Promat

PENETRATION SEALS

PASSIVE FIRE PROTECTION SYSTEM

PROMASEAL® Mortar

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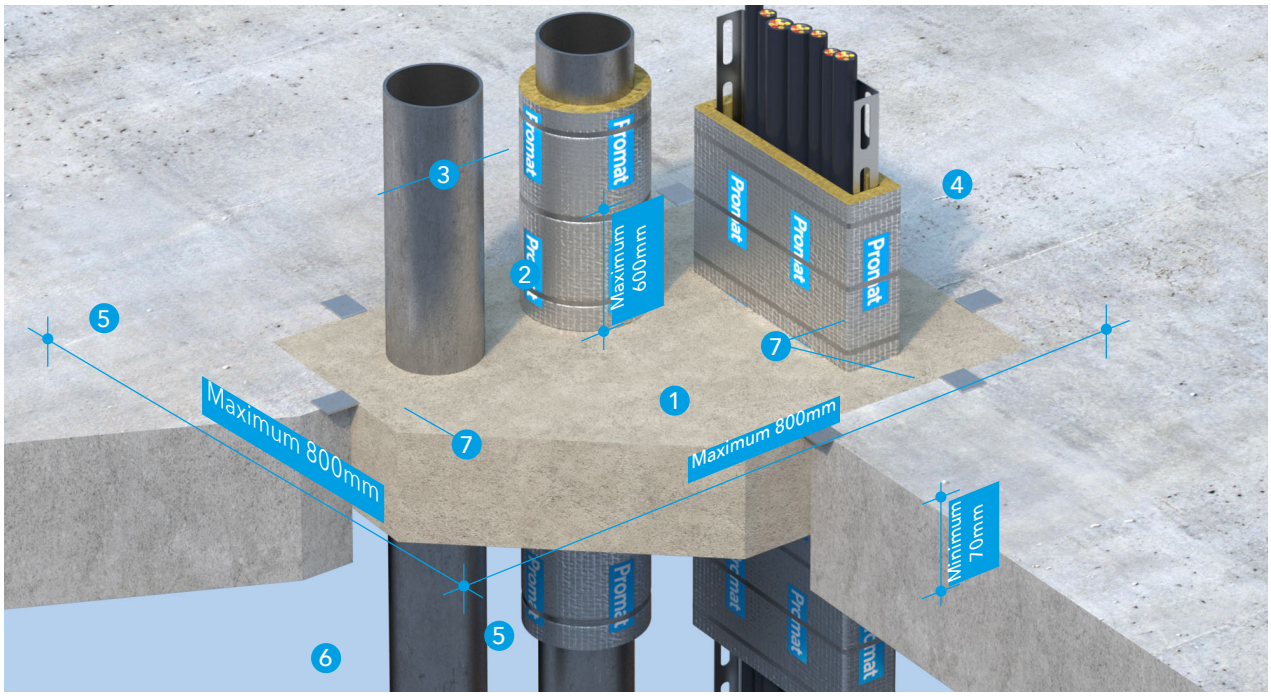


Up to -/120/120 fire resistance in accordance with the requirements of AS1530: Part 4: 2014 & AS 4072: Part 1: 2005, depending on applications and types of penetrating elements; insulation time is the measured time to insulation failure on surface of the PROMASEAL® Mortar

