

The Passive Fire Protection Handbook

Chapter 7: Penetration Seals - Promat PROMASEAL® Silicone Sealant

Promat PROMASEAL® Silicone Sealant is a silicone-based fire protection sealant, supplied in 310ml cartridges. Adhesion is excellent to most types of surface. The sealants cure in air to form a non-hardening, tack-free seal, preventing the passage of smoke, toxic gases and fire.

APPLICATIONS

Promat PROMASEAL® Silicone Sealant is suitable for sealing small gaps and holes in applications requiring up to 240 minutes fire resistance.

Promat PROMASEAL® Silicone Sealant would be required for service temperatures over 70°C or where increased joint movement capability is needed.

FIRE PERFORMANCE

The fire performance of Promat PROMASEAL® Silicone Sealants will vary according to the particular application, the surrounding substrates, the depth of sealant applied and the amount of sealant exposed to heat.

Promat PROMASEAL® Sealants have been tested to the procedures and adopting the criteria of BS 476: Part 20: 1987. Please note that if the fire risk is from both sides of the gap, then the systems as described should be installed on both sides.

ADVANTAGES (Promat PROMASEAL® Silicone Sealant)

- Good movement capability
- Suitable for joints up to 30mm wide
- Tack-free
- Flexible
- Fire tested up to 240 minutes (integrity)
- Good adhesion to most building products
- Will not slump
- Halogen free
- Suitable for internal and semi-exposed applications

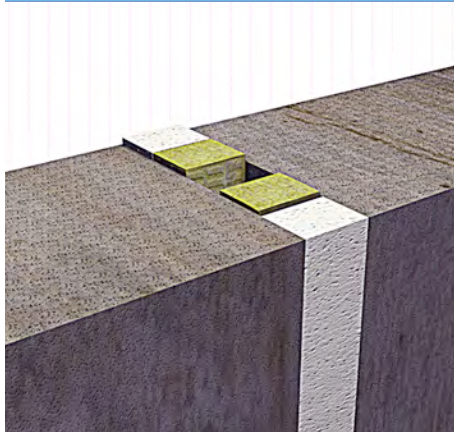
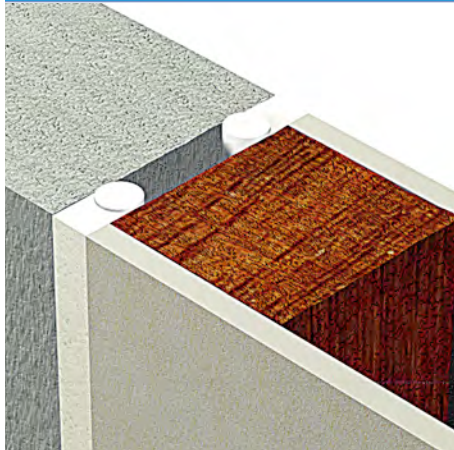
PAINTING

Promat PROMASEAL® Silicone Sealant should not be used for food-grade applications and should not be in contact with acids, oxidising agents or with materials that can exude certain components over a period of time. Promat PROMASEAL® Silicone Sealant cannot be overpainted.

INSTALLATION

Promat PROMASEAL® Sealants will adhere to most construction materials. If in doubt, the sealant should be applied to a small length of joint and examined, or the Promat Technical Services Department should be contacted. Promat PROMASEAL® Silicone Sealant cannot be overpainted.

All surfaces should be clean, dry, oil and grease-free, although very porous surfaces may need to be wetted with clean water to prevent too rapid drying of the sealant before proper cure. Surfaces should also be free of dust and friable particles. Any loose paint should be removed from steel. It is advisable to tool the sealant firmly against the joint faces and the sealant can be dressed off with a wetted trowel.



Note: If the fire risk is from both sides of the gap, then the sealant should be installed on both sides.

A safety data sheet is available from the Promat Technical Services Department and, as with any other materials, should be read before working with the product. The product is not classified as a dangerous substance and so no special provisions are required regarding the carriage and disposal of the product to landfill. This can be placed in an on-site skip with other general building waste which should be disposed of by a registered contractor.



