Promat

PENETRATION SEALS

PASSIVE FIRE PROTECTION SYSTEM

Application & Technical Manual: Penetration Seals

Contents

Penetration Seals: General Information

We offer you a complete portfolio of certified and tested products and systems to design and build a fully reliable fire safety solution for your building project.

While fire resisting compartments are created to contain and prevent fire and smoke from spreading within building structures, this also presents a parallel threat as most concealed cavities between fire resisting walls and floors are interlinked. The importance of sealing gaps in this type of construction is therefore vital to ensure compartmentation works to its optimum ability to save life and property. Such gaps are typical at service penetrations through walls and floors, but also include gaps left for structural movement and gaps left due to poor workmanship.

Recognising this, the development of effective solutions to seal gaps at service penetrations has increased over the past few years and Promat has become a world leader in supplying such solutions. Note should be taken that every service passing through fire resistant building elements react in different ways to fire, so there is no single solution or product that will protect all services.

Services must be tested in accordance with the test method outlined in appropriate standards. Tests are generally carried out in accordance with the general principles of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005 "Components for the protection of openings in fire resistant separating elements", which specifies testing in accordance with the test method set out in AS 1530: Part 4: 2014. It is important to note that although all of the above test methods can be considered similar, there are some major differences which can affect a particular application. See pages 4 and 5 for comparison of test methods/ building standards.

Failure Criteria

Failure is measured in terms of integrity and insulation. Stability or structural adequacy is not recorded for service penetrations, except those which are required to be load-bearing. Integrity failure occurs when cracks, holes or openings occur through which flames or hot gases can pass. This is measured in different ways, depending upon the standard used.

For instance, AS 1530: Part 4: 2014 measures integrity failure as flaming on the unexposed face for a time greater than 10 seconds as well as the cotton pad test. Other standards measure integrity failure using the same criteria but with different methods of measurement, for example, using a cotton pad, held against any gap, to see if the cotton pad ignites.

Insulation failure occurs when the temperature rise on the unexposed surface of the service, on the unexposed face of the building element 25mm from the penetration or on the seal itself exceeds 180°C. If insulation criteria cannot be waived, Promat have solutions to provide insulation criteria to copper and ferrous pipes as well as cable trays.

Fire stopping penetration seal products were introduced to complement Promat's wide range of fire resistant board systems.

Thanks in large part to the diversity of applications and ongoing test programmes the guidelines in this section are generalised in nature. It is therefore essential that the system specified or being installed is approved for use. Prior to installation, please consult Promat to confirm correct specification.

General Application Considerations

Openings through which services penetrate fire barriers have to be reinstated in such a manner that the fire resistance of the barrier is not impaired.

This means that if a wall or floor has a fire resistance level of 120/120/120 or -/120/120 or even -/120/30, the finished construction must have the same fire resistance. The only exception is that structural adequacy of penetration seals themselves is not measured, so the fire resistance level of the finished seal in the above systems would therefore be stipulated as -/120/120 or -/120/30.

In fire tests the temperature on the unexposed side of the specimen is measured at various locations.

This temperature is taken not only on the surface of the barrier and sealing system but also on the service itself where it is measured 25mm from the barrier.

If insulation criteria on the services is required, a tested prototype with insulation performance that matches the application is required. The test results must show that the insulation on the services meet the insulation criteria.

It is obvious in this instance that compliance on seals containing metal penetrations is difficult, as temperatures will quickly transfer by conduction through the metal elements.

Some fire tests do achieve insulation criteria on services, most commonly on penetrations consisting of cables and insulated pipes.

All barriers should maintain the insulation criteria on the base barrier system. Clause C4D15 (2) (a) in Building Code of Australia (BCA) allows the waiving of insulation on services where the service is protected such that combustible materials cannot be located within 100mm of the penetrating service for a distance of 2000mm from the penetration and it is not located within an escape exit. This waiver is currently only allowed for metal pipes and it is important to check for local interpretations of this provision.

If the service does not achieve the required insulation criteria and a

certificate for the work is to be issued, the fire resistance level should be expressed as -/120/- or similar.

Where cable trays penetrate walls or floors and it is deemed necessary, the cable tray itself may be cut so that it does not pass through the barrier, thus eliminating most of the conduction through the tray. Alternatively, barriers in the form of mesh guards can be placed around the service ensuring combustibles are not placed within 100mm of the surface of the penetration services.

Please refer to pages 6 to 52 for a wide range of penetration seals, fire stopping products and systems.

Application of Test Results

Where fire tests have been conducted with services penetrating masonry walls and the like, these results may not be applied to framed walls (drywall construction) in some countries.

Where fire tests have been conducted with services penetrating framed plasterboard walls, the results may be used in conjunction with all other walls including masonry (brick), cement/ concrete blocks, provided that:

1. The total wall thickness is no less than the thickness of the tested prototype;
2. The board system uses the same number of layers of board as used in the tested prototype, or must be covered by an assessment from a registered testing authority;
3. The sealant is applied in the same manner as the tested prototype;
4. The sealant is at least as deep as that applied in the tested prototype;
5. The required fire resistance is no greater than the tested prototype;
6. The fire resistance of the barrier is no less than the required fire resistance of the penetration;
7. The tested service penetration achieves at least the same fire resistance level as the wall or floor being sealed.

Please check with local regulations before specifying or installing penetration sealing systems to ensure local compliance.

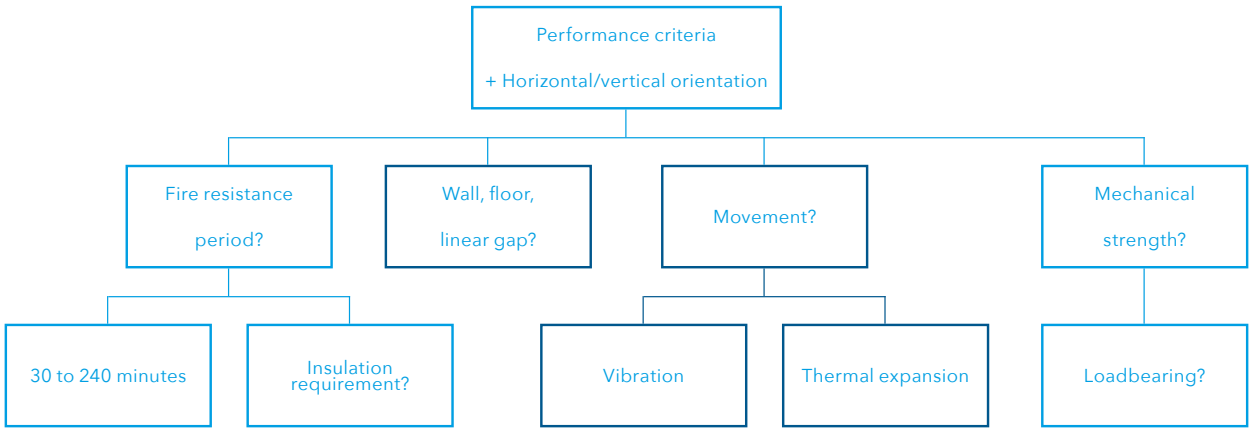
If the fire resistance level of the separating element of construction through which the penetrating service passes is not known, the only choice is to state that the penetration sealing system will perform for as long as the separating element retains its integrity and insulation, or for as long as the approved fire resistance level of the penetration sealing system (whichever period of time is less).

Where fire tests have been conducted with services penetrating a concrete floor, the results may be used in floors of similar BS 476: Part 20: 1987, BS EN 1366: Part 3: 2009, AS 1530: Part 4: 2014 and 2005. or greater fire resistance and thickness.
NOTE:

- NCC does not address the issue of smoke leakage through building elements (e.g. floors, walls and any service penetration passing through);
- Service penetrations should always be installed and tested in a manner representative of their intended purpose.
- For more information regarding standards, please refer to

User Guide To Systems

As penetrations can occur in various building elements, there are a number of important criteria that require consideration in determining the appropriate type of sealing system to be used, and this is simplified in the following chart:

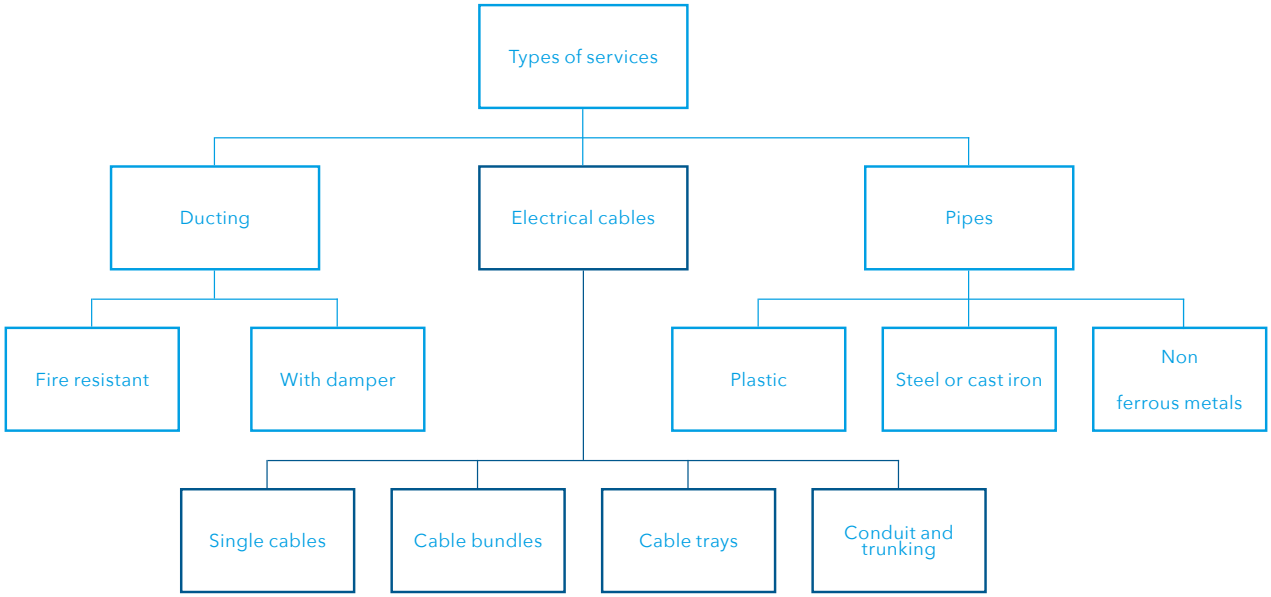


Limitations Of Use

- Size of opening
- Flexibility of seals
- Ambient conditions
- Frequency of change to services
- Penetration services
- Smoke or gas tightness l
- Design life
- Parent construction (type of substrate)

Special Considerations

In instances where electrical and mechanical services are involved, the selection of penetration sealing system also require the following additional elements to be carefully considered.



Compatability Considerations

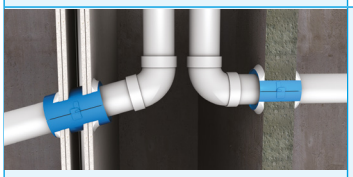
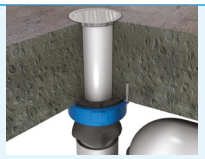
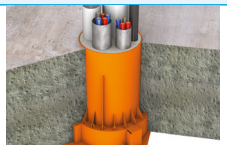
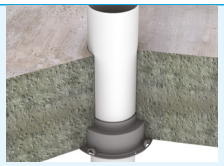
- Intumescent systems in lightweight constructions
- Smoke or toxicity in populated zones
- Rigid seals in “dynamic” barriers
- Dusty or friable materials in “clean room” applications
- Large spans and thermal expansion

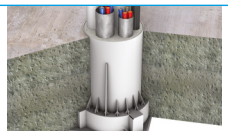
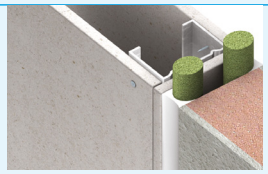
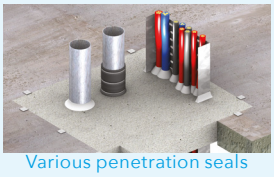
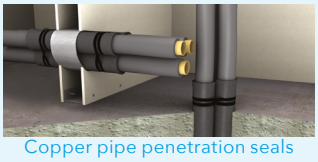
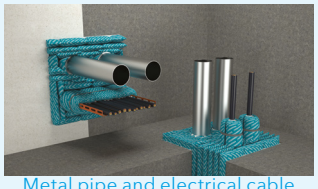
Penetration Seals: Comparison Of Building Standards

	British Standard BS 476: Part 20: 1987	European Standards BS EN 1366: Part 3: 2009 and BS EN 1366: Part 4: 2010	Australian Standards AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005	United States Standards ASTM E814: 2011 and UL 1479: 2006
Orientation	Requires representative specimen in both orientations. For asymmetrical specimens, a test should be conducted from each side using separate specimens.	Representative or standard service configurations tested both in horizontal and vertical orientation.	Requires full size or representative specimen and testing in both horizontal and vertical orientation if intended for use in both orientations. Provides standard test configurations.	UL requires both orientations to be tested unless it can be demonstrated that testing in a single orientation does not affect the results. ASTM does not specify but there are differences in temperature and pressure measurements for the two orientations so that, by default, both would be required.
Test sample	Does not specify projection distances of through penetrating elements. The end conditions of pipes should reflect the "as installed" conditions.	For the purpose of tests, joints may be formed on monolithic slabs or by adjacent discrete members. The linear joint seal shall have a minimum heated length of 900mm. A test construction may incorporate several discrete linear joint seals, evaluating performance of different system of the effect of different joint face substrates, providing the following conditions are met: a) Minimum distance between adjacent seals on the exposed sides shall not be less that 200mm. On the unexposed side, the minimum distance between adjacent seals shall not be less than 200mm. b) The test construction can either be inserted in the furnace opening or put onto the furnace walls. The minimum width of the supporting elements adjacent to the edges of the furnace opening shall be such that a distance of at least 200mm exists between the longitudinal edge of the linear joint seal and the interior furnace face. The minimum distance between a joint edge and an adjacent blockout edge shall be at least 200mm.	The ends of the services shall be sealed on the exposed side of the furnace, to simulate normal extension through compartment. The penetrating element shall extend 500mm into the furnace and 2000mm outside the furnace for plastic pipes, all other elements are 500mm inside and outside the furnace.	The penetrating element should extend into the furnace by 300mm and out of it by 910mm. The end of the element on the exposed face is capped, but uncapped on the unexposed side, unless it is to represent a closed system in which case it may be capped. The periphery of the specimen should not to be closer than 1.5 the thickness of the assembly, or 300mm to the furnace edge, whichever is greater.
Conditioning	Materials shall, at time of test, be in a condition approximating the state of strength and moisture content that would be expected in normal service.	The test specimens shall not be tested until both strength and moisture content approximate the values the service expects to attain.	The test specimens shall not be tested until both strength and moisture content approximate the values the service expects to attain.	Prior to fire testing, each test sample and test assembly is to be conditioned, if necessary, to provide a moisture condition likely to exist in similarly constructed buildings.
Protection of assembly and sample	Ambient temperature should be within 5-35°C prior to heating period, and temperature measurements on the unexposed face must be in draught free conditions.	Provided reference for test frames and ambient conditions are in 20°C ± 10°C at commencement of test. During testing, the laboratory temperature shall not decrease >5°C or increase by >20°C for all insulated separating elements while they still satisfy insulation criterion.	Not specified except that the initial furnace temperature must be not less than 10°C and not more than 40°C.	The testing equipment and test sample are to be protected from any condition of wind or weather that might influence the test results, i.e. ambient temperature at the time of testing must be within 10-32°C while the velocity of air across the sample must not exceed 1.3m per second.
Pressure differential	At mid height of vertical systems, the pressure differential is 15Pa. In horizontal systems, it is the same pressure different but 100mm below mid height.	A vertical furnace shall be operated so that a minimum pressure of 15Pa exists in the centre of the test specimen mounted in the lowest position. A horizontal furnace shall be operated so that a pressure of 20Pa + 3Pa is establishes at a position 100mm + 10mm below the lowest point of the test construction.	Not less than 20Pa at notional 100mm below the soffit height of horizontal element or at a level with lowest point of the penetration seal of a vertical element it should be 15Pa ± 3Pa.	Except for the first 10 minutes of the test, the furnace pressure shall be at least 2.5Pa greater than the pressure on the unexposed side of the following locations: a) at lowest elevation of the test specimen for walls, b)at the location of the pressure probes for floors. Test sponsor may also specify a unique pressure condition in which case it must be maintained throughout the duration of the test, excluding the first 10 minutes, within 20% of the specification.

	British Standard BS 476: Part 20: 1987	European Standards BS EN 1366: Part 3: 2009 and BS EN 1366: Part 4: 2010	Australian Standards AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005	United States Standards ASTM E814: 2011 and UL 1479: 2006
Integrity	a) Cotton pad test, b) gap gauge, and c) sustained flaming of more than 10 seconds.	a) Cotton pad test is generally performed, the use of reduced size cotton pad is permitted for penetration seal tests if necessary; b) whilst gap gauge is used for measurement in general test specimens, it shall not be used for evaluation of penetration and linear joint seals tests; c) flaming takes place at the unexposed face of the specimen for a period exceeding 10 seconds.	Failed when: a) Cotton pad test is generally performed, the use of reduced size cotton pad is permitted for penetration seal tests if necessary b) whilst gap gauge is used for measurement in general test specimens, it shall not be used for evaluation of penetration and linear joint seals tests.	Shall not permit the passage of flame throughout the fire test, or water through the hose stream test. Mandatory for all ratings in both standards, i.e. ASTM and UL.
Insulation	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C above the initial temperature.	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C (K) above its initial temperature.	The criteria for failure of insulation is if the temperature of any of the thermocouples on the unexposed side reaches 180°C above the initial temperature.	Shall not permit the passage of flame through the fire test, or water through the hose stream test or allow the temperature to increase by 180°C on the unexposed side. Mandatory for T rating in both standards.
Hose stream test	No specification.	No specification.	No specification.	For both F and T ratings, a duplicate specimen is subject to a fire exposure test for period half of the desired rating but not more than 60 minutes. Immediately after the fire exposure, the specimen shall be subject to the hose stream test. Same test assembly can be used for both tests but must take place within 10 minutes from the completion of the fire test.
Specification assembly and sample	a) Integrity, b) insulation, and c) load-bearing capacity where applicable.	a) Integrity, b) gap gauge (not applicable for penetration and linear joints seal tests), c) cotton pad, d) insulation, and e) second insulation area (if the test element incorporates two discrete areas of different thermal insulation).	AS 1530: Part 4 states results to be expressed in: a) integrity, and b) insulation.	An F rating based upon flame occurrence on the unexposed side of the test sample and acceptable hose stream performance; and a T rating based on temperature rise and flame occurrence on the unexposed side of the test sample and acceptable hose stream performance. An L rating is based on the amount of air leakage through the test sample. A W rating is based on the water resistance of the test sample.
Reporting	a) Temperature data from all specified critical thermocouple, b) a detailed description of all penetrating services, and c) a detailed description of the test construction.	In addition to the items required by EN 1363: Part 1, the following shall be included in the test report: a) A full description of any procedure used to induce relative movement of the linear joint seal faces, when tested as described in Annex B, b) the test specimen orientation, c) the limits of the range of nominal widths and the movement capability successfully tested, d) a full description of the splicing methods used, and e) a presentation in graphs if relevant.	In addition to the requirements of AS 1530: Part 4, the report should have: a) temperature data from all specified critical thermocouple, b) a detailed description of all penetrating services, and c) a detailed description of the test construction.	Report must have: a) description of assembly and materials, b) relative humidities, c) temperature recordings, d) the achieved rating, e) location of pressure probes and differential pressure of the test, f) record of all observations, and g) correction factor.
Commentary	For positions of thermo-couples and other items not specified in this standard, laboratories refer to the EN standard.	These standards are now in effect for use within the industry.	Comprehensive and simple standard configurations, as well as details on permissible variations.	UL also have an addition L rating which is to be reported as the largest leakage rate determined from the air leakage test.

Penetration Seals: System Index

Type	Product	Maximum fire resistance performance	Area of penetration seals or sealing	Page no.
 Plastic pipe penetration seals	PROMASTOP® UniCollar®	-/240/240	Concrete/masonry floors and walls, partitions	11-14
	PROMASEAL® Conduit Collar	-/240/240		
 Plastic pipe penetration seals	PROMASEAL® Retrofit Collar (square base)	-/240/240	Ceilings, concrete/masonry floors and walls, partitions	15-17
	PROMASEAL® Retrofit Collar (circular base)	-/240/240	Concrete/masonry floors and walls	
 Plastic pipe penetration seals	PROMASEAL® Wall Collar	-/120/120	Concrete/masonry walls, partitions	18-19
 Plastic pipe penetration seals	PROMASEAL® CIH	-/240/240	Concrete floors	20-21
 Plastic pipe penetration seals	PROMASEAL® CIL Cast-in Collar	-/240/240		
 Plastic pipe penetration seals	PROMASEAL® FWC	-/120/120	Concrete floors	21
 Plastic pipe penetration seals	PROMASEAL® Retrofit Floor Waste Collar	-/180/180	Concrete floors	22
 Electrical services penetration seals	PROMASEAL® Services Seal Collar	-/180/120	Concrete floors	23
 Plastic pipe penetration seals	Promat PipeSeal® Cast-in Collar	Non fire resistant	Concrete floors	24

 Electrical services penetration seals	Promat MultiSeal® Cast-in Collar	Non fire resistant	Concrete floors	25
 Various penetration seals	PROMASEAL®-A Acrylic Sealant	-/120/-	Metal pipes in concrete/masonry floors and walls	27-29 35
		-/180/-	Electrical cable trays in concrete/masonry walls, partitions	
		-/240/-	Steel ventilation ducts in concrete/masonry walls, partitions	
		-/240/240	Control joints and gaps in ceilings, concrete/masonry floors and walls, partitions	
 Seals of joints and gaps, and various penetration seals	PROMASEAL® IBS™	-/240/240	Ceilings, concrete/masonry floors	29-32
		-/240/240 (TBC)	Concrete/masonry walls, partitions	
 Seals of movement joints	PROMASEAL® FyreStrip	-/240/240	Concrete floors	33-34
		-/240/240	Concrete/masonry walls	
 Various penetration seals	PROMASEAL® Bulkhead Batt	-/120/120	Concrete floors	36-41
		-/120/120	Concrete/masonry walls	
 Various penetration seals	PROMASEAL® Mortar	-/240/240	Concrete floors	42-48
		-/240/240	Concrete/masonry walls	
 Copper pipe penetration seals	PROMASEAL® FlexiWrap	-/240/120	Concrete floors	49
		-/240/120	Concrete/masonry walls, partitions	
 Plastic pipe penetration seals	PROMASEAL® Grafitex 4T	-/240/120	Concrete floors	54
		-/240/120	Concrete/masonry walls	
 Metal pipe and electrical cable trunking penetration seals	PROMASEAL® Pillows	-/120/120	Concrete floors	50-51
		-/120/120	Concrete/masonry walls, partitions	
 Switchbox intumescent	PROMASEAL® SupaWrap	-/120/120	Concrete Floor, Lightweight of concrete/masonry walls	52

NOTE: The insulation values may relate only to the seal itself or to the penetrating/building elements. Please contact Promat for clarification and the test/approval number of assessment report relating to the above systems if necessary.