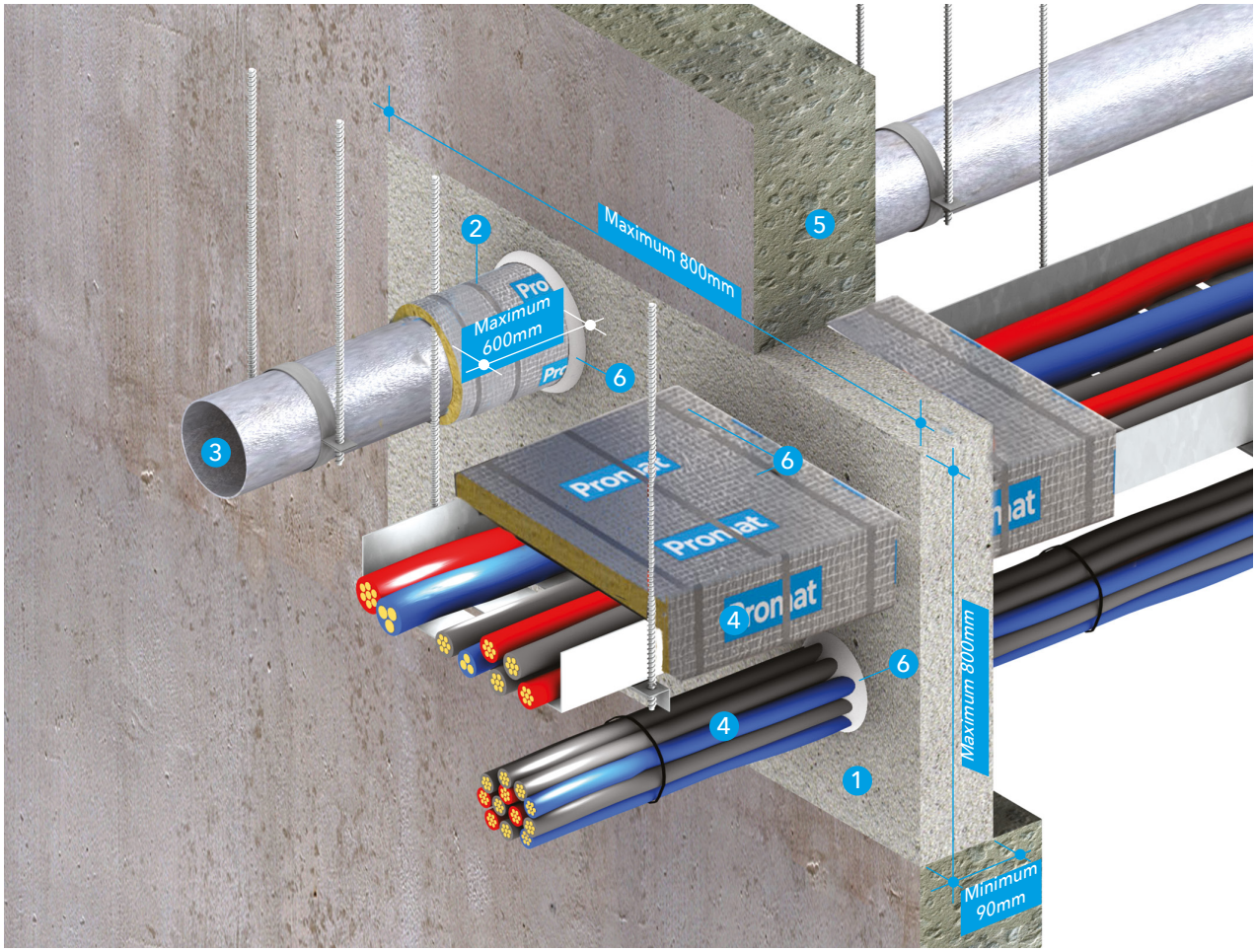
In some instances, where insulation measured upon the penetrating elements is the required criteria, this time to insulation failure can be substantially shorter, e.g. metal pipes penetrating the floors. If insulation measured upon the penetrating elements is a specified performance criteria, please consult Promat about the use of PROMASEAL® Wrap

1. PROMASEAL® Mortar
2. PROMASEAL® SupaWrap
3. Non combustible metal pipes
4. Electrical cables supported with cable tray or steel trunking
5. Steel Z-clips 25mm wide at nominal 300mm centres
6. Fire resistant concrete/masonry floors
7. All joints and contact points caulked with PROMASEAL®-A Acrylic Sealant

PROMASEAL® Mortar is a lightweight, fire resistant, cement based product, supplied as a pre-mixed, grey powder to which water is added. It has been tested up to a 120 minute fire resistance with various penetration seals in concrete/masonry floors and walls (with an equal or greater fire resistance level).