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Property	PROMASEAL® Silicone
Sealant base	Silicone
Cure system	Oxime
Speed of Cure (23°C, 50% RH)	4mm/day approx. 10mm/6 days approx.
Skin over time (23°C, 50%RH)	Minimum 15 minutes
Overpaint times	N/A
Application temperature range	+5 to +30°C
Service temperature range	-30 to +150°C
Joint movement capability	± 25%
Slump	Nil at joints up to 28mm
Elongation at break	250%
Expansion in fire conditions	N/A
Shelf life when stored between 5°C to 30°C	12 months

QUANTITY REQUIRED

Promat PROMASEAL® Sealants are packaged in 310ml cartridges. To calculate the approximate number of cartridges required, use the following formula:

No. of cartridges required =

$$\frac{\text{Joint length (m)} \times \text{joint width (mm)} \times \text{sealant depth (mm)}}{310}$$

This does not allow for wastage. Please note that joint length is in metres (m) but joint width and sealant depth are in millimetres (mm).

Table 7b Promat PROMASEAL® Silicone Sealant - Approval Matrix

Wall and Floor Installations					
Product Name		Promat PROMASEAL® Silicone Sealant			
Configuration	Max. Joint Width (mm)	Minimum Seal Depth (mm)	Seal position	Integrity (mins)	Insulation (mins)
Concrete or masonry or steel to timber gap surfaces, 125mm thick	30	22	Single or double sided seal, exposed or unexposed face	30	30
		44		60	60
Concrete or masonry to steel gap surfaces	30	30	Double-sided seal (two 15mm deep beads)	240	240
Concrete or masonry gap surfaces, 125mm thick	10	5	Single sided seal on the exposed or unexposed face	240	0
	20	10		240	0
	30	15		240	0
Concrete or masonry gap surfaces at least 100mm thick	10	5	Exposed	30	30
		5	Unexposed	30	30
		5 + 7	Both	90	90
		7 + 7	Both	120	120
	20	10	Exposed	30	30
		10	Unexposed	30	30
		10 + 10	Both	90	90
		12 + 12	Both	120	120
	30	18	Exposed	30	30
		15	Unexposed	30	30
		15 + 15	Both	120	120
		15	Unexposed	30	30
Concrete or masonry gap surfaces at least 125mm thick	10	5	Unexposed	120	120
		5 + 5	Both	180	180
	20	10	Unexposed	90	90
		10 + 10	Both	120	120
		12 + 12	Both	120	120
	30	15	Unexposed	30	30
		17	Unexposed	30	30
		15 + 15	Both	120	120
18 + 18	Both	180	180		
Concrete or masonry gap surfaces at least 215mm thick	10	5	Unexposed	240	240
		5 + 5	Both	240	240
	20	10	Unexposed	120	120
		10 + 10	Both	240	240
	30	15	Unexposed	120	120
		15	Unexposed	120	120
		15 + 15	Both	240	240
		15 + 15	Both	240	240

Application Technique: For good adhesion the surfaces of the building element shall be free of any dust or grease and be suitably primed.

The concrete floors and/or masonry or concrete walls must be at least 100mm thick and have at least the same fire rating as that required for the penetration seal. Masonry and concrete gap faces must be within the density range of 450 to 2300kg/m³ and gap faces will be free from loose or flaking material. Steel gap faces will be in material at least 6mm thick and will be free from dirt, loose rust, grease and other coatings. The steel member will remain free from significant deflection or thermal movement that increases the original gap width by more than 10% when exposed to standardised fire test conditions.

Certifire Approval No CF 424

Fig 7.20.1

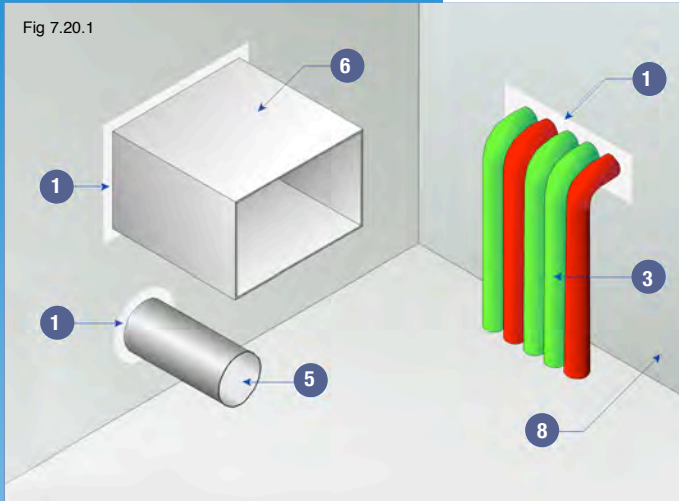
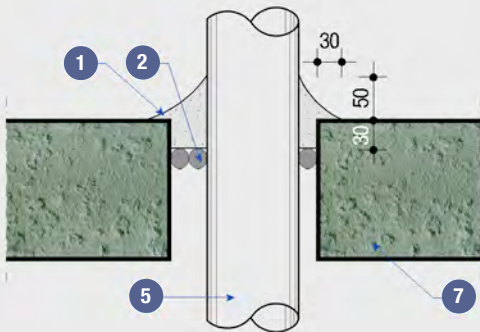
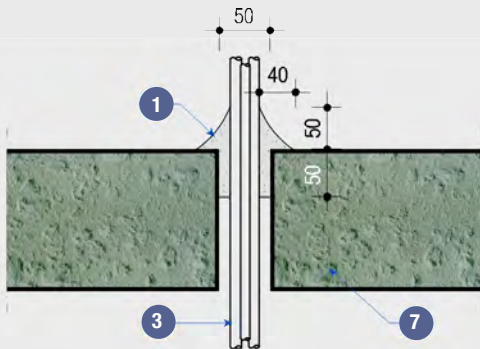