Fire Collars For Plastic Pipe Penetration Seals

Promat fire collars are manufactured using intumescent technology. These collars are designed to maintain the integrity of the fire resistant element through which plastic pipes, combustible insulation, cables or fibre optic facilities pass. Promat fire collars are suitable for installation in the various types of floors, walls and ceilings in which they have been tested.

In the event of fire, the plastic pipe will start to deform. In the case of uPVC pipes this occurs at a temperature of approximately 70°C. Once the pipe starts to deform, the intumescent material in the Promat fire collar expands, closing off the plastic pipe or combustible insulation, and thus forming an insulating barrier.

This intumescent compound continues to expand throughout the fire and forms a char which prevents flame and hot gases passing into adjacent compartments.

It is important to know that there are many different kinds of plastic and their behaviour in fire situations can vary significantly. This means that fire collars have to be tested on particular types and sizes of pipe to ensure their efficacy in the event of a fire.

Some examples of typical plastic pipes are:

- Acrylonitrile butadiene styrene (ABS)
- High density polyethylene (HDPE)
- Poly butylene (PB)
- Poly propylene (PP)
- Poly propylene random (PPR)
- Unplasticised poly vinyl chloride (uPVC)
- Polyethylene cross linked (PEX)
- Polyethylene, aluminium and polyethylene (PE/AL/PE)

Recent technology and the price of copper has seen the development of composite pipes using plastics combined with aluminium layers. It is important to note the combinations (of plastics, aluminium and other materials) before recommending a particular type or size of collar. PE/AL/PE is a good example. This means that the inner layer is polyethylene, the middle layer is aluminium and the outer layer is again, polyethylene. These types are mainly used for gas supply piping.

AS 1530: Part 4: 2014 is very specific regarding plastic pipes; it states that where a fire collar has been tested on the range of uPVC pipes, including 40, 50, 65, 80 and 100, and achieved the required fire resistance performance. It can be used on other types of plastic provided that the smallest and largest pipes from that particular family of plastics has been successfully tested and that a registered/accredited testing laboratory has assessed it.

It is important to understand why this is so. Different plastic pipes behave in very different ways when subject to the same fire resistance testing. As an example, uPVC, being a thermosetting plastic, will form a rigid char once it has been subject to a fire. On the other hand, the thermoplastic HDPE will not form a char. It will in fact melt and drip, enhancing its ignitability.

Some building regulations and test standards are more lenient than the Australian equivalents and do not require the same degree of strict testing and approvals with all types of plastics.

If overseas test reports are used in the jurisdiction of other countries, it is vital to check that those test standards are comparable with both AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005. In many cases they are not comparable.

Floor Wastes And Stacks

It is important to understand the difference between floor waste and stacks. The standard AS 1530: Part 4: 2014 discusses this difference in detail. Typical floor wastes are grates in the floor which allow a flow of water to drain into and through them. They are normally found in shower, floor and laundry waste applications and must be tested in that orientation.

Stack testing is used for whenever there is any length of pipe above the floor slab. The test demands that there be a 2000mm length of pipe above the slab. It is considered that this is the most onerous method of test because the 2000mm of pipe (stack) creates a chimney effect, drawing the fumes and hot gases through the length of pipe. Please note that sinks, toilets, baths etc are considered stacks and should be tested with the 2000mm of pipe exposed above the floor slab.

For a complete test/approval number of assessment report relating to floor waste collars, please contact Promat.

Floor Application

There are SEVEN (7) types of floor collars:

1. Square based PROMASEAL® Retrofit Collar (FC type) fits around the plastic pipe on the underside of a floor. It is bolted to the slab. However, it can be used as cast-in collar as well. Please note, new collars in the Australian market generally satisfy this method of installation.
2. Circular based PROMASEAL® Retrofit Collar (FCS type) has a larger opening than the FC type and is designed and tested to be retrofitted to floors. It can accommodate a pipe fitting if required and can also be used for lagged plastic drink lines.
3. PROMASEAL® CIH Collar is cast-in fitted with smoke and water seals.
4. PROMASTOP® UniCollar® and PROMASEAL® Conduit Collar.
5. PROMASEAL® CIL Cast-in Collar is designed to be fixed to formwork prior to pouring concrete floors. This collar accommodates the pipe fitting within the soffit of the slab, enabling space savings to be achieved. The collar will close both the pipe and pipe fitting in a fire. PROMASEAL® CIL Cast-in Collars

have been successfully tested up to 180 minute fire resistance with uPVC and HDPE pipes for floor waste stacks.

6 PROMASEAL FWC Floor Waste Collar has been tested up to 120 minute fire resistance with uPVC pipes and fittings for floor waste applications.

7 PROMASEAL® Retrofit Floor Waste Collar has been tested and approved for floor wastes where integrity and insulation criteria are required.

Wall Application

There are THREE (3) types of wall collars:

8 Square based PROMASEAL® Retrofit Collar (FC type) as described above. This collar fits around the plastic pipe on both sides of lightweight walls (e.g. plasterboard, PROMATECT® 100) or the fire side of masonry walls. This collar does not require fitting.

9 PROMASEAL® Wall Collar is a canister that fits around the pipe and slides centrally into the cavity of the wall. Thus only one collar is necessary to provide fire resistance from either direction. This collar is generally used for steel/timber framed lightweight partitions but can also be applied in masonry walls.

10 PROMASTOP® UniCollar® and PROMASEAL® Conduit Collar.

Ceiling Application

Square based PROMASEAL® Retrofit Collar (FC type) is fitted through the underside of the ceiling to the steel framing above.

Guide To Fixings

The section is to clarify the issues with regards to the use of the correct fixings currently available in the market place for fire collars and explain the differences between them. It is essential that fire collars are only installed with the correct size ALL STEEL fixings. In the past alloy based fixings have been tested and have shown that they will not provide the required fire performance.

Currently some fixing products available are marketed as all metal, or zinc alloy. These type of anchors need to be thoroughly checked because some of them have other alloys included in the matrix of the fixing and these can melt at lower temperatures than those found in cellulosic fires, thus rendering them inappropriate for supporting fire resistant devices such as fire collars.

Examples of non-compliant alloy anchors:

Ramset's Shuredrive	
Macsim's Macdrive	
Hilti's HD metal drive anchor	
Power's metal pin anchor	

NOTE: The above anchors are not suitable as fixings for PROMASEAL® and PROMASTOP® fire collars unless there are test approvals.

Examples of all steel compliant anchors:

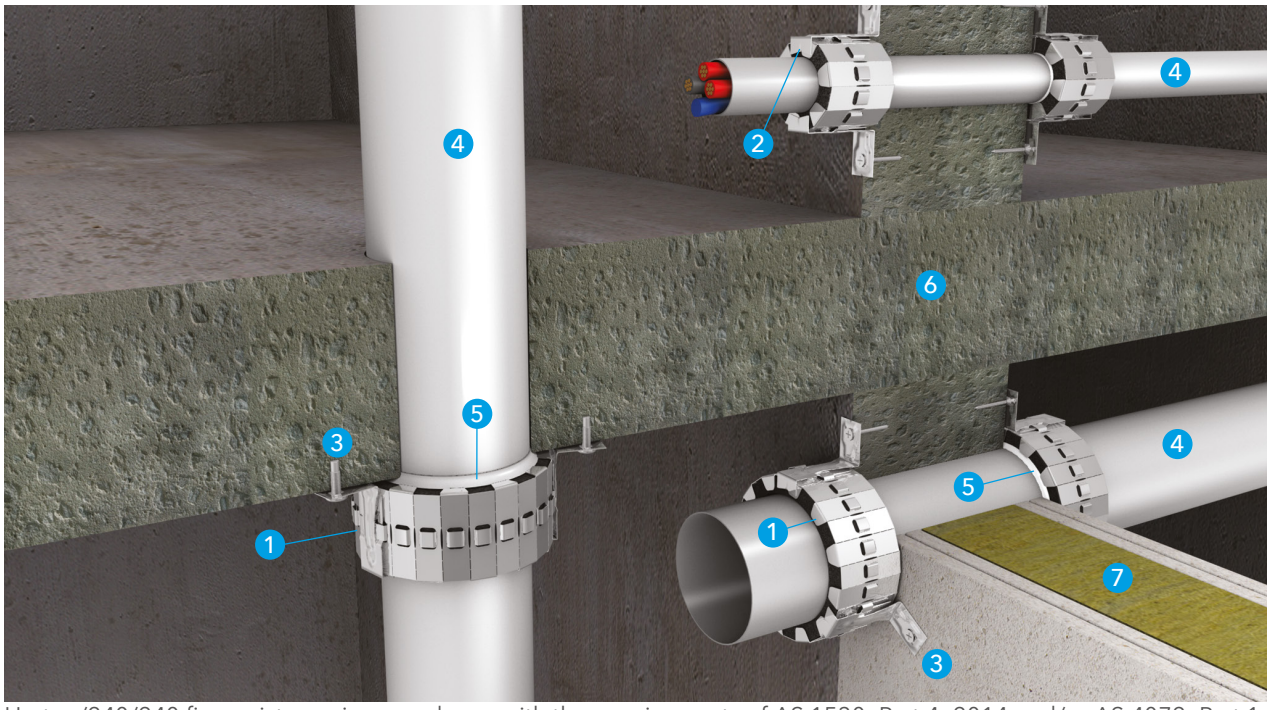
Ramset's Dynabolt	
Ramset's Trubolt	
Ramset's Redidrive	
Hilti's DBZ	
Hilti's HSA Stud Anchor	
Macsim's DBZ metal pin anchor	
Macsim's Masonbolt	
Power's sleeve anchor	
Power's Powerbolt	
Power's PBZ wedge anchor	

NOTE: The above anchors are suitable as fixings for PROMASEAL® and PROMASTOP® fire collars in accordance with tables below.

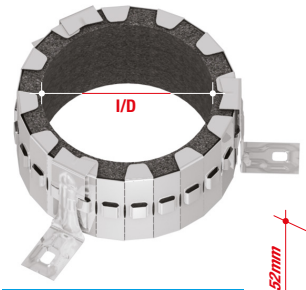
Concrete walls or floors	Plasterboard walls
Fire collars should be installed on both sides of the wall	
For PROMASTOP® UniCollar® installed into concrete walls or floors, steel fixings are supplied within the collar packaging and the collars should be installed with the requisite number of brackets depending upon the pipe size. For square or circular based PROMASEAL® Retrofit Collars (FC or FCS type) installed into concrete walls or floors, steel fixings must be installed using all the collar fixing points with the following sizes: • For collars up to 100mm, 25mm minimum length steel anchors as listed above should be used. • For collars from 150mm to 250mm, minimum 38mm x 6mm steel expanding anchors must be used, as per Ramset Dynabolt or similar. • For 300mm collars, minimum 50mm x 6.5mm steel expanding anchor.	For PROMASTOP® UniCollar® installed into plasterboard walls, 40mm x No.10 laminating screws are supplied within the collar packaging and should be installed with the requisite number of brackets depending on the pipe size. For square or circular based PROMASEAL® Retrofit Collars (FC or FCS type) installed into plasterboard walls, steel fixings must be installed using all the collar fixing points and using the following fixing size: • For collars up to 150mm, 40mm x 6g laminating screws should be used. • For collars above 150mm, framing should be placed within the wall at locations where the following rods pass through. 8mm diameter threaded rod must pass from one side of the wall to the other and washers and nuts should be placed onto the ends of the rods where they pass through the fixing points of the collar.

Plasterboard ceilings
PROMASEAL® Retrofit Collars, up to 160mm
Square or circular based PROMASEAL® Retrofit Collars (FC or FCS type) can be installed onto uPVC and HDPE in 60-120 minute fire resistant ceilings. Use PROMASEAL®-A Acrylic Sealant to seal annular gaps. Provide additional framing to support the collar. Fix the collar through the plasterboard and into the framing above. The gap between the ceiling lining board and the pipe should be no more than 15mm and sealed with PROMASEAL®-A Acrylic Sealant to the full depth of the lining board.

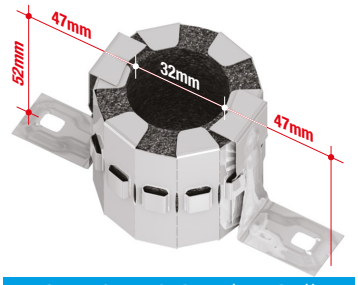
PROMASTOP® UniCollar / PROMASEAL® Conduit Collar



Up to -/240/240 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and/or AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements



PROMASTOP® UniCollar®



PROMASEAL® Conduit Collar

1. PROMASTOP® UniCollar®
2. PROMASEAL® Conduit Collar
3. Brackets attached with suitable fixing, i.e. steel bolt anchors for masonry/concrete floors and walls OR laminating screws for lightweight partitions
4. Various plastic piping
5. All gaps caulked with PROMASEAL®-A Acrylic Sealant to achieve the required fire resistance performance
6. Fire resistant concrete/masonry floors or walls
7. Fire resistant steel/timber framed lightweight partitions

Usage guide

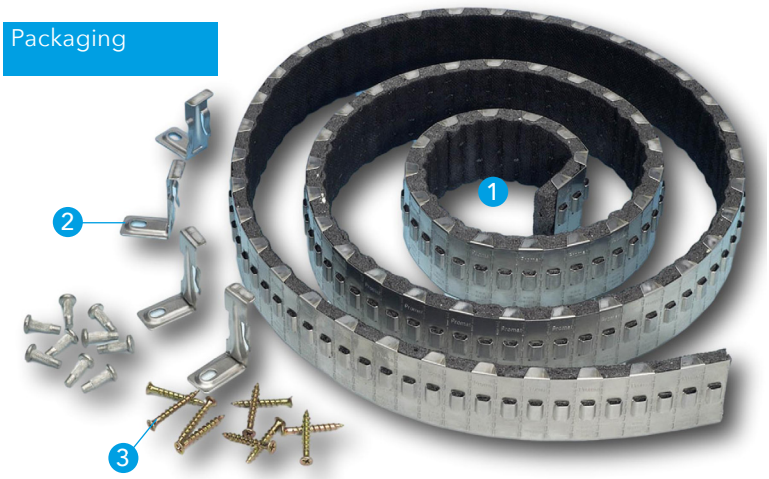
Inside diameter (I/D) mm inches	43	50	55	63	69	75	83	90	110	114	125	140	160	200
	1.25	1.5	–	2	–	2.5	–	3	–	4	–	5	6	–
Approximate number of collars per box	10	8.5	8	7.5	7	6.5	6	6	5	5	4.5	4	3.5	3
Number of brackets per collar for floor application (For 1 hour wall systems, please contact Promat)	2	2	2	2	2	3	3	3	3	3	4	5	5	5
Number of brackets per collar for wall application	2	2	2	2	2	3	3	3	3	3	3	5	5	5

PROMASTOP® UniCollar®

PROMASTOP® UniCollars® are a fire stopping device containing intumescent material designed to maintain the integrity of the fire resistant element through which plastic pipes pass. The collars are suitable for installation in various floors and walls similar to that in which they have been tested.

In the event of a fire, the intumescent material in PROMASTOP® UniCollar® rapidly expands, closing off the plastic pipe or combustible insulation and forming an insulating barrier. This intumescent compound continues to expand throughout the fire and forms a non combustible char which stops the fire passing into adjacent fire compartments.

Packaging



1. PROMASTOP® UniCollar®
2. Brackets
3. Fixings as provided

However, it is important to note that there are many different kinds of plastic and they react to fire in different ways. This means that fire collars may have to be tested on many types and sizes of pipe. Please note that local regulations must be accurately assessed if this is appropriate or necessary. Examples of plastic pipes are uPVC, HDPE, PP, PPR, ABS, PE and Pex/Al/Pex.

Australian Standard AS 4072: Part 1: 2005 "Components for the protection of openings in fire resistant separating elements. Part 1: service penetrations and joints" calls for all types of plastic pipe and all sizes to be tested. This means that any assessments written to AS 4072: Part 1: 2005 must be able to refer to tested specimens that clearly show the type of plastic has been tested with the collar in the same orientation and size as to be used in practise.

It is currently acceptable to test new types of plastic using uPVC as a benchmark.

PROMASTOP® UniCollar® has undergone fire tests in numerous countries around the world to many standards. Please contact Promat to check if the approval of the required application is already covered.

Packaging

PROMASTOP® UniCollar® is packaged in individual boxes each containing 2250mm length of collar or 150 segments. The collar is designed so that it can be cut and snapped in modules of 15mm.

One box contains the equivalent of 5 x 110mm collars. Please see table on page 11 for a usage guide to the approximate number of collars and brackets each full length of PROMASTOP® UniCollar® equates to in most typical on-site applications.

The table shows the suggested lengths of collar (segments) required for various inside diameters (I/D) of plastic pipes. In difficult situations it may be necessary to use longer lengths of collar to assist with installation.

The number of collar units per box may vary depending on installer's skill and attention to detail.

At time of this publication, tests have not been carried out on plastic pipes greater than 200mm outside diameter. Please consult Promat for details of such applications.

For uPVC pipes with 110mm outside diameter or less, add two segments if the collar has to fit around a pipe joiner.

Removing Casing And Accessories

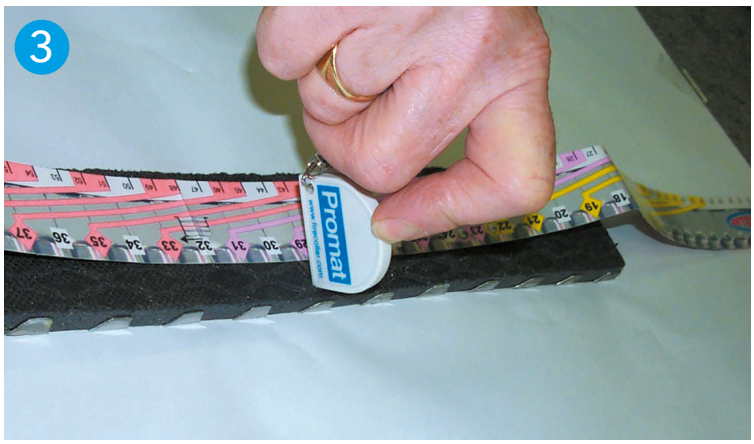
Each package of PROMASTOP® UniCollar® contains the fixings and other accessories required for installation (see pictures on page 12).

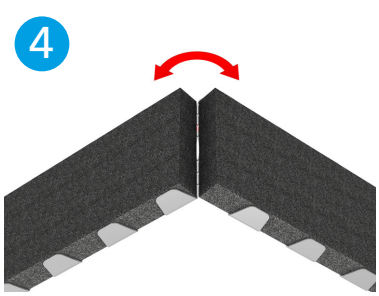
Please read the information in this manual in conjunction with the diagrams printed on the rear of the package and use of the measuring tape provided as an accessory in the package:

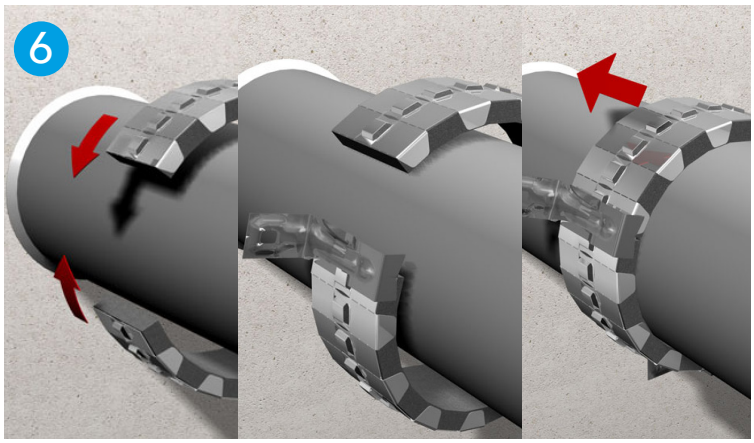
- Open the package at the position clearly marked with an arrow.
- Remove the accessories box before pulling out one end of the PROMASTOP® UniCollar®. The collar strip will uncoil.
- Ensure the soft Grafitex side of the collar strip faces up. The steel has perforations to ease the snapping of the length located at 15mm centres.
- Use only sufficient length (segments) required of the collar from the package. For example, approximately 600mm of a segment pulled out is adequate and convenient for a 110mm cut of the collar.

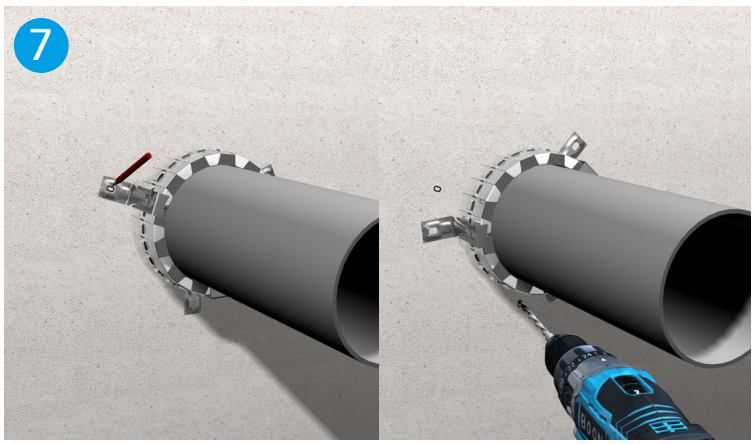
Cutting/Snapping The Collar

- Correctly identify the required outside diameter of the plastic pipes to which the PROMASTOP® UniCollar® will be applied. The diagrams printed on the package provide concise information on the number of segments required for various sizes of plastic pipes.
- Count the number of the 15mm segments required
- Cut through the soft Grafitex side of the collar strip at an appropriate









1. Pull out the PROMASTOP® UniCollar® strip and accessories box
2. Identify outside diameter of the plastic pipe
3. Identify number of segments needed for the particular pipe size from table on box
4. Bend and snap the collar strip accordingly
5. Shape the cut collar section (casing) to suit the pipe
6. Fit the casing around the pipe with one bracket first to joint ends
7. Attach other brackets onto the floor/wall

position, e.g. cut at segment 29 for a 110mm outside diameter pipe. It is important to note that, for safety purpose, the strip should be cut in an opposite direction from fingers at all times and this exercise should be performed in a consistent manner.

- Hold the collar strip between finger and thumb on each side and as close as possible to the desired cut section. Fold in a downward direction as far as possible. The cut Grafitex will open. Repeat the folding and unfolding sequence until the steel snaps.

PROMASEAL® Conduit Collar

For plastic conduits with 32mm diameter or less, the PROMASEAL® Conduit Collar has been tested up to 240 minute fire resistance in floors and walls. The collar is fixed to the floors/walls with two brackets.

Insulation criteria will vary depending on types of the plastic pipes and the penetrating building element through which the collar passes.

For the limited diameter required, only one size of 32mm PROMASEAL® Conduit Collar is available and prefabricated from Promat. It can be purchased individually.