Advantages of PROMASEAL® Mortar include:

- Clean and economical.
- The mortar weighs approximately 700kg per m^3 as compared to 2400kg of normal concrete and 1600-1800kg of lightweight concrete. This means that the formwork required is equally lightweight and simple for the mortar to install.
- Convenient for carriage in a few bags with just a bucket of water even on a large project site and for storage up to several hours in buckets with an air tight lid. Thus installers only need to do a number of small openings without having to repeat and consume time in preparing the mix at the site.
- Quick setting time in a few hours depending on ambient weather conditions.
- Easy to create new holes for installation of new penetrating services and equally easy to repair.
- Does not shrink on drying. For walls, if the opening is too large to be sealed, the void may need to be filled up to 90%. Let set for one hour, then fill remainder of void as the wet mortar slumping is under its own weight. This is not applicable in floors.
- Can be installed at the last minute before inspection time or after all services are installed.
- Comparatively more versatile and flexible to install, and more compatible with other Promat fire stopping systems.
- PROMASEAL® Mortar can provide a fully insulated system, depending on type and dimension of the penetrating services. Please consult Promat for details.



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1. PROMASEAL® Mortar
2. PROMASEAL® SupaWrap
3. Non combustible metal pipes with appropriate support
4. Electrical cables with or without supporting cable tray/steel trunking
5. Fire resistant concrete/masonry walls
6. All joints and contact points caulked with PROMASEAL®-A Acrylic Sealant

Applications that have been tested in floors or walls (with an equal or greater fire resistance level) are:

- Electrical or Communications cables in bundles or supported with steel cable trays through floors or walls;
- Steel and copper pipes up to 150mm nominal diameter in floors and up to 100mm in walls;
- Plastic pipes in floors and walls;
- Hot and chilled water pipes with combustible insulation in floors (used in conjunction with PROMASEAL® FlexiWrap) and walls;
- uPVC electrical conduits in floors (used in conjunction with PROMASEAL® Conduit Collar);

General Application Considerations

Please refer to the General Application Considerations on page 3 in conjunction with the following.

It is important that the user be aware of the type of penetrating services and the dimensions of the gaps that will be left around the services that are to be sealed. Valid supporting evidence that the proposal consists of a tested system may be required. This may vary from country to country; depending upon the way the test results are interpreted and how local regulations are applied.

Basic Handling Procedures

Mixing

PROMASEAL® Mortar is packed in bags, and is blended ready for mixing with water. When mixed with 12 to 16 litres of water, 20kg of the powder will produce approximately 35 litres of mix, this is sufficient to fill an area approximately 0.35m2 at 100mm thickness (or 0.6m x 0.6m of clear opening).

For a dry "packing" mix, add PROMASEAL® Mortar to 10 litres of water.

For a medium mix, add PROMASEAL® Mortar to 12 litres of water.

For a wet "pourable" mix, add PROMASEAL® Mortar to 16 litres of water.

This equates to approximately 3 x 20kg bags of PROMASEAL® Mortar per 1m² of clear opening at 100mm thickness or approximately 30 bags per m³.

PROMASEAL® Mortar can be mixed to a consistency to suit the application. If services are close together and difficult to access, it may be necessary to make a wet "pourable" mix. If however the PROMASEAL® Mortar can be easily installed, make a medium mix. If the mortar has to be stacked in a wall opening, make a dry "packing" mix.

To assess such a dry mix, add sufficient water to create a mix that will, when squeezed, assume the shape and form of hand but will easily brush off without leaving hand wet (similar to damp sand on a beach, for example).

Bond Breakers To Metal Pipes

A bond breaker is required between PROMASEAL® Mortar and the pipe where the Mortar could be in direct contact with the pipe. This can be achieved using a strip of 100mm x 10mm thick PROMASEAL® IBS™ wrapped around the pipe.

Sealing With PROMASEAL®-A Acrylic Sealant

Where cables penetrate the seal it may be necessary to apply sealant between the cables to ensure all gaps are sealed against the passage of fire and hot or cold smoke.

Where metal pipes penetrate the seal it is recommended that a fillet of PROMASEAL®-A Acrylic Sealant is applied around the pipe on the unexposed face to give a smoke and water seal at this point. This is not necessary to achieve the fire resistance, although is advisable to ensure the system can provide a seal against the passage of cold smoke.

