J 4x185SM or N2XH-O 4x185SM            | 58 (≤62,5) |
| E – Medium sheathed   | 1x185 mm <sup>2</sup> | PVC/PVC   | E-YY-J 1x185RM or E-YY-O 1x185RM; NYY-J 1x185RM or NYY-O 1x185RM; VV 1x185; TT 1x185 RM 0,6/1 kV | 23-27      |
| F – Telecom bundle    | 20x2x0.6 mm screened  | PE/PE     |                                                                                                  | 15-17      |
| G – Non-sheathed wire | 1x185 mm <sup>2</sup> | PVC       | H07V-R                                                                                           | 19,3-23,3  |



# NOTES

[illegible]

**Tremco CPG Europe manufactures high performance building materials in order to solve the complex challenges faced by today's construction industry. It is the home for multiple European construction product brands, including illbruck, Flowcrete, Nullifire, Tremco, Vandex, Dryvit and Nudura. With over 1,400 employees across Europe, we are committed to being by your side to shape a world where buildings and structures save energy, last longer and exceed sustainability benchmarks.**

From joint sealing, bonding and insulation through to passive fire protection, flooring, waterproofing and roofing solutions- the product brands housed within Tremco CPG Europe cover a wide array of different construction needs. Combined with the wealth of expertise, services and support we provide a truly unique offer- to make our customers more successful time after time.

Tremco CPG Europe is part of RPM International Inc. - one of the world's leading construction products companies for both the industrial and consumer segments.

## Our Values



COLLABORATION



HONESTY &  
INTEGRITY



RESPECT



ENGAGEMENT



SUSTAINABLE  
DEVELOPMENT

## Delivering World-Class Construction Product Solutions.

The product brands housed within Tremco CPG Europe cover a wide array of different construction needs and provide a wealth of complex services, support and systems that are rarely found together under one roof.



### Sealing, bonding & insulation

Window Insulation, Façade Construction, Exterior Insulation & EIFS, Structural & Inplant Glazing, Insulated Concrete Forms (ICFs)



### Passive Fire Protection

Fire Stopping for Service Penetrations, Linear Joints and Ventilated Cavity Barriers, Steel Protection Coatings



### Flooring

Seamless Resin Flooring, Subfloor Preparation, Car Parking Structures



### Waterproofing

Bridge Decks, Infrastructure, Potable & Waste Water Industry, Balconies, Terraces, Basements & Foundations.



### Roofing

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