Assemble The Collar

- Both cut ends of the Grafitex should be square. For easier fixing, cut these square ends to a slight angle. Shape the cut collar section (casing) to the approximate outside diameter of the plastic pipe. For small pipes (e.g. < 75mm), pay attention to the square ends of these casings to ensure they have been shaped correctly.
- Push one of the prongs of a bracket through the notch at one end of the casing. Fold the casing around the plastic pipe and push the other prong through the notch at the other end of the casing. If pushing is difficult, the bracket can be gently hammered into position. Attach this bracket followed by others onto the floor/wall.

If it is difficult to position the first bracket, additional bracket(s) can be positioned against the strip casing. The correct number of brackets must be used and both ends of the casing must be connected with one bracket. The prongs of all brackets must be fully engaged through the notch on the casing, i.e. the prong should go in one side and out from the other side, and does not get caught inside the casing.

Plastic Pipe Penetration Seals

Retrofit installation to underside of floors

PROMASTOP® UniCollar® has been tested up to 240 minute fire resistance with various plastic pipes up to 150mm outside diameter when fixed to soffit of concrete/masonry floors (with an equal or greater fire resistance level) through the provided brackets using 20mm x 5mm steel bolt anchors, on condition that the floor is in a secure condition for holding the anchors.

Backfill all annular gaps greater than 8mm between the plastic pipe and the floor with PROMASEAL® Mortar or other commercial grade mortar mix. A suitable water resistant sealant may be applied around the pipe on top side of the floor if a water seal is required.

If the gap is less than 8mm, apply a bead of PROMASEAL®-A Acrylic Sealant approximately 8mm deep into the gap on underside of the floor.

Retrofit installation to both sides of walls/partitions

PROMASTOP® UniCollar® has been tested up to 240 minute fire resistance with various plastic pipes up to 150mm outside diameter, depending on types and sizes of the pipes using the recommended number of the provided brackets.

For concrete/masonry walls, use the 20mm x 5mm steel bolt anchors provided. For steel/timber framed lightweight partitions, use 40mm x 10g laminating screws provided. The walls or partitions must be in a secure condition that will hold the anchors.

All annular gaps between the pipe and the walls/partitions must be minimum 2mm and filled with a bead of PROMASEAL®-A Acrylic Sealant.

Please consult Promat for details of PROMASTOP® UniCollar® retrofit installation to underside of floors and both sides of walls/partitions.

Other Services Penetration Seals

Retrofit installation to concrete/masonry floors

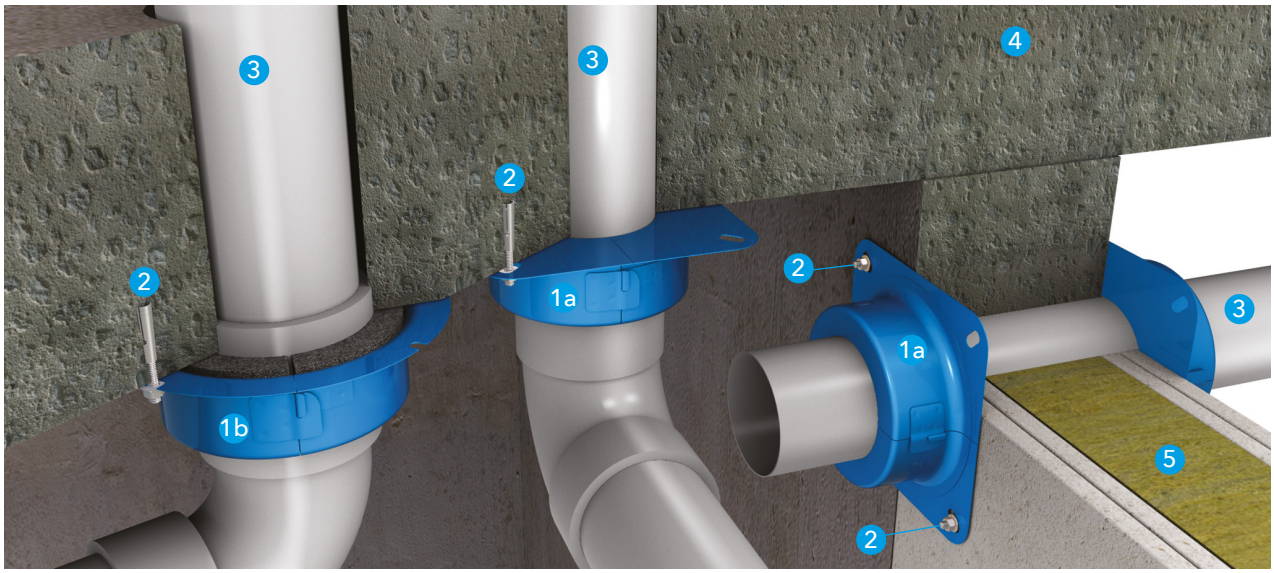
Position PROMASTOP® UniCollar® around the services and fix to the underside of the slab in the same manner as fitting for plastic pipes. Then fill any gaps inside the collar caused by the orientation of the service with PROMASEAL® Grafitex. Size of services should not exceed the inside diameter of the 100mm collar.

Retrofit installation to plasterboard walls

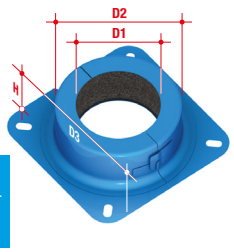
Position PROMASTOP® UniCollar® around the services and fix to the wall in the same manner as fitting for plastic pipes. Then fill any gaps inside the collar caused by the orientation of the service with PROMASEAL® Grafitex. Size of services should not exceed the inside diameter of the 100mm collar.

Please refer to illustrations on page 16 for fixing details.

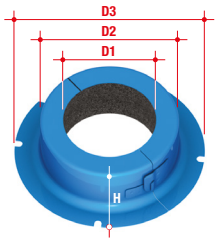
PROMASEAL® Retrofit Collar



Up to -/240/240 fire resistance in accordance with the requirements of, AS 1530: Part 4: 2014 and/or AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements



PROMASEAL® Retrofit Collar (square base)



PROMASEAL® Retrofit Collar (circular base)

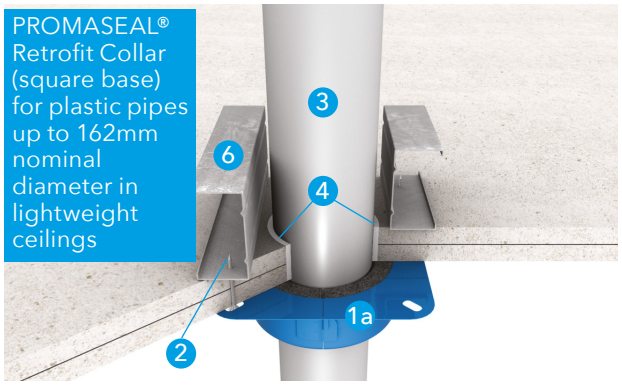
1a PROMASEAL® Retrofit Collar (square base)
1b PROMASEAL® Retrofit Collar (circular base) for use on sockets
2 Suitable fixing, i.e. steel bolt anchors for masonry/ concrete floors and walls OR laminating screws for lightweight partitions
3 Various plastic piping, e.g. HDPE, uPVC
4 Fire resistant concrete/masonry floors or walls
5 Fire resistant steel/timber framed lightweight partitions

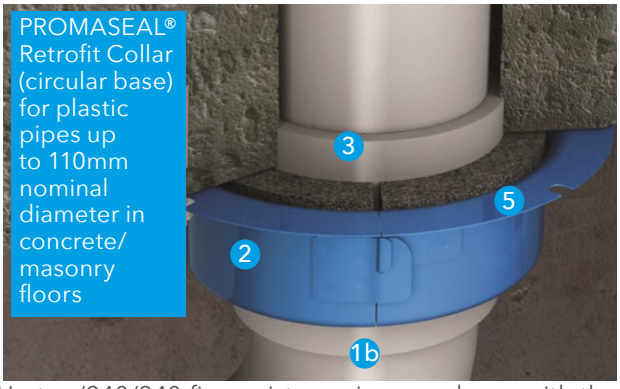
Dimensions of PROMASEAL® Retrofit Collar (square base)

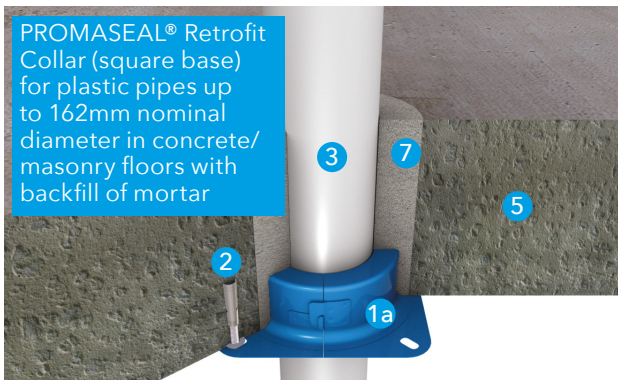
Code no.			FC 40	FC 50	FC 65	FC 80	FC 100	FC 150	FC 250	FC 300
Pipe nominal diameter		mm	40	50	65	80	100	150	250	300
Body	H	mm	43	43	43	43	53	73	120	160
	D1	mm	45	58	71	85	112	162	254	318
	D2	mm	77	90	103	123	150	200	316	402
Flange	D3	mm	112	125	138	158	185	235	380 Ø	466 Ø

Dimensions of PROMASEAL® Retrofit Collar (circular base)

Code no.			FCS 40	FCS 50	FCS 65	FCS 100
ABS Pipe nominal diameter		mm	40	50	–	100
HDPE pipe nominal diameter		mm	50	56	75	100
uPVC nominal diameter		mm	40	50	65	100
Body	H	mm	43	43	43	53
	D1	mm	56	70	84	127
	D2	mm	84	98	113	167
Flange	D3	mm	131	145	161	214







Up to -/240/240 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and/or AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements

1a PROMASEAL® Retrofit Collar (square base)
1b PROMASEAL® Retrofit Collar (circular base) for use on sockets
2 Suitable fixing, i.e. steel bolt anchors for masonry/concrete floors and walls OR laminating screws for lightweight ceilings
3 Various plastic piping, e.g. ABS, HDPE, uPVC
4 All gaps caulked with PROMASEAL®-A Acrylic Sealant to prevent cold smoke ingress when required
5 Fire resistant concrete/masonry floors
6 Steel channel fixed at position to the fire resistant lightweight ceilings
7 PROMASEAL® Mortar

PROMASEAL® Retrofit Collar (square base)

These PROMASEAL® Retrofit Collars are multi purpose collars designed for use with concrete/masonry floors or walls, lightweight partitions and lined ceilings.

These split type collars can be retrofitted where necessary. They are available in a range of sizes to suit plastic pipes up to 315mm outside diameter. The collars have been tested up to 240 minute fire resistance in accordance with the criteria of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2014 with various types and sizes of plastic pipes.

Square based PROMASEAL® Retrofit Collars above 150mm outside diameter have a circular base instead. It should be noted that the fire resistance performance can vary depending on the substrate and pipe type. Please consult Promat or the Fire Collar Selector App to ensure the proposed application and requisite fire resistance can be achieved.

PROMASEAL® Retrofit Collar (circular base)

These PROMASEAL® Retrofit Collars are designed to be fitted around installed pipes that pass through floors and have been tested with HDPE and uPVC pipes up to 100mm outside diameter in accordance with the criteria of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005.

The larger opening of the collars can accommodate the various pipes with different outside diameters. Sockets/ joiners fittings are suitable for uPVC pipes up to 100mm outside diameter. Circular based PROMASEAL® Retrofit Collars should be unclipped, placed around the pipe, re-clipped and pushed tight to the floor.

The collars have been tested up to 240 minute fire resistance in floors with uPVC pipes, up to 180 minute fire resistance in floors with different sized HDPE pipes (except 100mm which is tested up to 240 minutes), and up to 120 minute fire resistance on floors and walls.

Both square and circular based PROMASEAL® Retrofit Collars are splitable to be retrofitted or relocated when necessary.

PROMASEAL® Retrofit Collar (square base)

Plastic Pipe Penetration Seals

Retrofit installation to underside of floors

Square based PROMASEAL® Retrofit Collar (FC type) has a simple "clip and hinge" system, allowing the collar to be opened, placed or repositioned around the pipe, closed and re-clipped.

These PROMASEAL® Retrofit Collars can be used where fire resistance is required with plastic pipes up to 100mm outside diameter fixed to the soffit of concrete/masonry floors (with an equal or greater fire resistance level) through the holes at the collar flange using 25mm x 6mm steel bolt anchors or bolts. The floor must be in a secure condition for holding the anchors.

For fixing plastic pipes at 150mm outside diameter, 35mm long steel bolt anchors may be used. Plastic pipes up to 315mm outside diameter are installed with 6.5 x 50mm masonry anchors.

Backfill all annular gaps greater than 12mm between the plastic pipe and the floor with PROMASEAL® Mortar or other commercial grade mortar mix. A suitable water resistant sealant may be applied around the pipe on top side of the floor if a water seal is required.

If there is a possibility of pipe movement that might cause cracks in the mortar sealing between the plastic pipe and the floor, it is advisable to seal the pipe with PROMASEAL®-A Acrylic Sealant to prevent cold smoke ingress. However, this is not necessary for the required fire resistance performance.
Square based PROMASEAL® Retrofit Collars have been tested with various types of plastic pipes but will not accommodate fittings. This collar may also be employed to protect general building services passing through concrete/masonry floors, e.g. electrical cables, uPVC pipes and lagged copper pipes.

Retrofit installation to concrete/ masonry walls

Square based PROMASEAL® Retrofit Collars have been tested up to 120 minute fire resistance with various types of plastic pipes up to 150mm outside diameter in concrete/masonry walls with minimum 116mm thickness. The collars are attached to both sides of the walls.

Fix the collar to the wall through the holes at the collar flange using 40mm long steel bolt anchors.

Backfill all annular gaps between the plastic pipe and the wall with PROMASEAL® Mortar, other commercial grade mortar mix or PROMASEAL® A Acrylic Sealant.

For 250 & 300mm pipes, the collar are fixed to each other through the wall using a 8mm threaded rod that is bolted at both faces of the wall.

Retrofit installation to lightweight partitions

Square based PROMASEAL® Retrofit Collars can be installed:

- Up to 100mm outside diameter fixed to both sides of the partition using 10g x 40mm laminating screws.
- Pipes from 200mm outside diameter fixed to both sides of the partition with 8mm threaded rod with bolts on each end of a suitable 8mm diameter threaded bolt with nut and washer

Please refer to illustration on page 16 for fixing details.
Please refer to PROMASEAL® Wall Collar on page 18 for an alternate wall installation method.

Retrofit installation to ceilings

Square based PROMASEAL® Retrofit Collars have been tested up to 120 minute fire resistance with various types of plastic pipes up to 150mm outside diameter screw fixed to the trimmed framing of the ceiling (with an equal or greater fire resistance level) through the holes in the collar flange.

All annular gaps between the plastic pipe and the ceiling board must be no greater than 15mm and filled with PROMASEAL®-A Acrylic Sealant to the full depth of the board. Please consult Promat for specific requirements for various ceiling systems.

PROMASEAL® Retrofit Collar (circular base)

Plastic Pipe Penetration Seals
Retrofit installation to underside of floors

Circular based PROMASEAL® Collars (FCS) have been tested on HDPE and uPVC pipes up to 100mm outside diameter in concrete/masonry floors (with an equal or greater fire resistance level) with and without a pipe fitting at position. These collars are specifically designed for installing readily fixed plastic pipes to accommodate fitting of the pipe through the collar.

The large opening of the collars can accommodate HDPE pipes with different outside diameters and some imported pipe sizes.

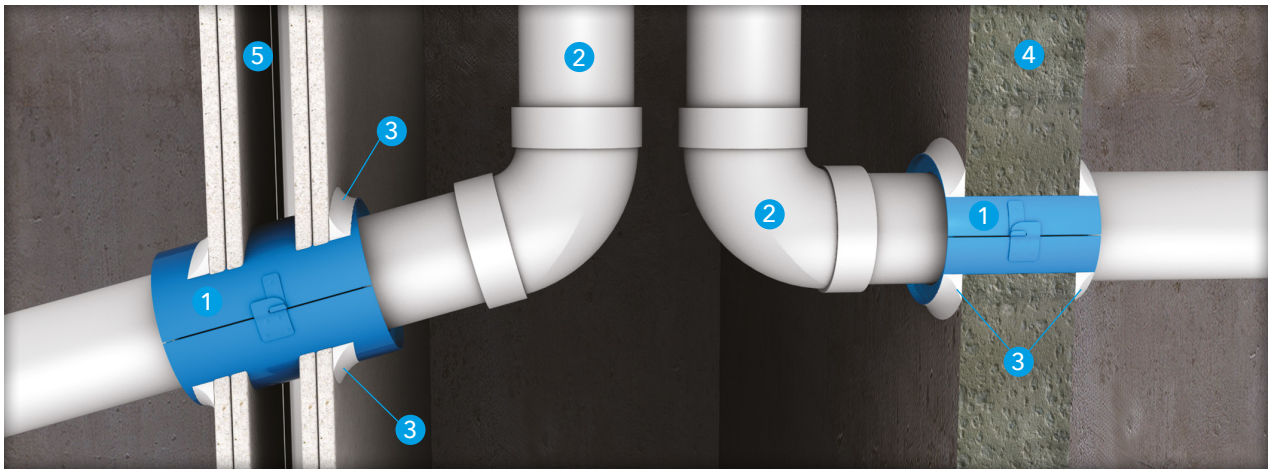
Fix the collar to the floor through all four slots at the collar flange using minimum 20mm x 5mm steel bolt anchors (e.g. Redi Drive).

If the pipes are passing cored holes of a floor that do not have to be backfilled with mortar, it is necessary to seal all annular gaps between the pipe and the floor with a bead of PROMASEAL®-A Acrylic Sealant approximately 10mm deep into the gap on underside of the floor. If the annular gap is greater than 8mm it must be backfilled with mortar.

Other Services Penetration Seals

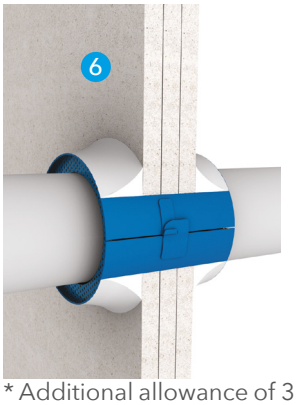
Retrofit installation to concrete/ masonry floors (or plasterboard walls)
Position either square or circular base PROMASEAL® Retrofit Collars (FC or FCS) around the services and fix to the underside of the slab (or to the plasterboard wall) in the same manner as fitting for plastic pipes. Then fill any gaps inside the collar caused by the orientation of the service with PROMASEAL® Graf 4T. Size of services should not exceed the inside diameter of the 100mm collar. Please refer to illustrations on page 19 for fixing details.

PROMASEAL® Wall Collar



Up to -/120/120 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements

1. PROMASEAL® Wall Collar
2. Various plastic piping, e.g. HDPE, uPVC
3. All gaps caulked with PROMASEAL®-A Acrylic Sealant to achieve the required fire resistance performance
4. Fire resistant concrete/masonry walls
5. Fire resistant steel/timber framed lightweight partitions
6. Hebel and three layers of 16mm thick plasterboard wall



* Additional allowance of 3mm for clip

Dimensions

Code no.			FCW 40	FCW 50
Pipe nominal diameter		mm	40	50
Body	H	mm	120	120
	D1	mm	80*	90*
	D2	mm	47	60

Code no.			FCW 65	FCW 100	FCW 150
Pipe nominal diameter		mm	65	100	150
Body	H	mm	120	120	120
	D1	mm	107*	153*	203*
	D2	mm	75	116	164

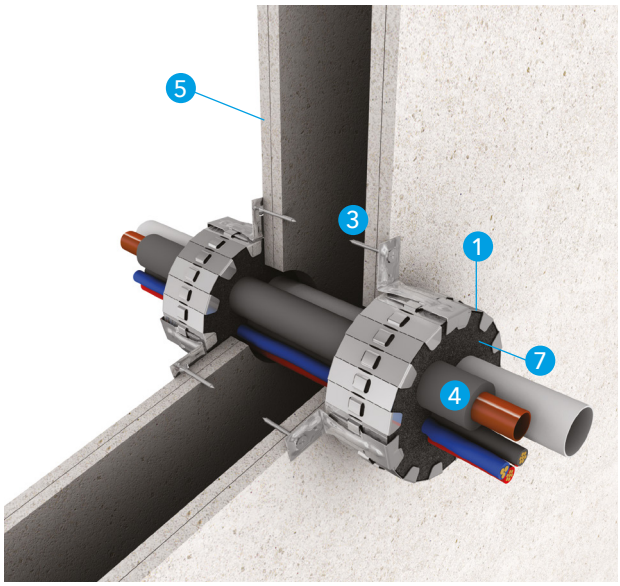
PROMASEAL® Wall Collar is designed for insertion into wall elements made of plasterboard, concrete or masonry. The collar has been tested up to 120 minute fire resistance with HDPE, PPR or uPVC pipes and general building services up to 162mm outside diameter through these wall elements (with an equal or greater fire resistance level) in accordance with the criteria of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005.

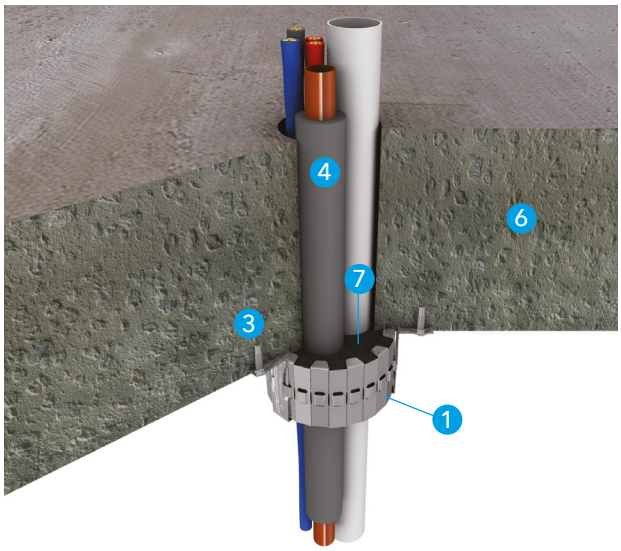
Similar to PROMASEAL® Retrofit Collar, this is a split type collar for retrofit where necessary.

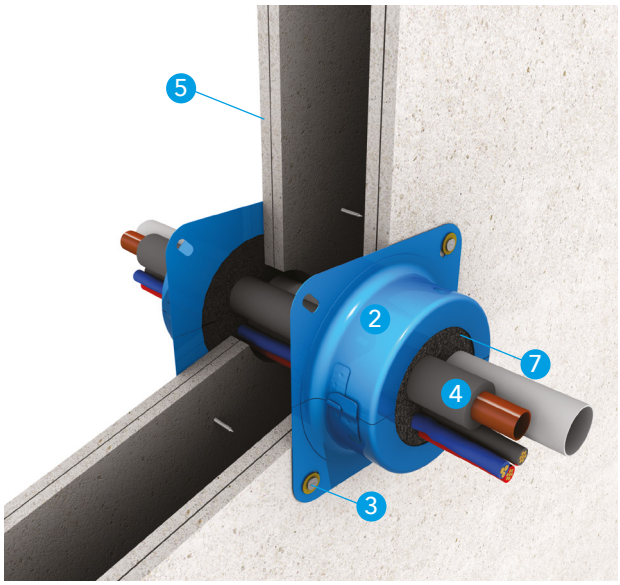
If the partition/wall is thinner than 128mm, PROMASEAL®-A Acrylic Sealant may need to be applied to the section of collar that extends from the partition/wall in order to maintain 120 minutes insulation.