Formwork

Types Of Formwork

Virtually any type of material can be used as formwork, e.g high density mineral wool, polystyrene, timber etc. Formwork does not necessarily have to be removed after installation. In the event of a fire the formwork becomes sacrificial. However, if formwork is constructed from a material such as PU foam, it is advisable to remove the formwork once the mortar is cured to reduce hazards of flammability and toxic smoke production.

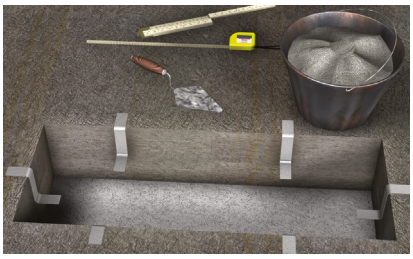
The following list of formwork types are suggestions only, the material to be used for formwork will depend on size of the openings, type and configuration of the penetrating services:

- Plasterboard;
- Medium and high density mineral/ rock wool;
- Polystyrene foam approximately 50mm thick depending upon the span;
- Timber (e.g. plywood or MDF board);
- Sheet metal.

Installing Formwork

Where access is possible, formwork can be fixed to the soffit of a floor or to the face of a wall. Ensure that the formwork is secure and supported where necessary.

If working from above a floor, the



formwork can be placed from the top and supported on a steel angle fixed to the inside edge of the floor. The angle does not need to be continuous. Use sufficient to support the formwork.

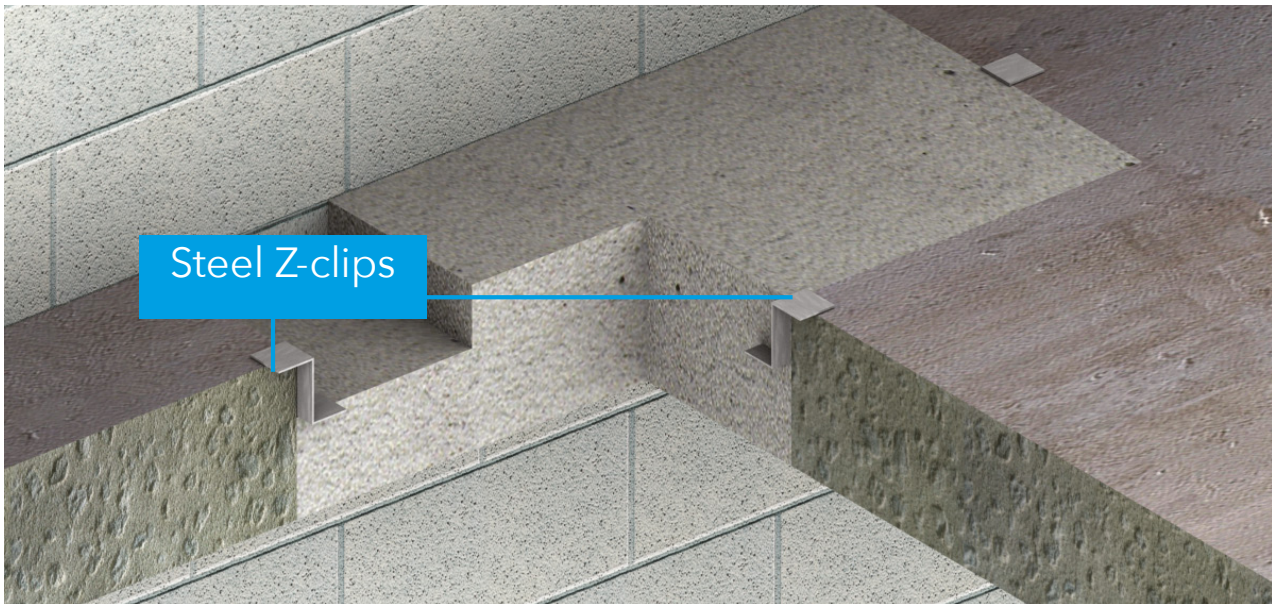
Alternatively, soft forms of formwork, e.g. mineral fibre battens, can be simply friction fitted into place. It is important to ensure the formwork is installed at the correct height to allow the correct depth (105mm) of PROMASEAL® Mortar to be installed. Once the mortar is fully cured the formwork is sacrificial.

Sealing Formwork

All gaps around the perimeter or the services should be sealed to prevent wet slurry seeping through to the other side. This can be carried out using PROMASEAL®-A Acrylic Sealant or by placing a dry mix of mortar over the gaps.