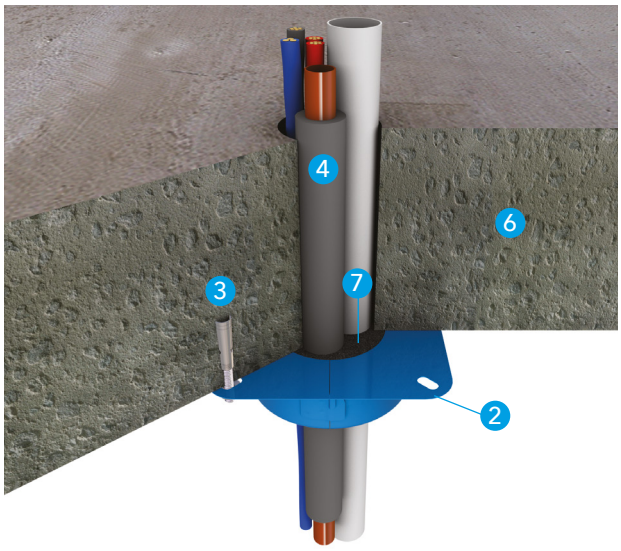
PROMASEAL® Wall Collar can be positioned at an angle providing the exposure is the similar to the original test. Multiple collars can be used for thicker walls, please consult Promat for details of the application requirements.

PROMASEAL® UniCollar® / PROMASEAL® Retrofit Collar / PROMASEAL® Wall Collar





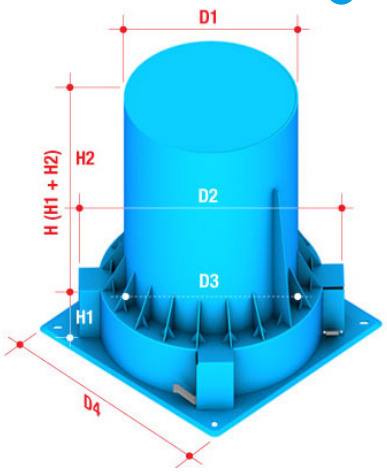




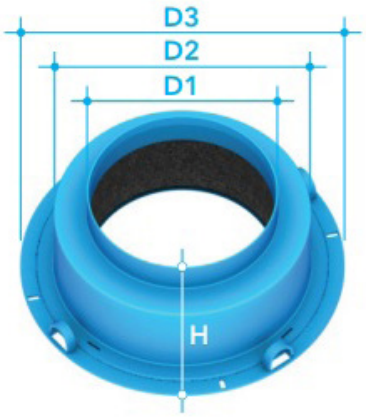
1. PROMASTOP® UniCollar®
2. PROMASEAL® Retrofit Collar (square or circular base)*
3. Suitable fixing, i.e. laminating screws for lightweight partitions OR steel bolt anchors for masonry/concrete floors
4. Various building services, e.g. electrical cables, plastic (uPVC) pipes and/or insulated copper pipes
5. Fire resistance lightweight partitions
6. Fire resistant concrete/masonry floors
7. All gaps between collars and services filled with PROMASEAL® Graf 4T

*Nominal size of 1 or 2 is maximum 100mm

PROMASEAL® CIH Collar, CIL Collar & FWC



PROMASEAL® CIH Cast-in Collar



PROMASEAL® CIL Cast-in Collar

Up to -/240/240 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements

1. PROMASEAL® CIH
2. PROMASEAL® CIL Cast-in Collar
3. Various plastic piping, e.g. HDPE, uPVC
4. Fire resistant concrete/ masonry floors

Dimensions of PROMASEAL® CIH

Code no.			CIH 65	CIH 100	CIH 150
Body	H	mm	250	250	250
	H1	mm	45	57	57
	H2	mm	205	193	193
	D1	mm	95	140	194
	D2	mm	132	178	232
	D3	mm	97	142	197
Flange	D4	mm	154	198	253

Dimensions of PROMASEAL® CIL Cast-in Collar

Code no.			CIL 40	CIL 50	CIL 65	CIL 80	CIL 100
uPVC pipe nominal diameter		mm	40	50	65	80	100
Body	H	mm	49 + 30*	49 + 30*	49 + 20*	60 + 20*	60 + 20*
	D1	mm	43	56	69	83	110
	D2	mm	115	115	115	163	163
Flange	D3	mm	160	160	160	210	210

* Additional height of upright pipe grip
NOTE: Both PROMASEAL® CIH and PROMASEAL® CIL Cast-in Collar are NOT to be used in floor wastes

PROMASEAL® CIH

Installation method
Cast-in installation to concrete/ masonry floors

Place the collar on the formwork. For the PROMASEAL® CIH 65 & CIH100, the cap can be removed to assist with locating the collar accurately.

Secure the collar into position with 20mm x 3mm flat head clouts, nailed through the notches provided. DO NOT SKEW THE NAILS.

After the formwork has been stripped and the pipe is ready to be placed into position, cut off any part of the collar that remains above the slab and insert the pipe section through the collar. PROMASEAL® CIH Collars can accommodate the uPVC pipe fittings within the collar itself, enabling space savings to be achieved.

Ensure that any concrete slurry that may have hardened on the metal base plate is removed.

The gap between the pipe and the collar must be back filled with concrete or commercial grade mortar mix. As an alternative, the gap can be filled to a depth of 20mm with PROMASEAL®-A Acrylic Sealant or any polyurethane or silicone based fire-resistant sealant.

It should be noted that if the pipe is pushed in from the top, the rubber seal will be forced downwards. Lift the pipe slightly to ensure that the rubber seal projects upwards if backfilling with concrete or mortar.

PROMASEAL® CIH Collars have been tested on permanent formwork decks such as KingFlor or Bondek. These are profiled steel decks with an uneven soffit requiring specialist application methods. Please consult Promat for details.

PROMASEAL® CIL

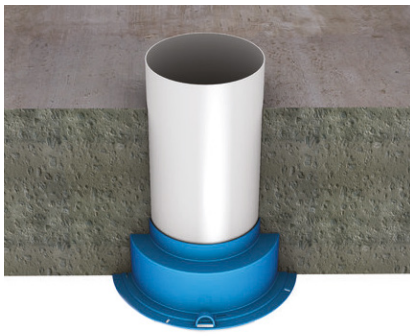
Installation method
Cast-in installation to concrete/ masonry floors

Place the collar onto the formwork. Secure the collar into position with 20mm x 3mm flat head clouts, nailed through the slots provided. Do not skew nail.

Insert a pipe section through the collar so that the end of the pipe sits flat on the formwork, ensuring the top of the pipe is higher than the finished slab depth. Ensure the pipe section remains in place and vertical during the concrete pour and immediately afterwards.

After the formwork is stripped, the short section of pipe used during casting may be knocked out of the collar and replaced with the complete pipe section.

PROMASEAL® CIL Cast-in Collars have been extensively tested on permanent formwork decks such as "KingFlor",these are profiled steel decks with an uneven soffit requiring specialist application methods. Please consult Promat for details.



PROMASEAL® FWC
(Floor Waste Cast in Collars)

Installation Instructions

Floor waste collars help prevent the passage of fire and smoke through openings in compartment floors in the event of a fire. For installation of collars on permanent form work and in thin floor slabs (<150mm) please consult Promat. These collars are available in various models and their applications depend on the certification required for the building.

PROMASEAL® Floor Waste Cast-in High Collars are designed to provide fire resistance function where floor wastes penetrate wet areas. The collars have been tested to AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005 up to-/240/240 fire resistance for cast-in floor applications with the pipe fitting within the collar.

PROMASEAL® Floor Waste Cast-in High Collars is available in one size and is suitable for 100mm uPVC, Raupiano and HDPE pipes. Minimum slab depth required is 150mm.

Installation Method
Cast-in installation to concrete/ masonry floors

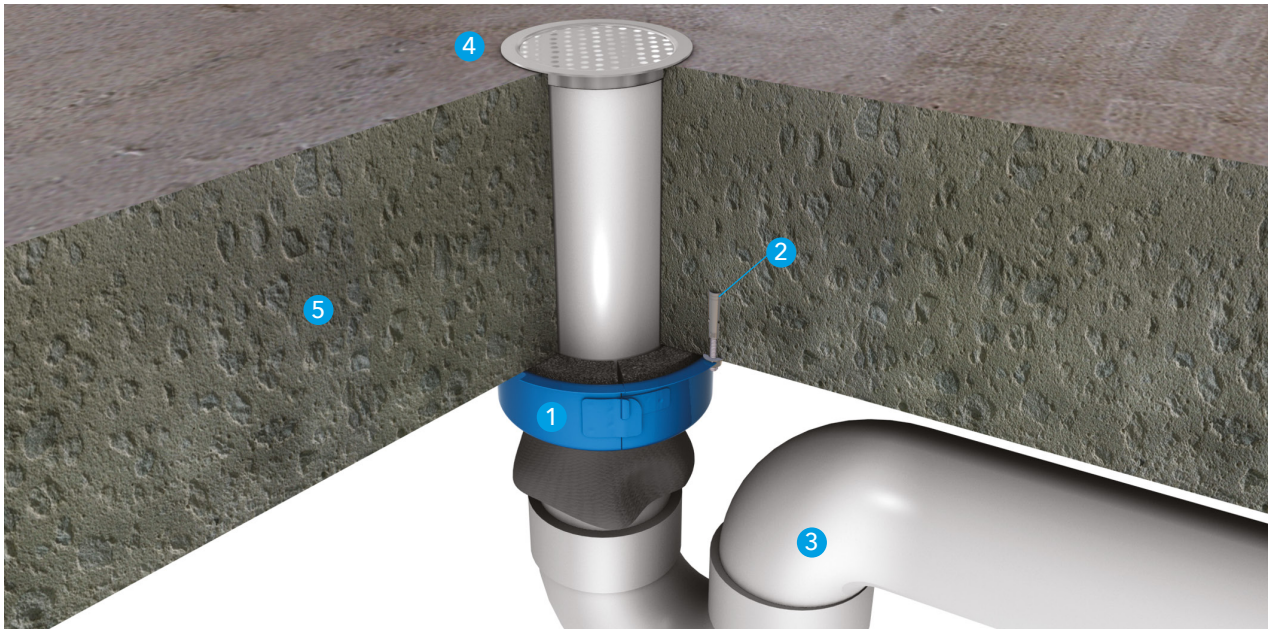
Nail or screw the collar to the formwork through the ready holes along the collar's edge. Nothing further needs to be done before the concrete is poured around the collar. Once the concrete is cured the collar can be cut off at slab level.

The protruding part of the collar is then cut off at slab level and then the pipe can pushed through the collar. No sealant is required to be applied to the gap between the pipe and the collar. The puddle flange, screed and floor waste grate are then installed.

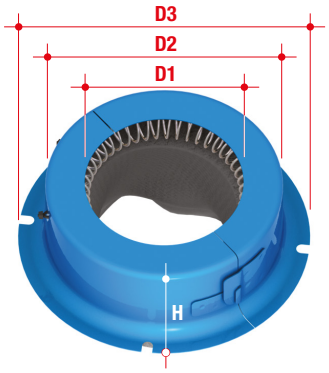
Typical Specification

Where plastic pipes used for floor wastes are to be fire resistant, use PROMASEAL® Floor Waste Cast-in Collars as tested to AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005 to maintain the required fire resistance level of the element. All details to be in accordance with the manufacturer's instructions. All work to be certified in an approved manner.

PROMASEAL® Retrofit Floor Waste Collar



Up to -/180/180 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005; insulation criteria will vary depending on type and size of plastic pipes AND the type of penetrating elements



1. PROMASEAL® Retrofit Floor Waste Collar
2. Suitable steel bolt anchors
3. uPVC plastic piping
4. Floor waste grate
5. Fire resistant concrete/masonry floors

Dimensions

Code no.			FWR 100
uPVC pipe nominal diameter		mm	50 / 80 / 100
Body	H	mm	70
	D1	mm	110
	D2	mm	167
Flange	D3	mm	209

PROMASEAL® Retrofit Floor Waste Collars are surface mounted collars manufactured with Promat intumescent technology. The collars are designed to accommodate pipe fittings within its body and provide fire resistant penetration seals for floor wastes in wet areas.

PROMASEAL® Retrofit Floor Waste Collars have been tested up to 240 minute fire resistance with uPVC pipes through concrete/masonry floors (with an equal or greater fire resistance level) in accordance with the criteria of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005 for floor waste traps up 50mm, 80mm and 100mm nominal diameters.

Where the uPVC pipes used for floor waste stack systems are fire resistant type, use PROMASEAL® Retrofit Floor Waste Collars as tested to above standards to maintain the fire resistance of the element. All works are to be certified in an approved manner.

Installation

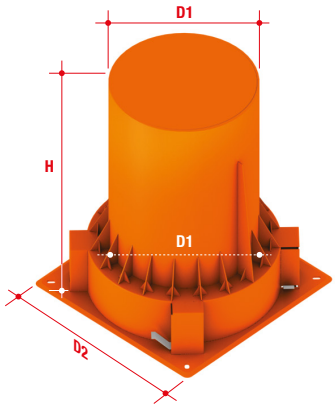
Retrofit installation to concrete/masonry floors

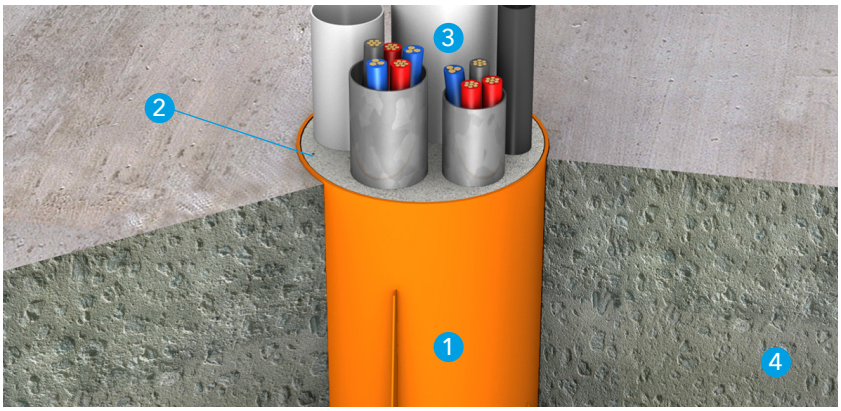
Unclip the joint of a PROMASEAL® Retrofit Floor Waste Collar and pull the collar apart into two sections. Place them around the uPVC pipe, close and re-clip.

Fix the collar to the floor through all four slots at the collar flange using minimum 35mm long 6.5mm steel bolt anchors. The cloth skirt provided inside the collar must be pulled down to its full extent.

PROMASEAL® Services Seal Collar

Up to -/180/120 fire resistance in accordance with the requirements of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005; insulation criteria will vary depending type and size of building services AND the type of penetrating elements





Dimensions

Code no.			PSS 100
Maximum diameter of services		mm	120*
Body	H	mm	250
	D1	mm	138
Flange	D2	mm	200

* Allowance of 10mm for backfill around services

PROMASEAL® Services Seal Collars are designed for attaching to formwork prior to pouring of the floor concrete. The collars have been tested with various building services (including electrical cables, lagged plastic pipes and/or combination of these within a single unit) through concrete/masonry floors in accordance with the criteria of AS 1530: Part 4: 2014 and AS 4072: Part 1: 2005 for:

- Up to -/120/120 fire resistance within a minimum 120mm thick floor (with an equal or greater fire resistance level), and
- Up to -/180/120 fire resistance within a minimum 150mm thick floor (with an equal or greater fire resistance level)

Please check with local authorities to ensure that the particular services etc are included in the scope of approvals for the application of PROMASEAL® Services Seal Collars.

Installation: Cast-in installation to concrete/masonry floors

Accurately position the PROMASEAL® Services Seal Collar on formwork and secure it firmly with nails through all four holes of the formwork and secure it firmly with nails through all four holes of the collar flange, before pouring floor concrete.

Service	Service Cross Sectional Area	Maximum number allowed
19mm copper with 9mm thick armaflex	1075mm²	4
Twin Core Electrical Cables 12+9mm	62mm²	8
3 Phase Electrical Cable 13mm dia	133mm²	2
40mm upvc	1590mm²	1
20mm upvc	314mm²	3
1/4'' + 1/2'' Pair Coil	1369mm²	4
19mm copper with 13mm thick armaflex	1590mm²	4
19mm copper with 25mm armaflex	3739mm²	2

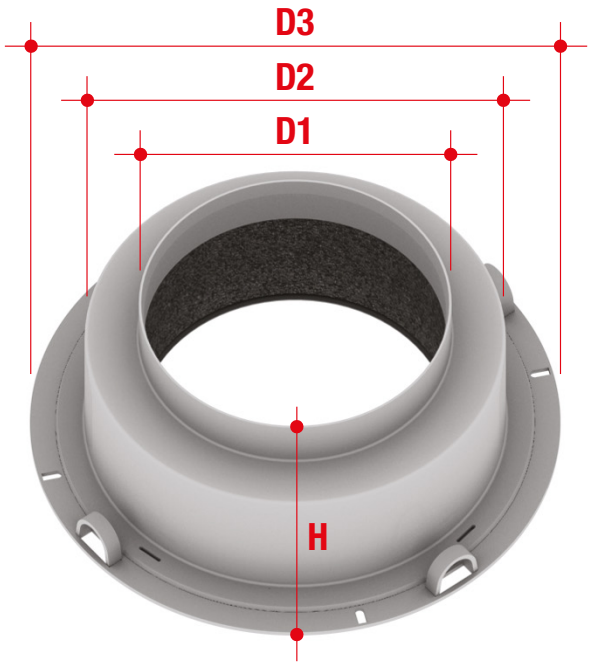
Before installing the services, trim off any ends of the collar that extends above the floor and replace the cap at the floor level to prevent debris from entering the collar.

After installing the services, backfill the collar with PROMASEAL® Mortar up to a level with the floor. Ensure the mortar mix does not reach below the level of the intumescent inside the collar to avoid interfering with its closing/sealing function. This can be easily achieved by slightly lifting the services after they are installed to ensure the intumescent projects upwards.

If the services are tightly packed and not practical for backfill with mortar, use PROMASEAL®-A Acrylic Sealant or trowel grade PROMASEAL® Grafitex instead and inject it to the maximum depth with and around the services as well as above the intumescent.

PROMASEAL® Services Seal Collar leaves a neat appearance after removal of formwork and prevents the steel reinforcement from any exposure caused by coring.

PROMASEAL® PipeSeal® Cast-in Collar



1. Promat PipeSeal® Cast-in Collar
2. uPVC plastic piping
3. Fire resistance concrete/ masonry floors

Promat PipeSeal® Cast-in Collar is designed to be fixed to the formwork prior to pouring concrete floor slabs to provide openings in floor slabs for non fire resistant plastic pipe penetrations. The collar is available in FIVE (5) sizes to accommodate pipes with an outside diameter of 43mm, 55mm, 69mm, 83mm or 110mm.

Installation

After the formwork has been stripped, the piece of pipe may be removed from the collar leaving an opening in the floor ready for the installation of the service.

Promat PipeSeal® Cast-in Collars leave a neat appearance after stripping and prevents the exposure of the steel reinforcement caused by coring.

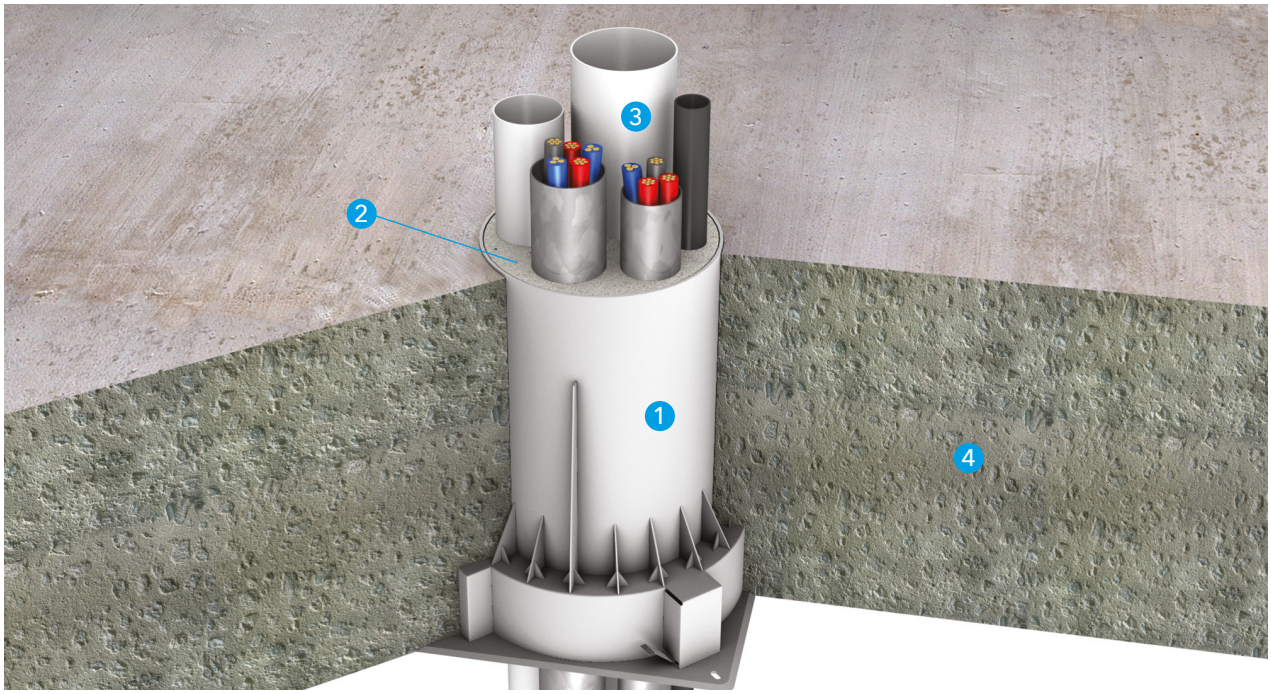
Promat PipeSeal® Cast-in are designed to provide openings in cast slabs. The product will not provide a seal in the event of a fire and has no fire resistance level classification.

Dimensions

Code no.			PPS 40	PPS 50	PPS 65	PPS 80	PPS 100	PPS 150
uPVC pipe outside diameter		mm	43	55	69	83	110	160
uPVC pipe nominal diameter		mm	40	50	65	80	100	170*
Body	H	mm	78	78	68	78	78	150
	D1	mm	43	55	69	83	110	190
	D2	mm	115	115	115	163	163	190
Flange	D3	mm	160	160	160	210	210	253

* Allowance of 10mm for backfill around pipes

Promat MultiSeal® Cast-in Collar



1. Promat MultiSeal® Cast-in Collar
2. PROMASEAL® Mortar
3. Various building services, e.g. electrical cables
4. Fire resistance concrete/ masonry floors

Dimensions

Code no.			MSS	MSM	MSL
Maximum diameter of services		mm	75*	120*	170
Body	H	mm	250	250	250
	D1	mm	95	140	190
Flange	D2	mm	155	198	253

* Allowance of 10mm for backfill around services

Promat MultiSeal® Cast-in Collar is designed to be fixed to the formwork prior to pouring concrete floor slabs to provide openings in floor slabs for multiple service penetrations.
Promat MultiSeal® Cast-in Collar is available in THREE (3) sizes:

1 Small, for services up to nominal 75mm diameter;
2 Medium, for services up to nominal 120mm diameter; and
3 Large, for services up to nominal 170mm diameter.

Installation

Promat MultiSeal® Cast-in Collars leave a neat appearance after stripping and prevents the exposure of the steel reinforcement caused by coring. Trim off any of the part that extends above the floor slab.
After the installation of the services, backfill the collar with a mortar mix to the full height of the floor slab.
Promat MultiSeal® Cast-in collars are designed to provide openings in cast slabs. The product will not provide a seal in the event of a fire and has no fire resistance level classification.

PROMASEAL®-A

Control joint seals in junctions between a lightweight partition and a concrete/masonry wall

Up to -/120/120 fire resistance in accordance with the requirements of AS4072.1: 2005 and/or AS 1530: Part 4: 2014, depending on applications and types of penetrating elements

PROMASEAL®-A Acrylic Sealant is a water based acrylic sealant. The advantages of water-based sealant is that post installation and/or site cleanup is very easy. It is also low VOC. If installed correctly and once cured, PROMASEAL®-A Acrylic Sealant should not crack, and it can be over painted with acrylic based paints.

PROMASEAL®-A has been tested and approved in accordance with AS 1530: Part 4: 2014 & AS 4072: Part 1: 2005. It is integral to most approved penetration seal systems including PROMASEAL® Bulkhead Sealer System, PROMASEAL® Pillows, PROMASIL®1100 Super, PROMASEAL® Mortar and PROMASEAL® & PROMASTOP® Fire Collars.

It also has a range of approvals for use in small openings in substrates including concrete, Fire Rated Plasterboard, AAC Panels and Speedpanel.

Generally, the PROMASEAL®-A will be applied where single or small bundles of services are installed through an aperture with limited space between the service and substrate. Approvals are available for both wall and floor penetrations. Also approved to seal penetrations in accordance with NCC Spec C3.15

PROMASEAL®-A has approvals for the protection of low movement joints in both floor and wall installations.

PROMASEAL®-A is available is either 300ml cartridges or 600mm sausages in either Grey or White. Box quantity is 12 for either size.

Handling Information

- Storage and transport temperatures between 3°C and 35°C.
- Skin formation after approx. 15 mins (@ 20°C and 65% RH)
- Can be overpainted after 24 hours; adhesion and compatibility must be checked
- Once opened containers should be fully used as soon as possible
- Clean tools with water after use
- Ensure there is sufficient space around the service to be able to install the correct amount of material. If insufficient then space needs to be created.
- Air and substrate temperature must be between 5°C and 40°C at time of installation.
- Relative humidity less than 65%.
- Installations done outside of the limits above will result in extended drying / cure time and may lead to slumping.
- Substrate must be free of oil, grease, and dust
- Use water or water diluted PROMASEAL®-A (approx. 50% water) as a primer for absorbent substrates
- Dried and cured product is intended for use at temperatures between -20°C and 70°C with exposure to UV but no exposure to rain (Equivalent to ETAG Use Category Y1)
- PROMASEAL®-A is not recommended for use in external or wet areas and should not be used where continuous water immersion is likely, or areas where the atmosphere is continually wet or damp.

PROMASEAL®-A Acrylic Sealant is a water based acrylic sealant. The advantages of water based sealant is in making post installation and/or site clean up very easy. It is also environmentally friendly. If installed correctly and once cured, PROMASEAL®-A Acrylic Sealant should not crack and it can be simply over painted. It has good resistance to water characteristics and some movement capabilities.

There are, however, some key points to remember:

- PROMASEAL®-A Acrylic Sealant is not recommended as an external water seal.
- It should not be used where continuous water immersion is likely.
- It should not be used in areas where the atmosphere is continually wet or damp, e.g. bathrooms.

- It is not recommended for use in high movement joints. In fact, PROMASEAL®-A Acrylic Sealant should not be employed in joints that require more than ±15% movement.

General Application Considerations

PROMASEAL®-A Acrylic Sealant will adhere to a wide range of surfaces. All common foam backer rods are suitable as bond breakers. Surfaces do not need priming if dust free. If in doubt, apply the diluted (by adding 50% water) PROMASEAL®-A Acrylic Sealant to the surfaces by brush.

It is essential that the correct width to depth ratio of PROMASEAL®-A Acrylic Sealant is maintained in control joint seals (see table on page 31).

In order to cure correctly, PROMASEAL®-A Acrylic Sealant must not be subjected to high humidity or moisture during the curing period. Please refer to Exterior And Fire Resistant Seals In Control Joints below.

PROMASEAL®-A Acrylic Sealant should not be applied if the air temperature is below 5°C or above 35°C. If the prevailing ambient temperature is outside this range it may effect the curing of the sealant; the surface temperature of the separating elements must also be taken into consideration.

Maintenance Painting

Once properly cured, PROMASEAL®-A Acrylic Sealant may be finished and is compatible with most paints. Please confirm the compatibility of the paint and sealant by conducting a small scale test sample before use.

Clean Up

PROMASEAL®-A Acrylic Sealant is water based and can thus be cleaned up with water. Please check the latest local regulations for the correct disposal of waste product and waste cleaning water.

Acoustic Applications

PROMASEAL®-A Acrylic Sealant has been approved for use with certain acoustic ratings. Please refer to page 31 for the STC value performance levels of the sealant in control joint seals.

Exterior And Fire Resistant Seals In Control Joints

If PROMASEAL®-A Acrylic Sealant has to be used externally, it must be applied in strict accordance with the manufacturer's instructions. The surfaces to which the sealant is to be applied must be dust free to ensure correct adhesion. PROMASEAL®-A is not recommended for external use or in areas with a continually moist atmosphere.

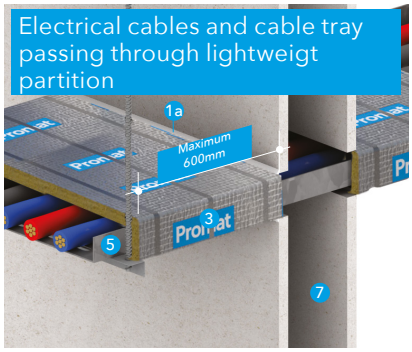
Backer rod should be inserted into the joint at a position which allows the correct depth of sealant to be applied. It is important to follow the chart provided by the manufacturer for this depth. Do not install the sealant to a depth greater than recommended.

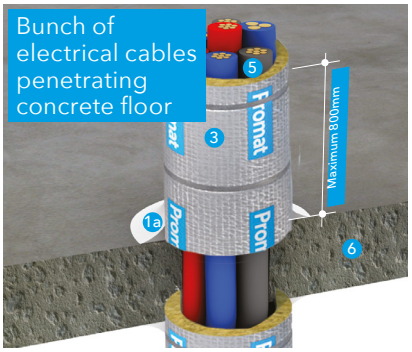
The PROMASEAL® A Acrylic Sealant must be protected from the elements (e.g. water, freezing etc) until it is fully cured. The curing period will vary depending upon prevailing weather conditions and the size (width or depth) of the joint. Dampness from surrounding building elements can lead to prolonged curing periods.

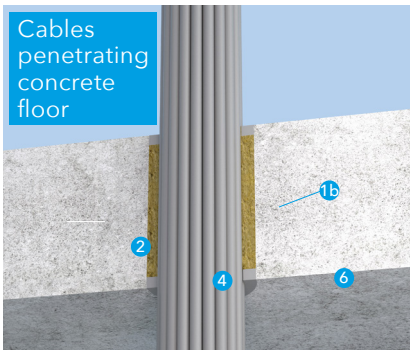
For maximum long term aesthetic properties, the sealant should have a film preservative (paint) applied over. This coating must be maintained. For exterior use however, such a coating is often not acceptable or even practical. For example, consider maintaining the paint on a multi storey building.

For these and other reasons, Promat does not recommend the use of this product for exterior application. Promat and its official associates will not issue warranties for such exterior applications.

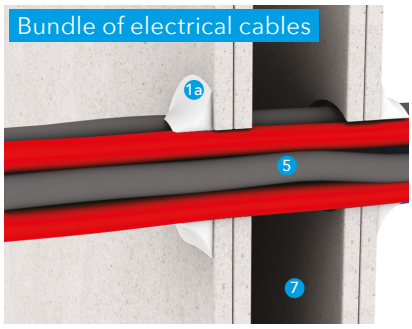
PROMASEAL®-A Acrylic Sealant







Up to -/120/120 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements

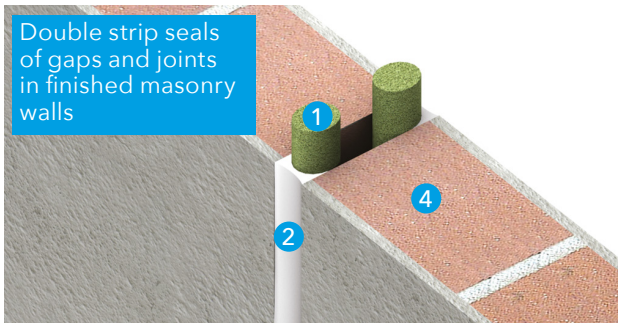


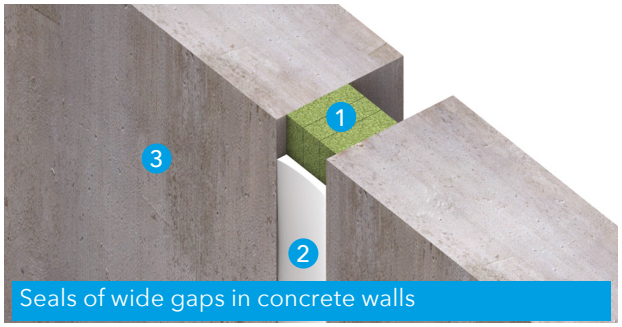
1a PROMASEAL®-A Acrylic Sealant for penetration seals of electrical cables and cable trays (up to -/180/180 fire resistance) in floors and partitions
1b PROMASEAL®-A Acrylic Sealant for penetration seals of cored hole-fixed metal pipes (up to -/120/120 fire resistance) or cast-in metal pipes (up to -/120/120 fire resistance) in floors and partitions
2 Polyethylene backing rods (or PROMASEAL® IBS™, see pages 29 and 30)
3 PROMASEAL® SupaWrap
4 Non combustible metal pipes* up to 150mm nominal diameter
5 Electrical cables with or without supporting cable tray/steel trunking
6 Fire resistant concrete floors
7 Fire resistant steel/timber framed lightweight partitions

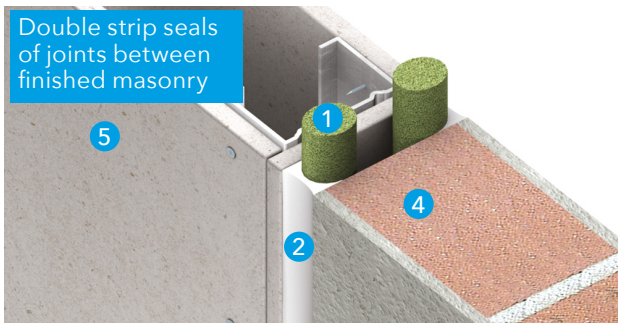
All above penenetraton sealing systems apply equally to concrete, masonry, plasterboard and dry construction materials where the structure has a fire resistance level equal or greater than the proposed system.

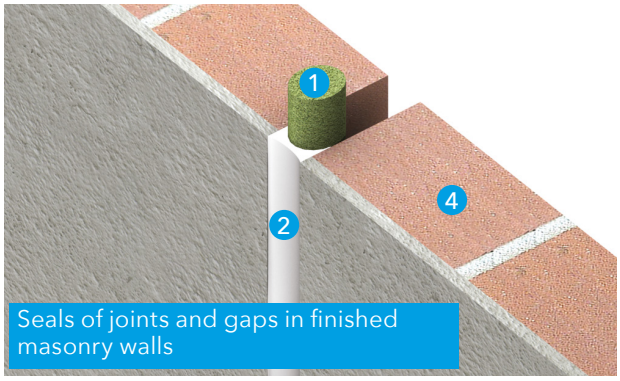
*Use of copper pipes instead might affect the overall fire resistance performance of the penetration seal due to the fact that copper is a high conductor of heat. Please consult Promat for application of PROMASEAL®-A Acrylic Sealant on penetration seals of copper pipes

PROMASEAL® IBS™









1. PROMASEAL® IBS™ dimension in accordance with the table on page 30
2. Joints and gaps filled with PROMASEAL®-A Acrylic Sealant, minimum depth in accordance with the table on page 31
3. Fire resistant concrete floors or walls
4. Fire resistant masonry walls
5. Fire resistant steel/timber framed lightweight partitions

Up to -/120/120 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements

PROMASEAL® IBS™ is a fire resistant, flexible foam strip which, when placed in joints and around service penetrations in floors and walls, will maintain the fire resistance of the separating element. In most instances the addition of PROMASEAL®-A Acrylic Sealant is necessary. On some occasions a non fire resistant sealant can be applied. See table on page 31 for control joints.

PROMASEAL® IBS™ is a factory made product and can be easily verified as being installed in the correct manner.

PROMASEAL® IBS™ generally is used in lieu of a fire resistant sealant where the specifying authority or certifying body is concerned that the correct depths of sealant or the correct type sealant may not be applied by the contractor.

PROMASEAL® IBS™ accommodates movement in building services, e.g. the expansion or contraction of metal pipes, while maintaining the integrity of the penetration. It can be used for external wall joints in conjunction with an exterior grade sealant.

PROMASEAL® IBS™ is not designed for use in control joints that are designed to accommodate high or ongoing movement.

As a general rule, PROMASEAL® IBS™ should be compressed by approximately 20% when inserted into the joint or gap. This will then accommodate small movements. If movement is an important factor in the choice of product, please refer to details of PROMASEAL® FyreStrip on page 33.

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 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. Applications that have

been tested in the ceilings, floors, walls and partitions (with an equal or greater fire resistance level) include:

- Metal pipes up to 150mm nominal diameter through concrete floors;
- Fire dampers through floors and walls;
- Gaps and joints in walls, control joints in lightweight partitions;

Dimensions

PROMASEAL® IBS™ is supplied in plastic bags and is ready for use. It is available in the following standard dimensions:

- 16mm diameter round strip
- 22mm diameter round strip
- 29mm diameter round strip
- 38mm diameter round strip
- 50mm x 20mm thick flat strip
- 100mm x 10mm thick flat strip

Guide To Seals Of Joints & Gaps Butt Joints

Where joints occur between lengths of PROMASEAL® IBS™ and sealant is not used, the fire resistance of the system can be maintained by applying an additional 50mm long strip of PROMASEAL® IBS™ over the joint on either the exposed or unexposed face. Alternatively, apply PROMASEAL®-A Acrylic Sealant over the butt joint to a depth of 5mm with a minimum of 5mm coverage on either side of the butt joint.

Intermediate Joint Widths

For joint widths that fall between the dimensions in the chart below, use the PROMASEAL® IBS™ applicable for the next size up.

Uneven Joint Widths

Joints in floors, concrete walls and plasterboard walls are generally even. However, joints in masonry walls and between floor slabs and walls are likely to vary. In these instances it is recommended that wherever possible install the size of PROMASEAL® IBS™ which will accommodate the widest part of the joint. It is also recommended that sealant is applied over the top of the PROMASEAL® IBS™ if there is any likelihood of the uneven surface of the substrates resulting in through gaps between the PROMASEAL® IBS™ and the building element.

Dimensions Of PROMASEAL® IBS™ For Seals In Gaps And Joints Of Floors Or Walls

*If sealant is not used in this application the fire resistance achieved will be -/180/90. For joints up to 30mm wide it is possible to install a 10mm thick PROMASEAL® IBS™ into the joint on the element's side exposed to fire without a sealant coating.

** If sealant is not used in this application the fire resistance achieved will be -/240/180. For joints up to 30mm wide it is possible to install a 12mm thick PROMASEAL® IBS™ from the element's side unexposed to fire without a sealant coating.

The non fire resistant sealant consists of acrylic, silicone or polyurethane based materials. To install PROMASEAL® IBS™, compress and insert into the joints. For gaps up to 30mm, it is possible to install the PROMASEAL® IBS™ in the centre of the depth/ thickness of the floor or wall without a sealant fill. The fire reistance achieved depends on the existing fire resistance level of the building element in which the PROMASEAL® IBS™ is installed.

Installation

The fire resistance achieved with PROMASEAL® IBS™ will vary depending on applications and types of the penetrating element, and the orientation of both application and element. Please consult Promat for the latest fire test approvals.

Metal pipes through cored or existing openings

Fire resistance performance up to -/180/180 with Fyreguard or up to -/180/- without Fyreguard.

Please select the correct dimensions of PROMASEAL® IBS™ to suit the

Table 1 Joints in concrete walls D

Configuration	Maximum joint width (mm)	Nominal dimension of IBS™ (mm)	Minimum depth of non fire resistant sealant (mm)	Maximum fire resistance
System to non fire side only	18	22	9	-/240/120
	30	38	12	-/240/120
	35	38	12	-/240/120
	54	80	20	-/180/120
	65	80	20	-/180/120
System to fire side	18	22A	15	-/180/60
	30	40B	15	-/180/60
	35	40B	15	-/180/60
	54	80C	20	-/180/60
	65	80C	20	-/180/60
System to mid depth	18	18	NA	-/60/45

Notes
A Up to a depth of 40mm B Up to a depth of 40mm C Up to a depth of 50mm
D The concrete wall must be either designed in accordance with AS 3600:2018 by others (as apropriate) or tested for required period of fire performance by an accredited testing laboratory (ATL)

gaps around the penetrating pipes. The maximum gap width should not exceed 35mm.

PROMASEAL® IBS™ will always require a coating layer of PROMASEAL®-A Acrylic Sealant.

Please note the following general user guide:

For gaps up to 10mm	See PROMASEAL®-A Acrylic Sealant for control joint seals on page 29
For gaps 10-13mm	16mm thick PROMASEAL® IBS™
For gaps 13-18 mm	22mm thick PROMASEAL® IBS™
For gaps 18-24 mm	29mm thick PROMASEAL® IBS™
For gaps 24-35 mm	38mm thick PROMASEAL® IBS™

Set a 5mm thick PROMASEAL® IBS™ below the surface of the penetrating element. Apply a 10mm thick sealant along the pipe and the taper to 30mm onto the surface of the element.

Metal pipes through PROMASEAL® Mortar backfill

Fire resistant performance up to -/240/120.

There may be requirements in some instances for the fire seal to accommodate the movement of metal pipes. In these cases, before PROMASEAL® Mortar is installed, wrap the PROMASEAL® IBS™ (cut from a 100mm x 10mm thick flat strip) around the pipes. Hold in place with a wire tie or adhere with PROMASEAL® AN Acrylic Sealant.

It is also prudent to provide some separation between the PROMASEAL® Mortar and any copper pipe to ensure that there will be no chemical reaction between the mortar and the copper.

For floor applications, the PROMASEAL® IBS™ should project some 40mm above the mortarline. Apply PROMASEAL®-A Acrylic Sealant over the PROMASEAL® IBS™ to a depth of 45mm from the mortar and 20mm from the pipe surface. Form a cone shape similar to a volcano.

For wall applications, the PROMASEAL® IBS™ is installed to the full thickness of the wall and should remain flush with both sides of the wall.

Metal pipes through 60 minute fire resistant ceilings with two layer 16mm plasterboard

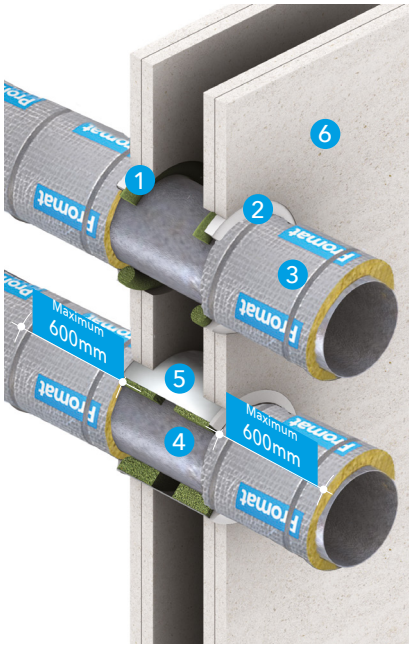
Fire resistant performance up to -/60/60 or -/60/-.

For pipes up to 100mm nominal diameter with a maximum 15mm aperture, install 50mm x 20mm thick flat PROMASEAL® IBS™ around the pipe to finish flush with the side of the ceiling. Apply PROMASEAL®-A Acrylic Sealant to a depth of 5mm by extending 30mm onto the ceiling surface. It is necessary to install a steel wire cage above the ceiling if insulation criteria is required. Please see the above said metal pipes through cored or existing openings. Combustible insulation through floors, walls and partitions.

Where insulated pipes pass through openings in floors, walls or partitions, it is essential that any combustible insulation be protected. This can be achieved using fire collars, PROMASEAL® FlexiWrap or PROMASEAL® Grafitex.

If these options are not practical, then the combustible insulation must be replaced with a non combustible insulation for a minimum distance of 400mm on each side of and passing through the floor, wall or partition.

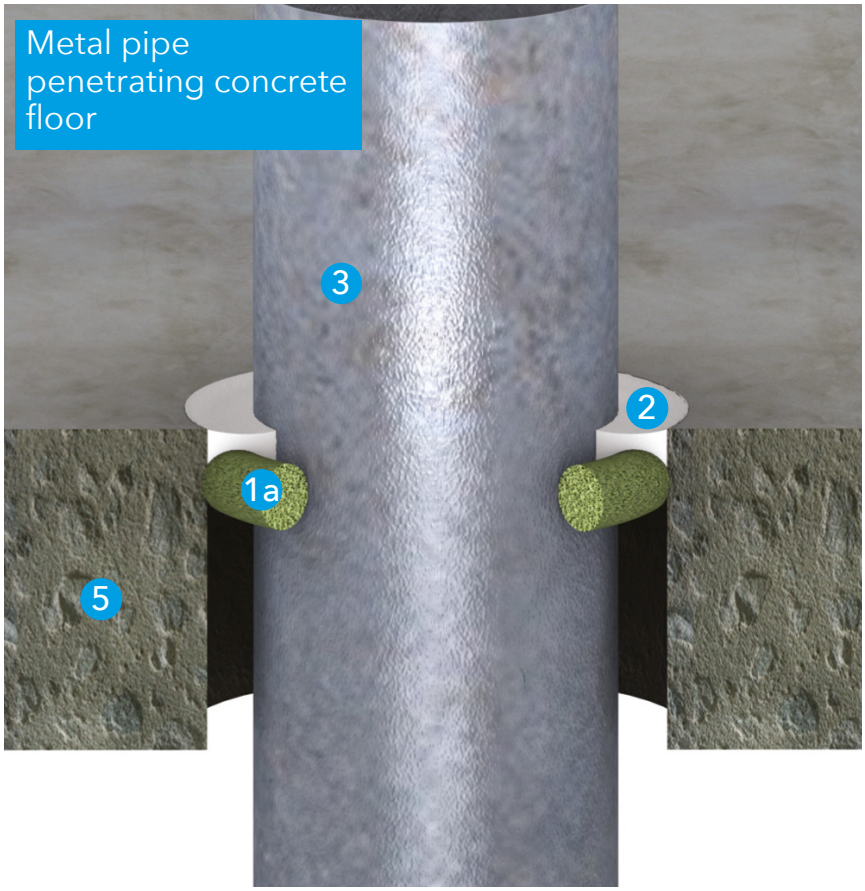
Any gaps no more than 30mm between a floor opening and pipe insulation should be sealed with PROMASEAL® IBS™ compressed into the gap, set approximately 5mm below the floor surface. PROMASEAL®-A Acrylic Sealant is applied over the PROMASEAL® IBS™ to a depth of 20mm and on to the floor surface for minimum overlap of 15mm. A maximum pipe diameter of 75mm with 25mm of insulation applies.