Steel Z-Clips

Install steel Z-clips and/or angle brackets. These are critical to ensure and effective key into existing concrete/masonry floors. In certain situations (generally where a cable tray is adjacent to a vertical wall as shown on page 42), the clips are only required on three sides of the opening. An alternate method to applying steel Z-clips is to use a mechanical



interlock where holes are drilled into the existing concrete element which meets the new PROMASEAL® Mortar, so that the fresh mortar can flow into that and key it back to the surrounding element.
Every application may need a slightly different approach and solution. The following are basic guidelines only.

PROMASEAL® Mortar is non loadbearing. It is advisable to place a visible warning sign near all barriers to identify its characteristics/inherent properties, with wording similar as follows:

WARNING: THIS IS A FIRE RESISTANT BARRIER. DO NOT DISTURB. DO NOT WALK OR PLACE ANY LOADS ON OR AGAINST THE BARRIER. IF THE BARRIER IS DAMAGED CONTACT ..... (name of installer) IMMEDIATELY.

Installation

Penetration Seals In Concrete/ Masonry Floors

Depth of PROMASEAL® Mortar required

For floors a minimum 90mm thick PROMASEAL® Mortar is required for fire resistance performance up to 120 minutes.

The insulation measured on the individual penetrating services may have lesser fire resistance level. Please consult Promat for more information.

Cored holes

If the gap around any service is small, it may be possible to simply force a foam backing rod or styrene foam into place to act as formwork and then install the mortar. It is advisable to seal around services with a fillet of PROMASEAL®-A Acrylic Sealant to act as a barrier against the passage of smoke and water leakage in floors. This sealant is not required to meet fire performance requirements. .

Openings in service risers

Generally such openings have only three sides and are adjacent to a continuous vertical wall.

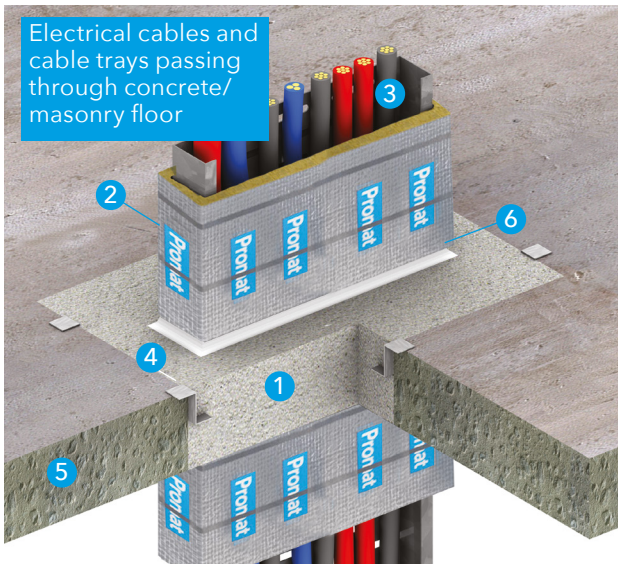
Once the formwork of choice is positioned and sealed, mix a wet slurry of PROMASEAL® Mortar and pour approximately 20mm over the entire surface of the formwork, taking care to achieve good coverage around and behind services, especially cables. When viewed from above, where gaps around perimeter edges and services exist, sealant or a drier mortar mix may be used to seal such gaps.