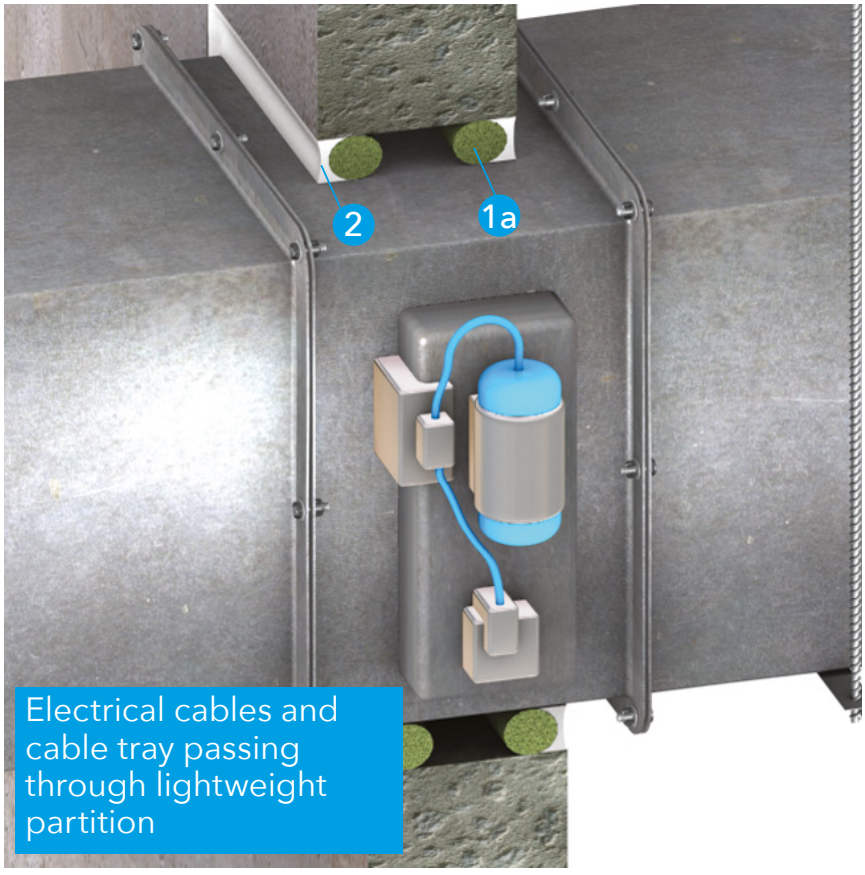
Up to -/240/120 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements

1. PROMASEAL® IBS™ dimension in accordance with the table on page 30
2. Joints and gaps filled with PROMASEAL®-A Acrylic Sealant, minimum depth in accordance with the table on page 31
3. PROMASEAL® SupaWrap
4. Non combustible metal pipes
5. Steel sleeve to close off cavity
6. Fire resistant steel/timber framed lightweight partition

For walls and partitions, apply the removal of the insulation and reinstatement using non combustible insulation. The maximum gap between the insulation and wall is 10mm. Insert 22mm thick PROMASEAL® IBS™ into this gap, set approximately 10mm from the wall surface and apply PROMASEAL®-A Acrylic Sealant to a depth of 20mm and extend onto the surface of the element to give minimum 10mm overlap on the element.

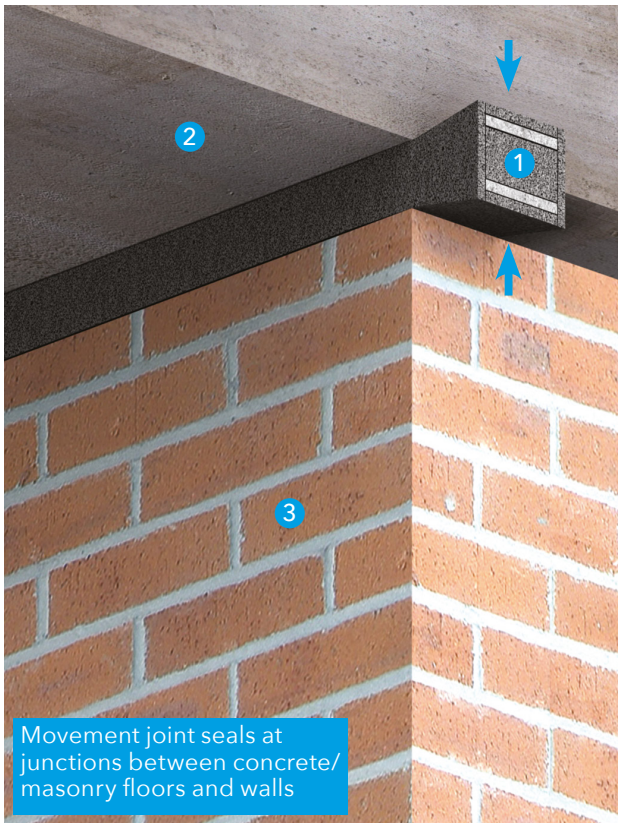


1a PROMASEAL® IBS™ dimension in accordance with the table on page 30
1b PROMASEAL® IBS™ thickness in accordance with the table on page 31
2 Joints and gaps filled with PROMASEAL®-A Acrylic Sealant, minimum thickness in accordance with the table on page 31
3 Non combustible metal pipes*
4 Steel wire mesh to maintain distance from combustible materials where insulation criteria is required (please consult Promat for details)
5 Fire resistant concrete floors or walls

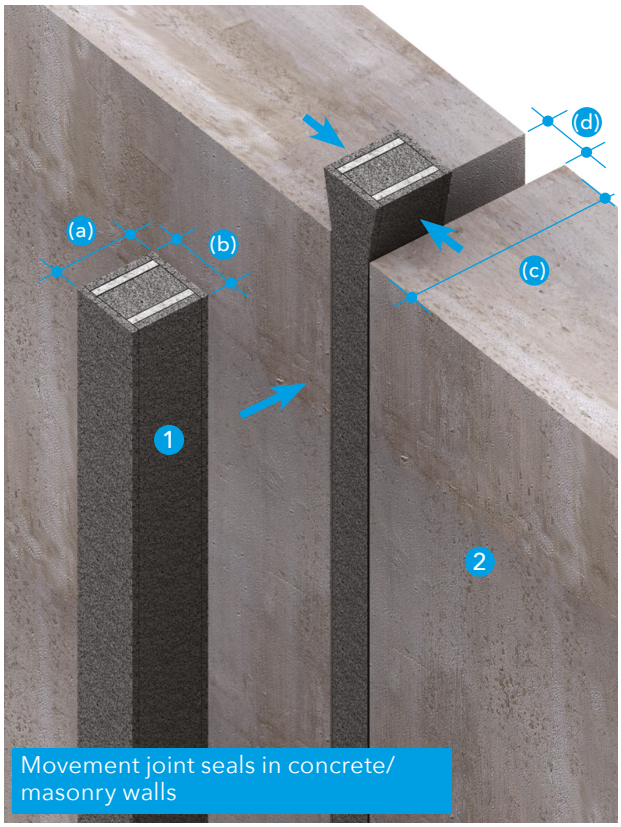


*Use of copper pipes instead might affect the overall fire resistance performance of the penetration seal due to the fact that copper is a high conductor of heat. Please consult Promat for application of PROMASEAL® IBS™ on penetration seals of copper pipes. Alternatively, apply a PROMASEAL® Wrap or mesh guard.

PROMASEAL® FyreStrip



Movement joint seals at junctions between concrete/ masonry floors and walls



Movement joint seals in concrete/ masonry walls

Up to -/240/240 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements. Movement joints at the top of the hollow block and cavity walls AND the cavity within the hollow block walls must be sealed for a minimum one strip of PROMASEAL® FyreStrip, otherwise the hollow block and cavity walls will need to be capped.

1. PROMASEAL® FyreStrip
2. Fire resistant concrete/masonry floors or walls
3. Brick walls

Code no.		FS 20	FS 40	FS 50	FS 80	FS 100
(a) Depth of FyreStrip	mm	70* 90	70* 90	90	100	120
(b) Width of FyreStrip	mm	28	46	56	84	124
(c) Minimum thickness of penetrating elements	mm	170 (-/240/240) 150 (-/180/180) 120 (-/120/120)	170 (-/240/240) 150 (-/180/180) 120 (-/120/120)	170 (-/240/240) 150 (-/180/180) 120 (-/120/120)	170 (-/240/240) 150 (-/180/180) 120 (-/120/120)	170 (-/240/240) 150 (-/180/180) 120 (-/120/120)
(d) Minimum gap width for insertion of FyreStrip	mm	16	24	32	48	64
Minimum gap width at full compression	mm	12	16	24	36	44
Maximum gap width at full expansion	mm	20	40	50	80	100

PROMASEAL® FyreStrip is a highly compressible, flexible, fire resistant expansion strip seal which is used where movement joints are formed in the structure of a building. It consists of layers of PROMASEAL® Grafitex intumescent material bonded to a special foam and it has been successfully tested for up to 240 minute fire resistance for movement joint seals within concrete/masonry compartment floors and walls (with an equal or greater fire resistance level).

The flexibility of PROMASEAL® FyreStrip is suitable for use in a variety of configurations. The fire resistance performance of PROMASEAL® FyreStrip will vary depending on applications and types of the penetrating elements. The gap width for which the FyreStrip will be inserted and the orientation of the insertion will affect the level of its fire resistance performance.

PROMASEAL® FyreStrip has been tested up to 240 minute fire resistance in accordance with the criteria of AS 1530: Part 4: 2014 for high movement control joints in building elements. These typical applications include:

- Joints between old and new constructions that are aligned, i.e. the existing building is being extended.
- Joints in floor slabs that are used for vehicles and require a high degree of flexibility.
- Joints in PROMATECT 100 walls and Ceilings for up to -/120/120

Selection Of Correct Materials

The thickness of PROMASEAL® FyreStrip is determined by the minimum or maximum width of the gap expected during the lifetime of the building element. The thicknesses should not be less than the maximum expected widths (please refer to the table on page 33). The depth of PROMASEAL® FyreStrip is a function for the gap width and the required fire resistance performance.

PROMASEAL ® FyreStrip is available in 1000mm lengths.

It may be readily cut to suit a particular length. When more than one length is required for sealing a joint, ensure that the two strips are tightly abutted so that there is no gap between the adjoining ends. At the ends of each joint, ensure the strip is fitted tight to the adjoining surface.

If a smoke or water seal is required, apply a suitable sealant in accordance with the manufacturer's instructions.

PROMASEAL® FyreStrip is non load-bearing. If the area of installation is trafficable, a suitable plate should be fixed over the joint. Such plates must also allow for the expected movement.

PROMASEAL® FyreStrip is suitable for use in concrete/masonry floors and walls with a fire resistance level equal or greater than 240 minutes. For lightweight partitions, PROMATECT 100 walls and PROMATECT 100 ceilings 120 minute fire resistance can be achieved in movement joints up to a maximum gap width of 50mm.

Installation

As the thickness of PROMASEAL® FyreStrip is determined by the minimum or maximum width of the gap expected during the lifetime of the building element, it is therefore important to insert the PROMASEAL® FyreStrip so that the Grafitex sits parallel to the direction of movement. One end of the appropriate size of the FyreStrip is simply compressed between fingers and thumb until it can be inserted into the required gap. Make sure the label is facing outwards.

The strip can then be progressively pushed in to the joint. If it is difficult to insert, the strip may be knocked in to place with a hammer handle, rubber mallet or by placing a piece of timber along the length of the strip and knocking the timber.

Alternatively, the strip can be inserted in between two sleeves of sheet metal to provide ease of installation. Once in position the two sleeves can be withdrawn and reused. It is advisable to insert each strip progressively along its length.

For joints at the top of hollow block and cavity walls, the block must be sealed for a minimum of one course or the cavity wall will need to be capped on top. The strip must be centrally located in the wall or floor joint. In cold conditions it is advisable to store the strip in a warm atmosphere immediately prior to installation as this improves compressibility.

The strip may readily be cut to suit a particular length. When more than one length of PROMASEAL® FyreStrip is required in a joint, ensure the two pieces are butted tight together and there is no gap between the adjoining ends.

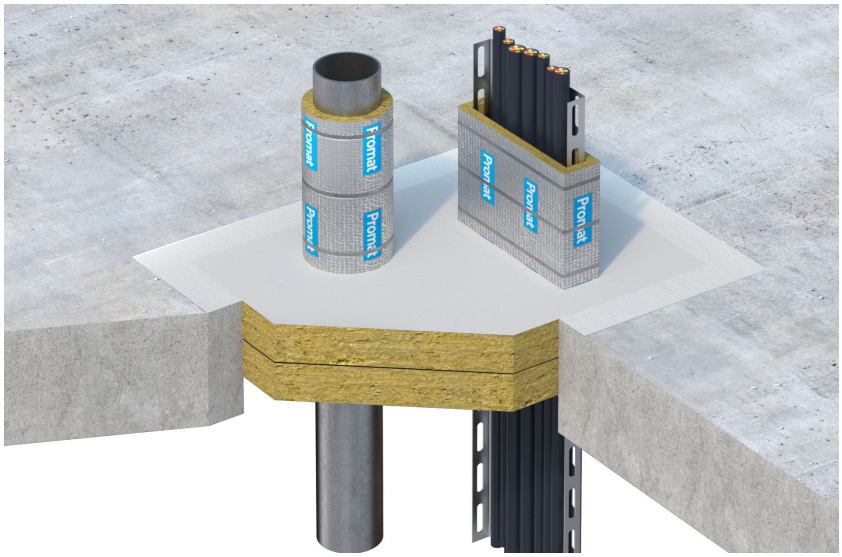
At the ends of each joint, it is essential to fit the strip to the adjoining surface. If a smoke or water seal is required, apply a suitable sealant according to the instructions of the sealant manufacturer.

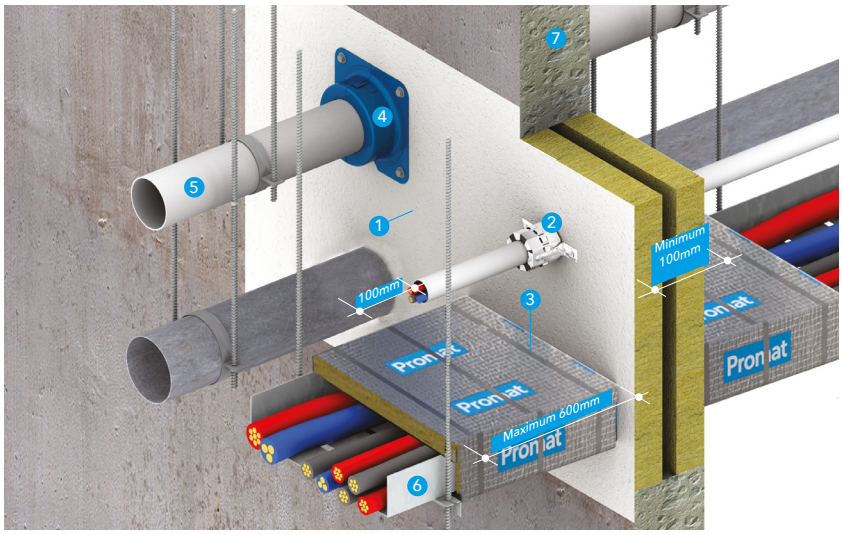
If the area where the PROMASEAL® FyreStrip is installed is designed to be trafficable, a suitable plate should be fixed over the joint, always allowing for movement.

PROMASEAL® FyreStrip sealing systems are 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.

PROMASEAL® Bulkhead Sealer System





1. PROMASEAL® Bulkhead Batt 50mm thick
2. PROMASEAL® Conduit Collar
3. PROMASEAL® SupaWrap
4. PROMASEAL® Retrofit Collar (square base) fixed through the batt with a threaded rod
5. Combustible plastic pipes with appropriate support within 300mm from both sides of the Bulkhead barrier
6. Electrical cables supported with cable tray or steel trunking within 300mm from both sides of the Bulkhead barrier
7. Fire Resistant Lightweigh, concrete or masonry wall with minimum thickness of 100mm

Up to -/120/120 fire resistance in accordance with the requirements of 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® Bulkhead Batt.

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 walls. If insulation measured upon the penetrating elements is a specified performance criteria, please consult Promat about the use of PROMASEAL® Wrap

PROMASEAL®-A Acrylic Sealant (not shown above) should be liberally applied to all joints and contact points between the Bulkhead barrier and items 3 or 5 AND between the barrier and the floor

PROMASEAL® Bulkhead Batt's are 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.

PROMASEAL® Bulkhead Sealer System

Made using high density mineral wool that is protected with a robust ablative coating to both faces.

PROMASEAL® Bulkhead Sealer batts are a simple and economical way to fire rate voids and when combined with Promat's many other fire stopping systems can protect a wide range of penetration types and sizes.

Properties

- Approved to AS 1530: Part 4: 2014 and AS4072.1: 2005
- Manufactured to ISO2001:2008
- Size: 1200 x 600 x 50mm
- Coating: White Ablative
- Density: > 160kg/m³
- Packaging: Individual wrapped in Promat branded plastic film
- Acoustics: Rw (Ctr) : 29 (-3)
- FRL: up to -/180/180

Benefits

- Economical
- Easy install
- Up to 3 hours fire rating
- Floor and wall penetrations

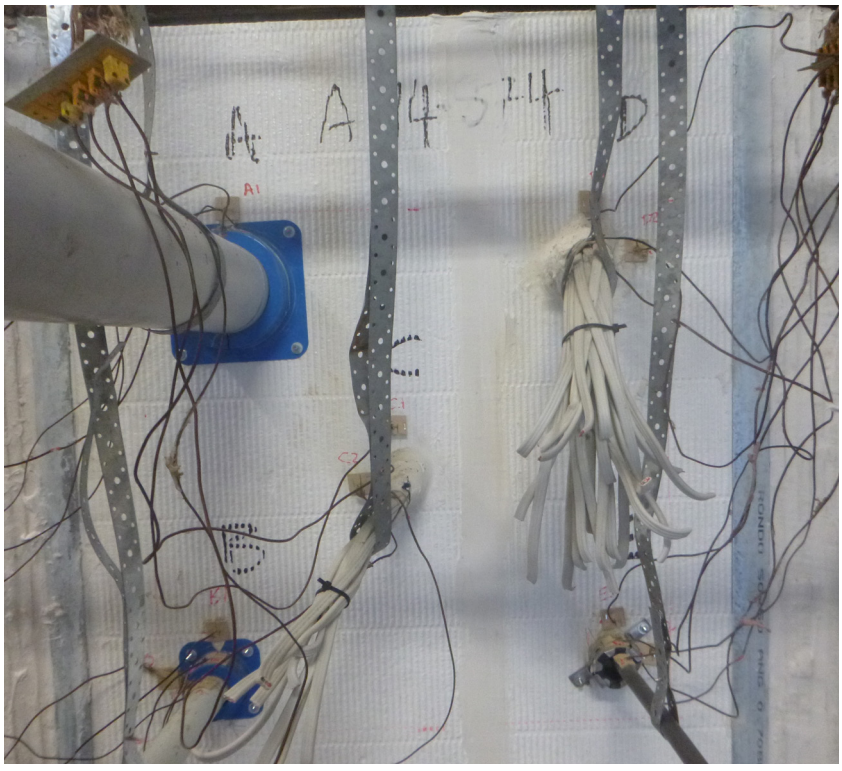
Penetrations Approved

- uPVC
- HDPE
- PVC Conduits
- Metal pipes lagged and bare
- PEX
- Cables (electrical/telco/optical)
- Cable Trunking

Approved substrates

- Concrete Slabs
- Plasterboard walls
- Speedpanel
- KOROK
- Hebel/AAC
- Masonry
- Alpha Panel
- Xlam CLT

Please refer to the relevant assessment report for installation specifics

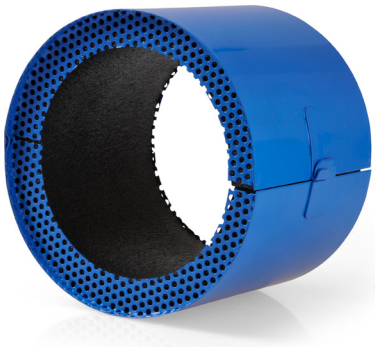


1. PROMASEAL®-A Acrylic
2. PROMASEAL® Retrofit collars
3. PROMASEAL® Wall Collars
4. PROMASEAL® Conduit Collars
5. PROMASEAL® Supawrap

1

2

3



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5

Approved Opening Sizes: Walls

Method 1

Min. 116mm Plasterboard (2 x 13mm each face), Concrete, Masonry, AAC . 2 layers installed within opening

- Up to 600mm (H) x Up to 1500mm (W) or
- Up to 1000mm (H) x any width up 1m² or
- Up to 500mm (H) x any length

Method 2

Min. 116mm Plasterboard (2 x 13mm each face), Concrete, Masonry or Min. 75mm AAC min. One Layer installed on each face of wall

- Up to 550mm (H) x 450mm (W)

Method 3

Min. 75mm AAC. Min 78mm Speedpanel Concrete, Masonry. One Layer on face. One Layer inside opening

- Up to 550mm (H) x 450mm (W)

Method 4:

Min. 90mm Plasterboard (1 x 13mm each face), Masonry, Concrete. One Layer inside opening

- Up to 600mm (H) x Up to 1200mm (W)

Method 5

Min. 116mm Plasterboard (1 x 13mm each face), Masonry or Concrete One Layer installed on each face of wall

- Up to 550mm (H) x 450mm (W)

Approved Opening Sizes: Floors

Method 1

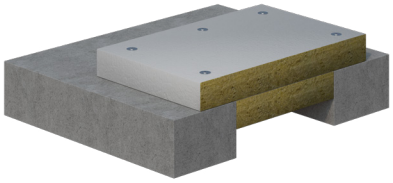
Min. 120mm Concrete. 2 layers installed within opening

- Up to 800mm (W) x Up to 1500mm (L) with angles or
- Up to 500mm (W) x Up to 1000mm (L) no angles or
- Up to 600mm (W) x any length. Angles at 600mm centres
- Up to 300mm (W) x any length. No additional supports

Method 2

Min. 120mm Concrete. 1 layer installed within opening, 1 layer on top of slab (100mm overlap)

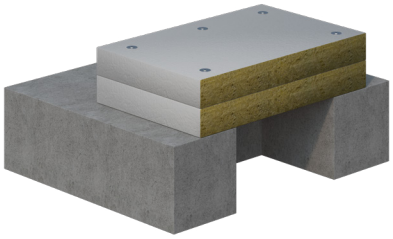
- Up to 800mm (W) x Up to 1500mm (L) with angles or
- Up to 500mm (W) x Up to 1000mm (L) no angles or
- Up to 600mm (W) x any length. Angles at 600mm centres
- Up to 300mm (W) x any length. No additional supports



Method 3

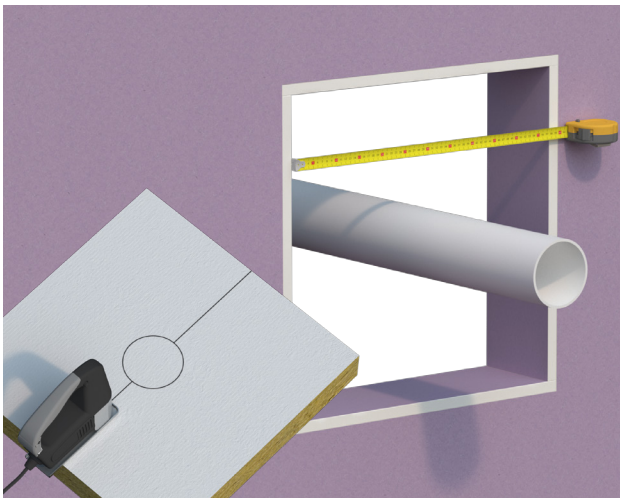
Min. 120mm Concrete. 2 layers on top of slab (100mm overlap)

- Up to 800mm (W) x Up to 1500mm (L) with angles or
- Up to 500mm (W) x Up to 1000mm (L) no angles or
- Up to 600mm (W) x any length. Angles at 600mm centres
- Up to 300mm (W) x any length. No additional supports



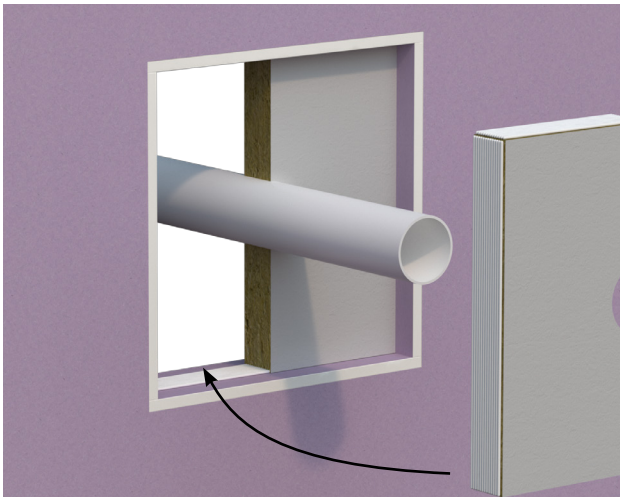
Installation Method

Please see safety data sheet (SDS) for appropriate personal protection equipment (PPE).

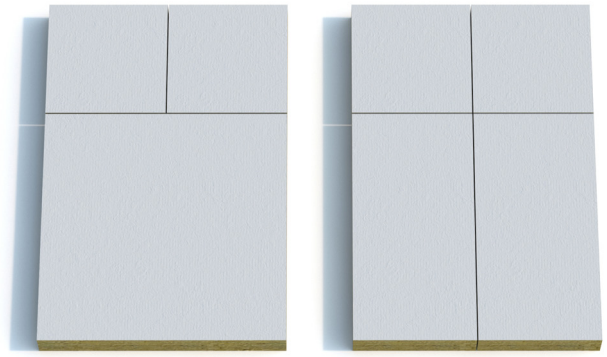


1 Measure opening and cut PROMASEAL® Bulkhead Batt to suit the opening and services.

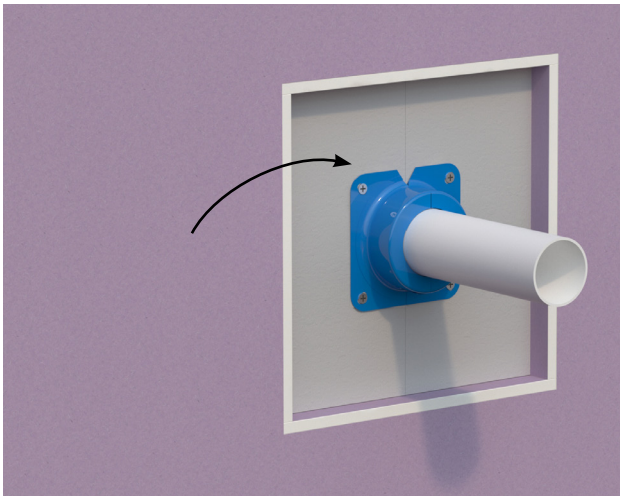
2 Apply PROMASEAL®-A Acrylic Sealant to the cut surface and the mating substrate.



3 Assemble batt into the opening. Noting any additional support requirements as listed in the relevant report.

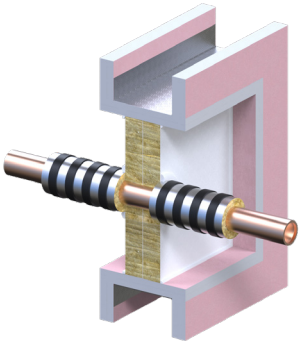
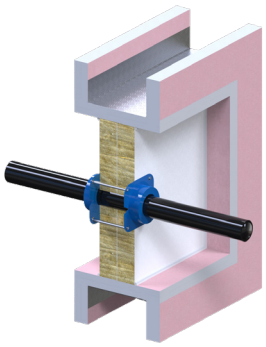
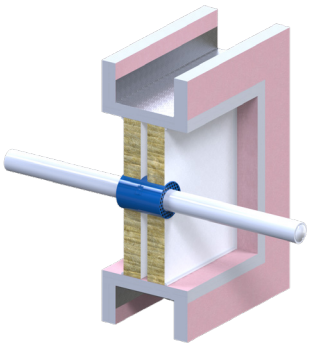
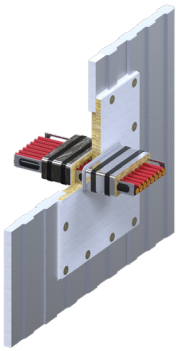
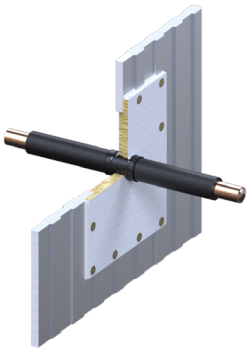
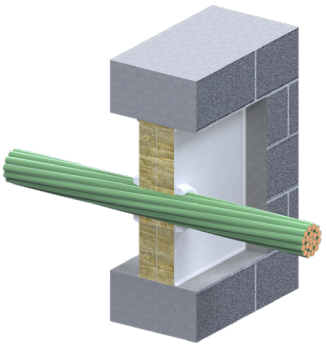
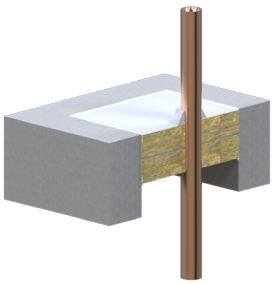
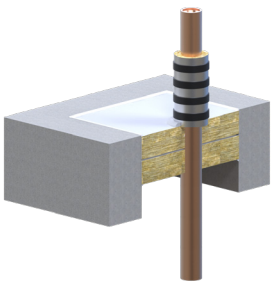
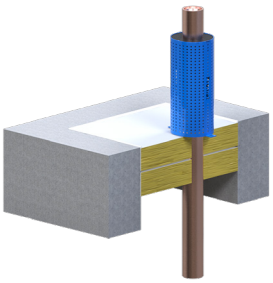
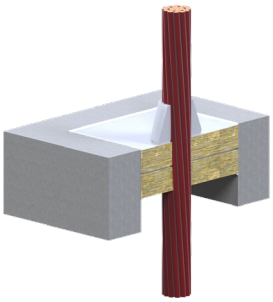
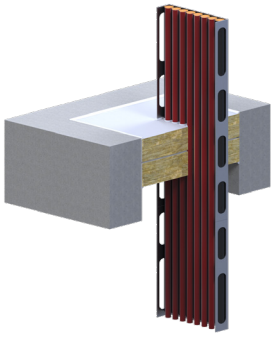
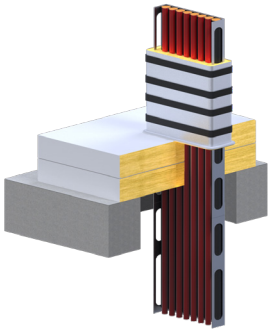


4 Joints between layers should be staggered so that no straight through gaps occur in the filed of the batt. Do not have cross junctions of butt joints in a single layer.

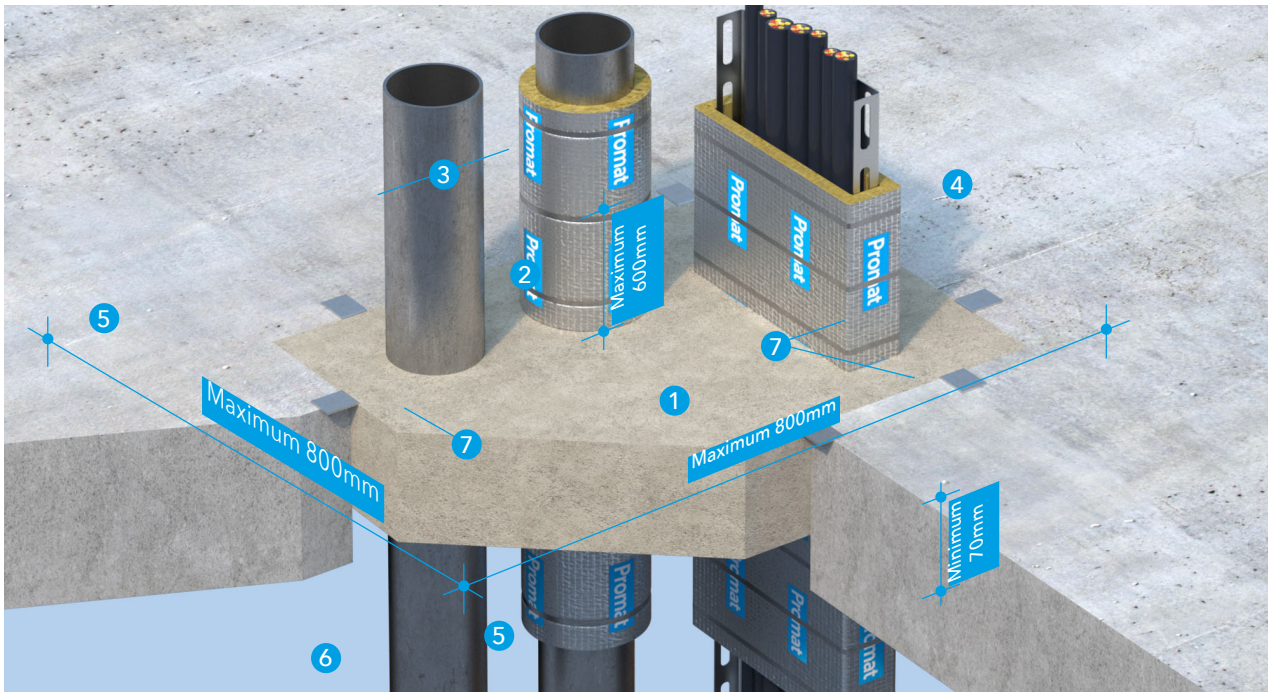


5 Fire stop penetrations in accordance with the relevant report.

6 Apply sticker to finished penetration.

PROMASEAL® Mortar



Up to -/120/120 fire resistance in accordance with the requirements of 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

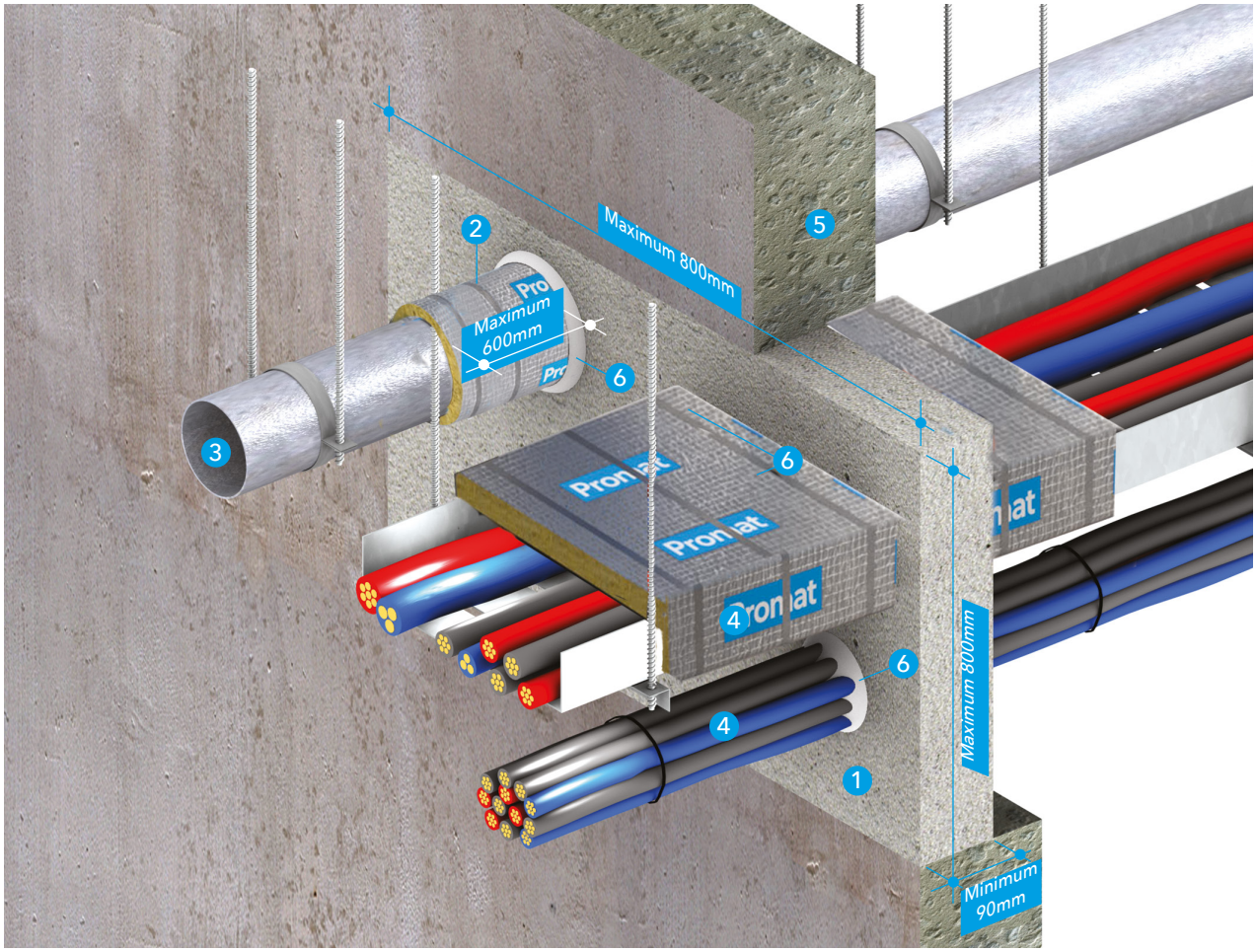
In some instances, where insulation measured upon the penetrating elements is the required criteria, this time to insulation failure can be substantially shorter, e.g. metal pipes penetrating the floors. If insulation measured upon the penetrating elements is a specified performance criteria, please 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 240 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 m³ 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.



Up to -/120/120 fire resistance in accordance with the requirements of 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 walls. 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 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 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);
- Telecommunication cables in floors and walls.

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

For some types of installation it may be necessary to allow for movement of services that pass through the seal, e.g. metal hot water pipes.

A bond breaker will then be required between the PROMASEAL® Mortar and 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.

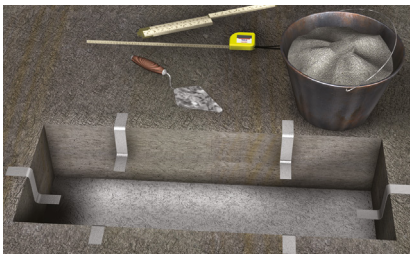
The following list of formwork types are suggestions only, the material to be used for formwork will depend on size of the openings, type and configuration of the penetrating services:

- 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.

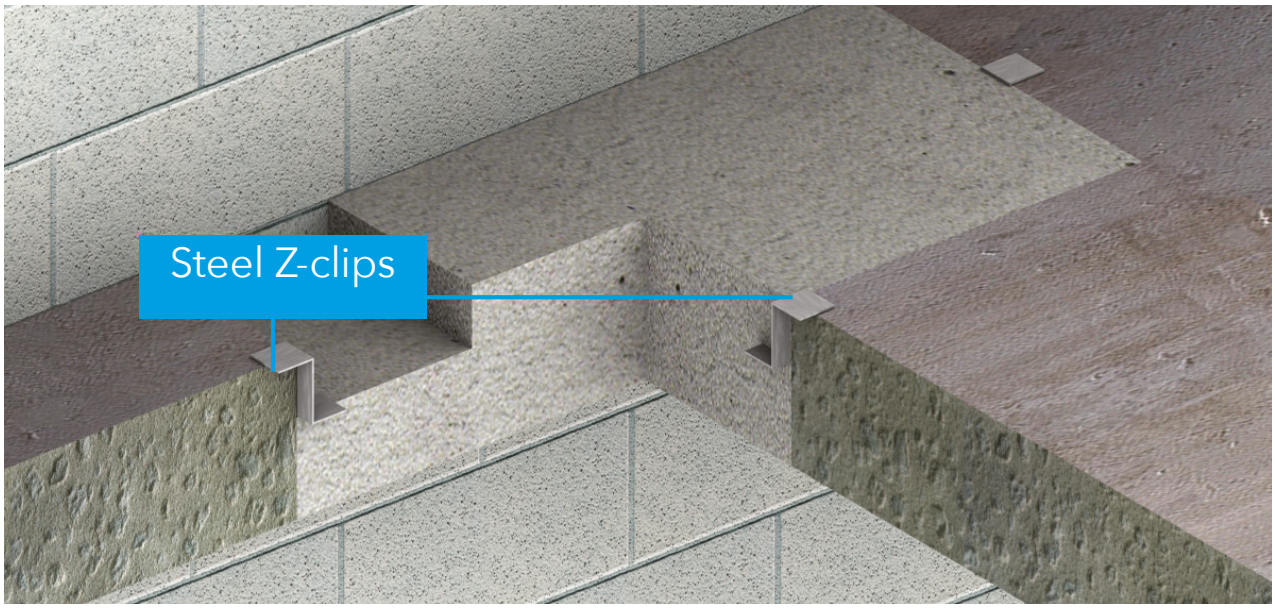
Alternatively, soft forms of formwork, e.g. mineral fibre battens, can be simply friction fitted into place. It is important to ensure the formwork is installed at the correct height to allow the correct depth (105mm) of PROMASEAL® Mortar to be installed. Once the mortar is fully cured the formwork is 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 105mm thick PROMASEAL® Mortar is required for fire resistance performance up to 240 minutes and 70mm thick PROMASEAL® Mortar for 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. PROMASEAL® Pillows are normally a better option for this type of penetration. Please refer to pages 50 and 51 for details.

Openings in service risers

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

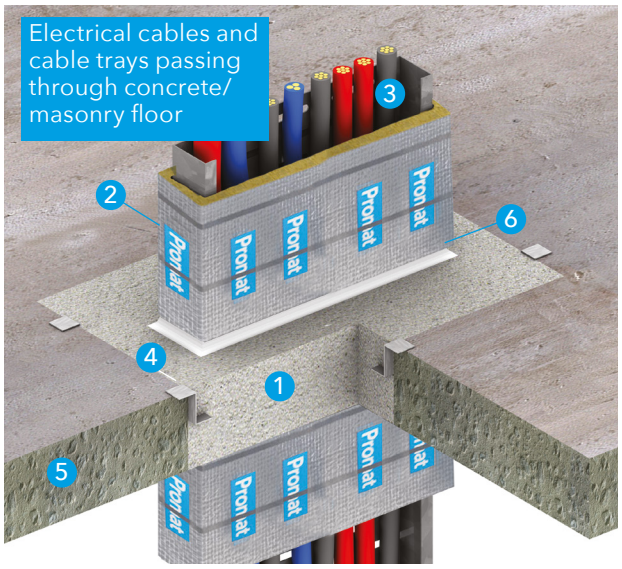
Once the formwork of choice is positioned and sealed, mix a wet slurry of PROMASEAL® Mortar and pour approximately 20mm over the entire surface of the formwork, taking care to achieve good coverage around and behind services, especially cables. When viewed from above, where gaps around perimeter edges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

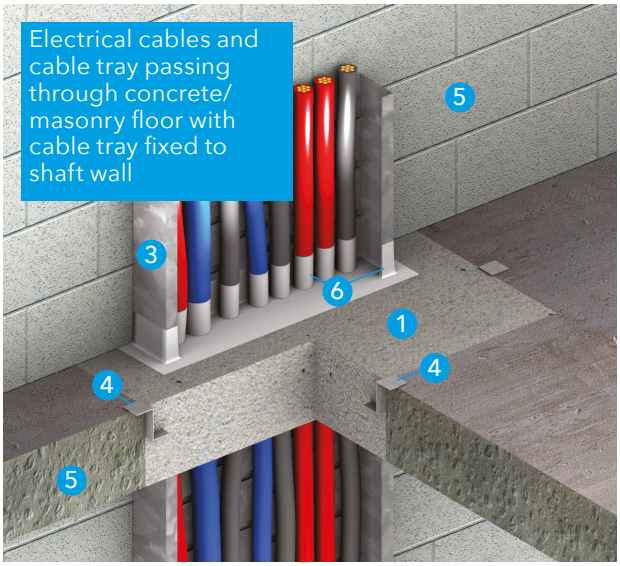
On the fourth side of the penetrations, where it is not possible to install steel Z-clips due to the position of the vertical wall, they can be omitted. Place the Z-clip formed angles into the opening at nominal 300mm centres. The angles to the vertical wall should be mechanically fixed using minimum 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.





Up to -/240/180 fire resistance in accordance with the requirements of 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 walls. If insulation measured upon the penetrating elements is a specified performance criteria, please consult Promat

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

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 240 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.

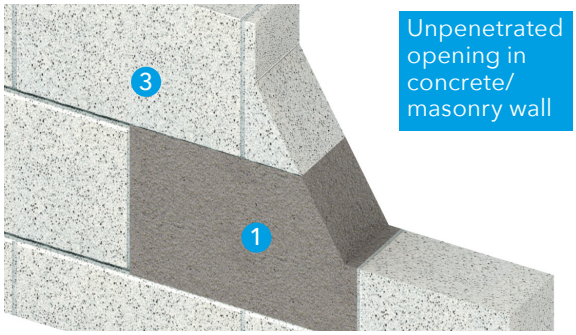
Surface hardening

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.