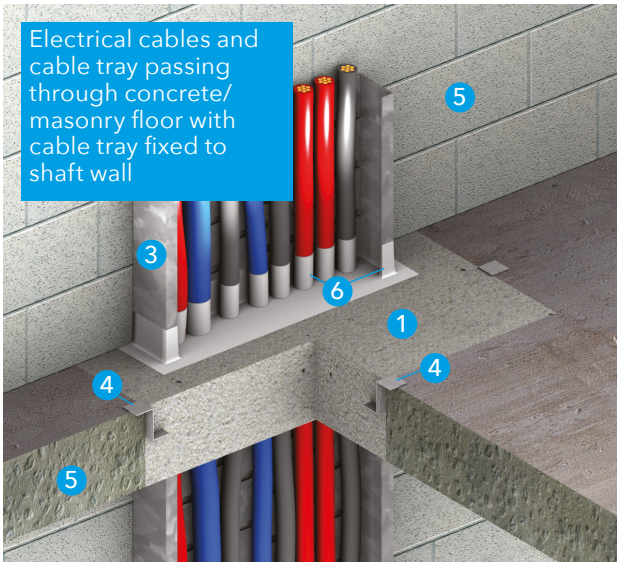
On the fourth side of the penetrations, where it is not possible to install steel Z-clips due to the position of the vertical wall, they can be omitted. Place the Z-clip formed angles into the opening at nominal 300mm centres. The angles to the vertical wall should be mechanically fixed using minimum 25mm nails or similar, the horizontal leg of the angle or Z-clip should sit approximately 50mm into the thickness of the PROMASEAL® Mortar.

The slurry will quickly set, in turn enabling a drier mix to be packed into position by hand. It is advisable to wear rubber gloves when handling the mortar material to prevent chapping or irritation of hands.

Pack the mix firmly to the top of the slab and trowel off to provide a neat finish. It is necessary to seal around services with a fillet of PROMASEAL®-A Acrylic Sealant to seal against the passage of smoke and water leakage in floors. The sealant should be applied in a cone "volcano" shape and should extend approximately 45mm along the service and 20mm onto the mortar element.

It is acceptable to apply dry mix directly to formwork as long as all gaps can be filled and the mortar penetrates between and around all services.





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Penetration Seals In Concrete/Masonry Walls

Depth of PROMASEAL® Mortar required

For walls a minimum 90mm thick PROMASEAL® Mortar is required for fire resistance performance up to 120 minutes.

The insulation measured on the individual penetrating services may have lesser fire resistance level. To combat this issue consider the use of PROMASEAL® Wrap. Please consult Promat for more information.

Cored holes

Clearances around services in cored holes are generally small, requiring a dry mix to be packed into the gap between the wall and the service. In such cases formwork may not be required.

Purpose made service openings

These may be pre-formed or may be holes that have been knocked through existing walls. If a neat, smooth finish is required, formwork should be attached to one face of the wall over the opening. Trim the formwork around the service. It is not necessary to make the formwork fit tightly around services.

For wall applications, a dry "packing" mix should be used. Stack the mortar into the opening; it should be possible to stack the mortar to a height of 600mm at one time if the mix is correct consistency. It may be necessary to fill in along the top of the opening after the mortar has settled and set. Any small openings around the edges or around services should be sealed with PROMASEAL®-A Acrylic Sealant.

Waterproofing

PROMASEAL® Mortar is porous. Its low density is one of the major reasons it is used on building and construction sites. If subjected to constant water coverage, water will pass through the mortar. If water resistance is required, the surface of the dry mortar must be sealed with a proprietary waterproof membrane or coating.

It would be prudent to prepare a sample area for testing to ensure the membrane of coating is suitable for use in terms of its compatibility with the PROMASEAL® Mortar and that the membrane/coating will provide sufficient durability to meet installation requirements. As always, the membrane/coating manufacturer's instructions should be followed precisely.

Surface hardening

Hardening is not a usual requirement. However, in some floor applications where small cored holes may have to be sealed, it may be necessary. This is frequently the case in office areas where equipment is being installed and may thus necessitate surface hardening.

In such instances, apply a proprietary brand cementitious, non shrink grout to the surface of the PROMASEAL® Mortar that will set into a hard surface. At all times, follow the manufacturer's instructions.

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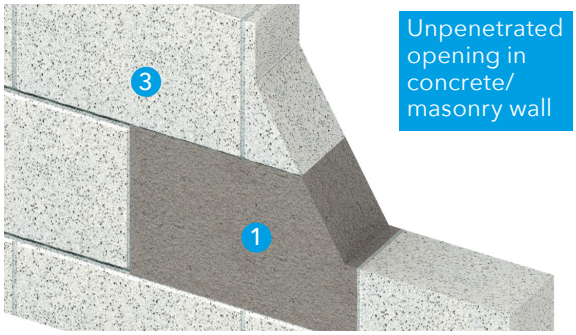
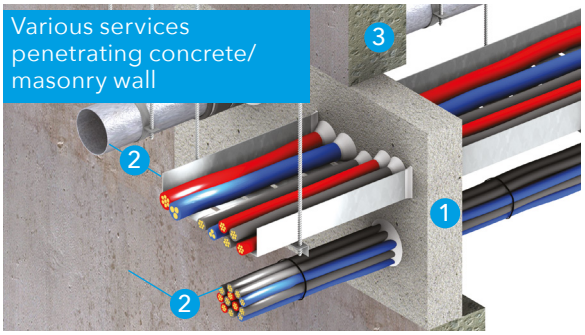


Unpenetrated opening in concrete/ masonry wall

Another example of unpenetrated wall opening



Various services penetrating concrete/ masonry wall

1. PROMASEAL® Mortar
2. Various penetrating services (see page 48 for details)
3. Fire resistant concrete/masonry walls

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Promat Asia Pacific

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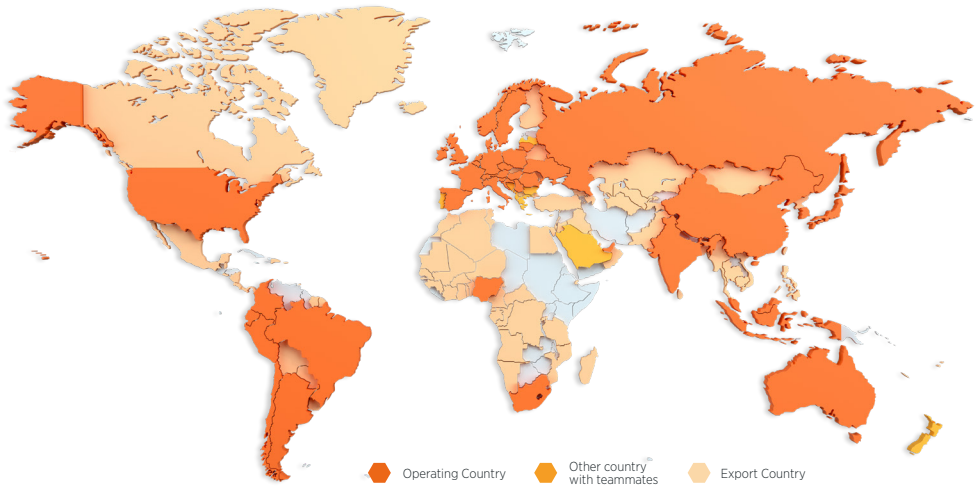
- All data contained herein conforms to and frequently surpasses generally accepted fire protection standards recognised by most professional fire science practitioners and regulatory authorities worldwide. The same general principle is equally applicable to all Promat products and systems. Promat has access to a considerable body of test authentication data and this can be provided on a complimentary basis upon request. It should be noted however that this publication replaces all previous editions in its entirety.



About Etex

Etex is a global building material manufacturer and pioneer in lightweight construction. Etex wants to inspire people around the world to build living spaces that are ever more safe, sustainable, smart and beautiful.

Founded in 1905, headquartered in Zaventem, Belgium, Etex is a family-owned company with more than 13,500 employees globally. It operates more than 160 sites in 45 countries and recorded a revenue of EUR 3.7 billion in 2022. Etex fosters a collaborative and caring culture, a pioneering spirit and a passion to always do better for its customers.

Etex has five R&D centres supporting five global divisions:

- Building Performance: dry construction solutions including plasterboards and fibre cement boards, plasters and formulated products, passive fire protection and associated products.
- Exteriors: a range of aesthetic fibre cement materials for use in agriculture, architectural and residential exteriors.
- Industry: fire protection and high-performance insulation products for the construction and OEM (Original Equipment Manufacturer) industries.
- Insulation: glass mineral wool and extruded polystyrene (XPS) for thermal and acoustic insulation.
- New Ways: high-tech offsite modular solutions based on wood and steel framing.

Etex's global portfolio includes leading commercial brands such as Promat, Kalsi, Siniat, Equitone, Eternit, Cedral, Durlock, Gyplac, Pladur, Superboard and URSA.

Etex is Inspiring Ways of Living, for more information, please visit our website: www.etexgroup.com