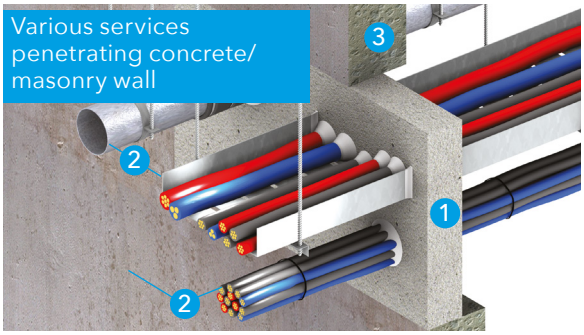
Up to -/240/120 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements; insulation time is the measured time to insulation failure on surface of the PROMASEAL® Mortar.

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 walls. If insulation measured upon the penetrating elements is a specified performance criteria, please consult Promat about the use of PROMASEAL® Wrap.



Unpenetrated opening in concrete/ masonry wall

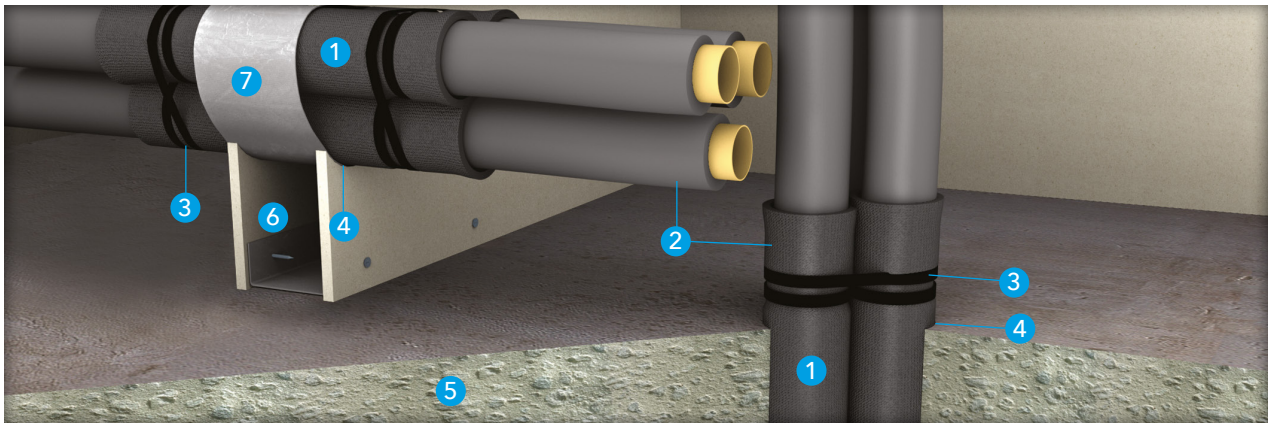
Another example of unpenetrated wall opening



Various services penetrating concrete/ masonry wall

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

PROMASEAL® FlexiWrap



Up to -/240/120 fire resistance in accordance with the requirements of AS 4072: Part 1: 2005, depending on applications and types of penetrating elements

1. PROMASEAL® FlexiWrap
2. Combustible copper pipes with insulation layers
3. General electrical cable ties
4. All joints and contact points (in close fit openings) caulked with PROMASEAL®-A Acrylic Sealant to prevent cold smoke ingress and water passage from natural building or thermal movement
5. Fire resistant concrete/masonry floors
6. Fire resistant steel/timber framed lightweight partitions
7. Where a cavity exists at which the PROMASEAL® FlexiWrap passes through a wall/partition, mild steel closers should be wrapped around the FlexiWrap to prevent the intumescent product falling into the cavity when exposed to fire

PROMASEAL® FlexiWrap is manufactured with Promat intumescent technology. It is designed to provide fire resistance where combustible insulation is used as thermal insulation around metal pipes.

PROMASEAL® FlexiWrap has been tested up to 240 minute fire resistance with copper pipes through concrete/masonry floors and walls or lightweight partitions (with an equal or greater fire resistance level) where they are generally combustible and potential for fire, hot gases and smoke to bypass the compartmentation. It is not applicable on plastic pipes.
PROMASEAL® FlexiWrap is supplied in 850mm x 450mm forms.

Installation in concrete/masonry floors

For penetration seals of groups of copper pipes with combustible lagging passing through a concrete/masonry floor, the following should be observed:

- Individually wrap each pipe with one layer of PROMASEAL® FlexiWrap. These wraps should protrude a minimum of 50mm from the upper and lower surface of the floor. To ensure the FlexiWrap stays in place and secured with general electrical cable ties in four locations, i.e. one at each side of the penetration and two within the depth of the penetration.
- Once wrapped, the pipes should be backfilled with PROMASEAL® Mortar.
- Maximum dimension for a floor penetration is 600mm x 400mm; multiple penetrations are allowed. For openings greater than 600m mx 400mm, please consult Promat.

Installation in concrete/masonry walls

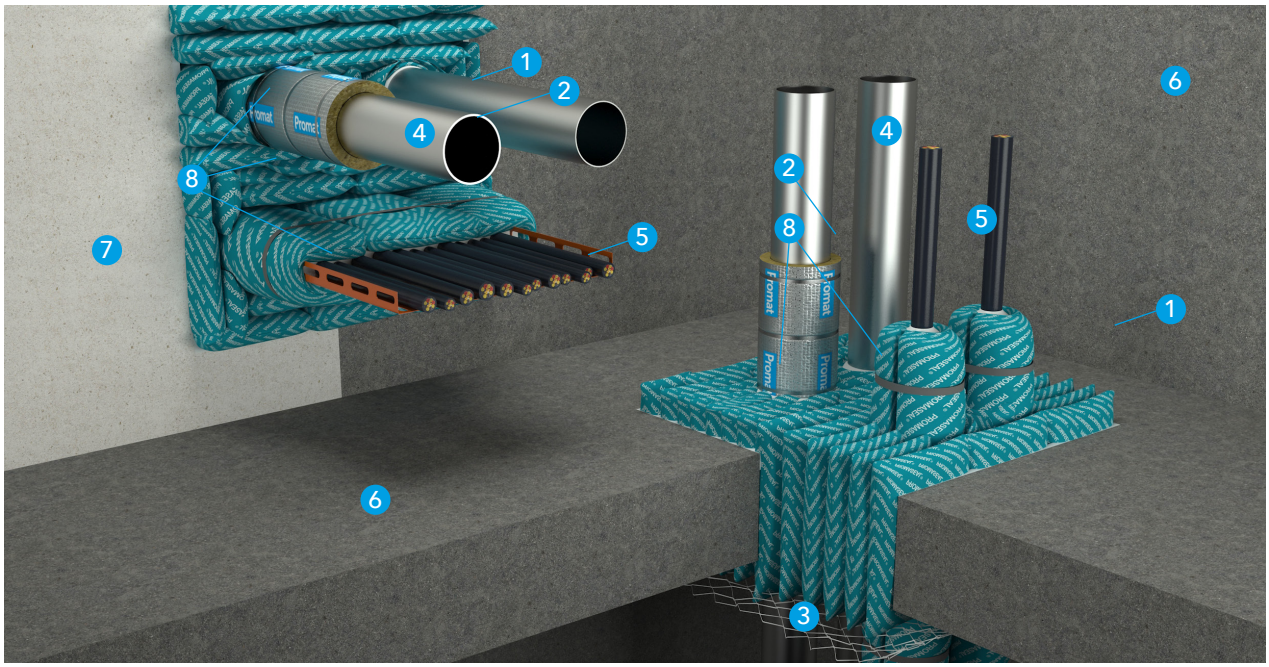
For penetration seals of groups of copper pipes with combustible lagging passing through a concrete/masonry wall, the following should be observed:

- Individually wrap each pipe with one layer of PROMASEAL® FlexiWrap. These wraps should protrude a minimum of 50mm from both sides of the wall. To ensure the FlexiWrap stays in place and secured with general electrical cable ties in four locations, i.e. one at each side of the penetration and two within the depth of the penetration.
- For cavity walls, mild steel closers should be wrapped around the PROMASEAL® FlexiWrap to prevent the intumescent product falling into the cavity when exposed to fire.
- Once wrapped, the pipes should be backfilled with PROMASEAL®-A Acrylic Sealant, PROMASEAL® Mortar or other Promat fire stopping products depending on the dimension of the opening.
- Maximum opening dimension is 600mm x 600mm. Multiple penetrations are allowed.

Installation in other walls

Approvals are also available for pipes penetrating Speedpanel and AAC Panels. Installation for these is similar to installation in a concrete/masonry walls, with the following changes. PROMASEAL® FlexiWrap should extend for 75mm from each face and only one pipe per opening. Pipe sizes from 19 to 200mm but refer to approval document for specific sizes approved in each wall type.

PROMASEAL® Pillows



Up to -/120/120 fire resistance in accordance with the requirements of 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® Pillows.

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 or walls. If insulation measured upon the penetrating elements is a specified performance criteria, please consult Promat about the use of PROMASEAL® SupaWrap or extra large PROMASEAL® Pillows (nominal 250mm x 600mm x 40mm thick)

1. PROMASEAL® Pillows
2. PROMASEAL® Extra Large Pillow
3. Optional steel wire mesh to support the pillows in a horizontal orientation
4. Non combustible metal pipes
5. Electrical cables with or without supporting cable tray/steel trunking
6. Fire resistant concrete/masonry floors or walls
7. Fire resistant steel/timber framed lightweight partitions
8. All joints and contact points caulked with PROMASEAL®-A Acrylic Sealant to prevent cold smoke ingress and water passage from natural building or thermal movement

PROMASEAL® Pillows are manufactured from treated cloth filled with a high density, granulated fire seal mineral wool. When exposed to fire, the pillows remain in place and char, thus forming a fire barrier of a solid mass of insulating material.

PROMASEAL® Pillows have been tested to BS476:Part 20: 1987, BS EN1366:Part 3: 2009 and AS1530: Part 4: 2014 and achieved a Fire Resistance Level (FRL) of up to -/180/180 in floors, masonry and lightweight walls of the same or greater fire resistance. The FRL will be dependent upon the thickness of the building element and the type and size of any penetrating services. The pillows are available in four sizes:

1. Extra Large, nominal size 300 x 600 x 40mm
2. Large, nominal size 300mm x 250mm x 40mm
3. Medium, nominal size 200mm x 250mm x 40mm
4. Small, nominal size 100mm x 250mm x 40mm

Installation Method

Penetration seals in Concrete / masonry floors

The basic PROMASEAL® Pillows sealing system is up to 180 minutes FRL when applied to unpenetrated situations in floors. Various types of service penetrations have been evaluated within the system and achieved a range of fire resistance levels. Please consult Promat for full information.

Maximum dimensions for floor openings is 0.25m2 or 500mm x 500mm. If the width is less than 180mm, then the length of the opening can be unlimited.

PROMASEAL® Pillows must be tightly packed into the openings, starting at one edge and moulded to overhang the perimeter of the floor slab for support. Place the PROMASEAL® Pillows along one full side of the opening and gradually work into the centre of the opening. For the small, medium, and large pillows the 250mm length should be perpendicular to the element being penetrated.

All subsequent layers of PROMASEAL® Pillows must be staggered (overlapped), similar in a manner to the way bricks or blocks are laid. Ensure that the pillows are packed very firmly into position, using a rubber or wooden mallet or similar implement.

Ensure all gaps around the services and at the edge of the penetration are fully and properly sealed with PROMASEAL® -A Acrylic Sealant. To prevent removal of the pillows, it is recommended to seal the topside of the installed pillows with 1-2mm of PROMASEAL® -A Acrylic Sealant of fix a wire mesh under the floor opening.
Penetration Seals in fire resistant plasterboard or concrete/masonry walls.

The basic PROMASEAL® Pillow sealing system is up to FRL -/180/180 when applied to unpenetrated situations in floors. Various types of service penetrations have been evaluated within the system and achieved a range of fire resistance levels. Please consult Promat for full information.

Maximum Dimensions for wall openings is up to 1000mm wide x 600mm high. If the height is less than 180mm, then the width can be unlimited.

PROMASEAL® Pillows must be tightly packed into the openings, starting at the bottom and mould them to overhang the facings of the wall. Place the PROMASEAL® Pillows along one full row of the opening and gradually work towards the top of the opening. For the small, medium, and large pillows the 250mm length should be perpendicular to the element being penetrated.

All subsequent layers of PROMASEAL® Pillows must be staggered (overlapped), similar in a manner to the way bricks or blocks are laid. Ensure that the pillows are packed very firmly into position, using a rubber or wooden mallet or similar implement.

Ensure all gaps around the services and at the edge of the penetration are fully and properly sealed with PROMASEAL® -A Acrylic Sealant.
In steel or timber framed lightweight walls, the edges of the wall lining around the opening must be restrained by trimming out with additional framing and lining.

PROMASEAL® Pillows are also approved for use in Speedpanel walls for openings up to 1000mm wide x 700mm high. The area around the penetration must be thickened with 20mm PROMATECT® 100 boards on each face of the wall. Contact Promat for further details.

To prevent removal of the pillows, it is recommended to seal the installed pillows with 1-2mm of PROMASEAL® -A Acrylic Sealant of fix a wire mesh over the wall opening.

Use of Extra Large size PROMASEAL® Pillows, Mesh Guards and PROMASEAL® SupaWrap

To achieve the insulation criteria for metal pipes and cables additional measures are required to slow the conduction of heat along these services. For the PROMASEAL Pillows there are multiple options available. Where cable trays or bunches of cables pass through fire resistant barriers, Extra Large Size PROMASEAL® Pillows can be used directly in contact with the penetrating services to provide insulation criteria as well as integrity. The pillows need to be held on to the services with metal straps or Stainless Steel Cable Ties. If the opening is larger, other sizes of pillows can be used to fill in the rest of the opening. For other services such as metal pipes, it is advisable to use PROMASEAL® SupaWrap.

As an alternative, a mesh guard can be applied to cable trays, bunches of cables or metal pipes. The guard must be spaced 50mm away from the service and be the following lengths. 100mm for cables, cable trays and steel or cast iron pipes up to 100mm diameter. 500mm for copper pipes up to 150mm and steel or cast iron pipes from 100 to 150mm diameter.

Usage Rate (Guide Only)

Approximately 120 bags will fill 1m2 or opening, but a mixture of bags is required to do the job properly when you have services passing through. As a "rule of thumb" for 1m2 of clear area, a combination of various pillow sizes will be required. The following shows a possible combination of pillows that could be used:

- Large Pillows: approximately 90 bags
- Medium Pillows: approximately 45 bags
- Small Pillows: approximately 15 bags.

This is for "clear area" without services. The installer will need to determine the coverage for services. E.g for 0.5m2 clear opening, the usage rate could be multiplied by 0.5. Further, for 0.75m2 clear opening, the usage rate should be multiplied by 0.75. For the Extra Large Pillows, generally you will need to allow for 2 per service that is within the penetration.

Promat provides a wide range of systems for compartmentation, fire resistant air and cable ducts, structural steel protection. Fire stopping and partitions. For assistance with any passive fire protection problems, please consult Promat.

PROMASEAL® SupaWrap

PROMASEAL SupaWrap is Foil backed mineral wool sleeve or blanket designed to increase the insulation criteria performance of services such as metal pipes and cables where they pass through a fire resistant building element or any of our firestopping systems such as PROMASEAL Bulkhead Batts, Mortar or Pillows.

Pipe OD (mm)	Box Quantity
13	15
21	14
25	12
32	10
42	9
50	9
63	6
89	4
102	4

The product is available in two styles. The first is a blanket which is supplied in a 4m long roll with a width of 600mm. The second is a sleeve which is provided in 1200mm long section and sized to suit metal pipes with outside diameters as follows:

Both the blanket and sleeves have a 40mm thickness of mineral wool with a minimum density of 80kg/m3 and a service temperature of 650oC as required by our approvals.

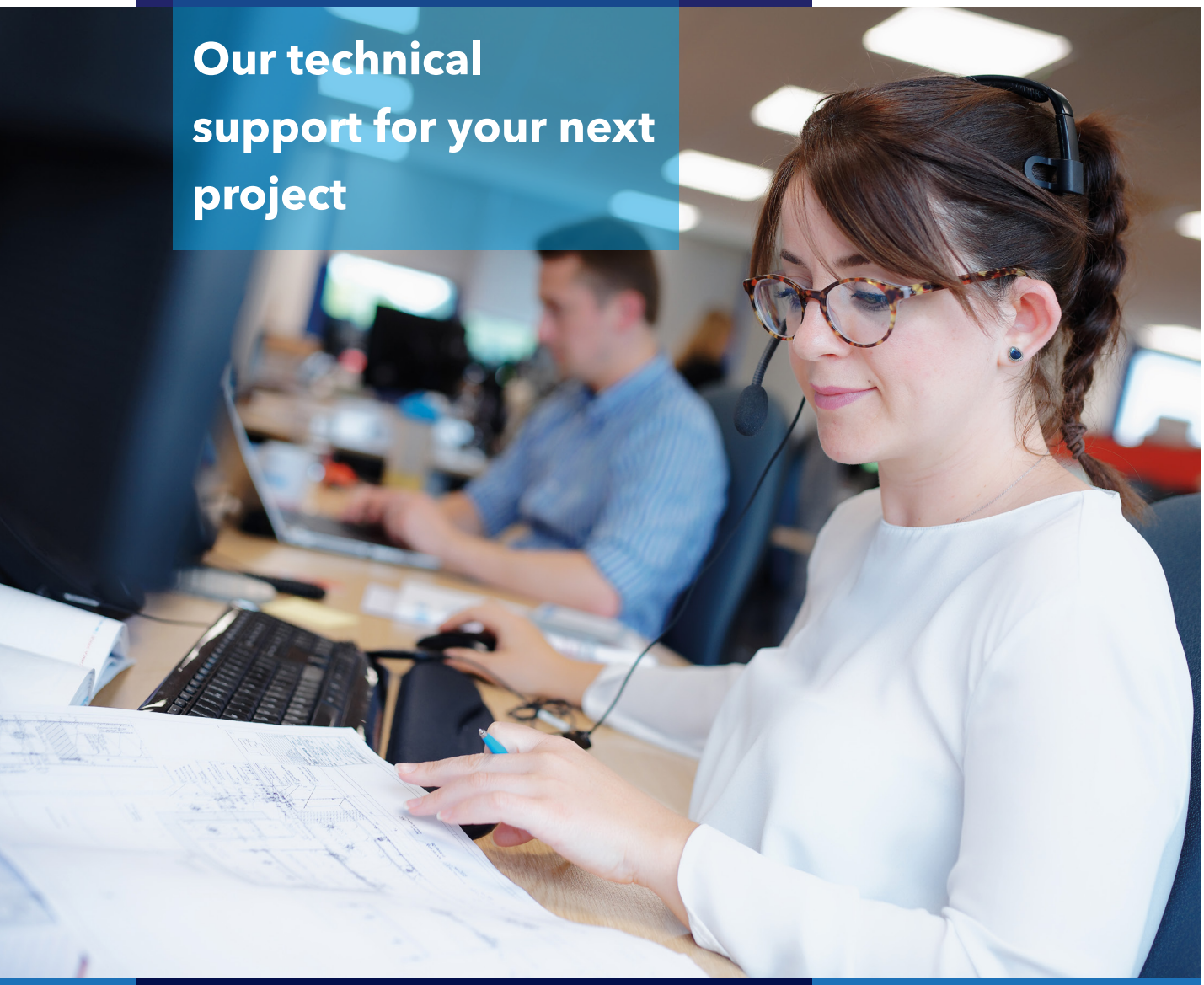
Installation – Complete enclosure of service.

The PROMASEAL SupaWrap is installed by cutting to size to suit the length and size of the service. (Refer to the specific reports for each system to determine requirements). Where the service is being protected on all sides, it is wrapped around the service and taped together with Promat Re-enforced Aluminium Foil Tape. In most circumstances the connection of the ends is just a butt joint and no overlap is required. It is then held in place on the service with Stainless Steel Cable ties or metal pipe clamps. Four straps are required on each side of the element. One 50mm from each end of the wrap and two evenly positioned between these. For slab penetration the wrap is applied to the top side only in many circumstances, but some systems do require wrapping top and bottom. For wall penetrations it is applied to both faces in all cases. PROMASEAL® A is then applied to the interface between the PROMASEAL SupaWrap and the building element or firestopping system.

Installation – Cable tray against a wall in a slab penetration

Where a service running through a slab such as a cable tray is hard against or within 50mm of a fire rated wall, it can be installed in a 3-sided manner. To do this, additional mineral wool is installed into the gaps between the cables on the tray. The PROMASEAL SupaWrap is then installed across the tray with 100mm overlap to both sides. If the tray is in a corner this overlap can go on to an adjacent wall. The wrap is then fixed directly to the substrate with a 65mm long screw with a 20mm Washer 100mm from the top and bottom of the wrap. Screw type will vary depending on the substrate it is applied to. PROMASEAL® A is then applied to the interface between the PROMASEAL® SupaWrap and the building element or firestopping system.

Our technical support for your next project



We understand that designing and building a passive fire protection solution is often not an easy task.

We can help you to interpret your local regulations and assess the risks in your building project that demand a reliable fire safety solution.

We can provide you with a full technical report and all the supporting documents you need to finalise your design and start the building process. We offer you technical support and practical advice to deliver a perfect fire safety job.

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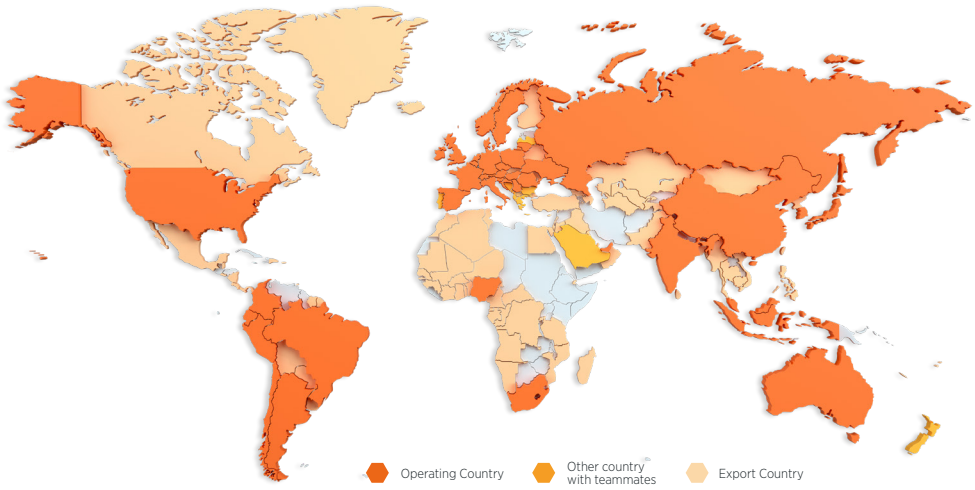
Promat Asia Pacific

- The technical data provided in this publication is based on mean values prevalent at time of publication and is thus subject to fluctuation. It should not be regarded as a guarantee to system performance.
- 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