Fig 7.20.2



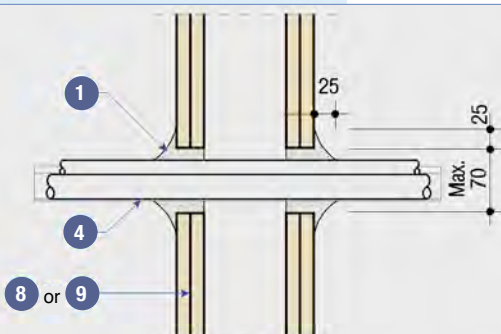
Detail 1 – Metal pipe through floors

Fig 7.20.3



Detail 2 – Cables or tray through floors

Fig 7.20.4



Detail 3 – Cable tray through masonry wall or partition

PENETRATION SEALS

Promat PROMASEAL® Intumescent Acrylic or Silicone Sealant are ideal for sealing small gaps with or without penetrating elements. Supplied in a 310ml cartridge. They are also ideal for sealing around metal pipes, cables, conduits, bus ways and ducts which penetrate walls or floors.

They bond to masonry, concrete, calcium silicate board, plasterboard, metal and cable coverings and remains flexible after curing to accommodate thermal movement. PROMASEAL® Silicone Sealant is suitable for thermal movement of metal pipes.

The fire rating achieved will be limited to the fire rating of the building element through which the service passes. The size of the gaps around services that can be protected with Promat PROMASEAL® sealants have limitations. For metal pipes passing through floors the gap between the pipe and floor should be no greater than 38mm and for walls no greater than 20mm. For bundles of cables passing through floors, the maximum opening should be no greater than 50mm diameter (approximately 2000mm²) and through walls, 38mm diameter (approximately 1100mm²).

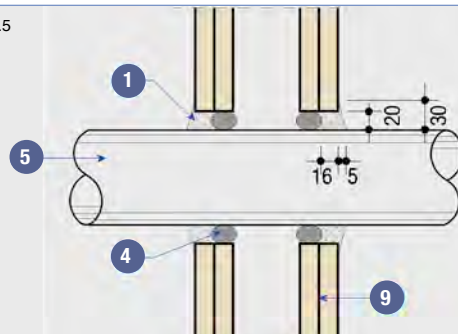
For cables on cable trays passing through walls, the maximum opening size should not exceed 70mm high x 440mm wide. In some installations when gaps are at the upper end of the range, sealant may be inclined to slump.

TECHNICAL DATA

Up to 120 minutes fire rating in accordance with the criteria of BS 476: Part 20: 1987, depending on application.

1. Promat PROMASEAL® Intumescent Acrylic or Silicone Sealant.
2. Polyethylene backing rod.
3. Cables.
4. Cable tray.
5. Metal pipe.
6. Ventilation duct.
7. Concrete floor.
8. Masonry wall.
9. Lightweight partition.

Fig 7.20.5



Detail 4 – Metal pipe through partitions



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CONTROL JOINTS

Promat PROMASEAL® sealants are intumescent acrylic or silicone based gunnable sealants designed for fire resistant sealing of joints and services penetrations against spread of smoke, toxic gases and fire for up to 240 minutes fire resistance.

Adhesion is excellent to most types of surface. They cure in air to form a non-hardening, tack-free seal.

When specifying or sourcing a sealant for a control joint, it is essential that the characteristics of each control joint are taken into account. Control joints are provided either in or between elements of construction to allow for differential movement caused by a number of factors including shrinkage, thermal expansion, service loads, creep or as means of joining pre-cast units.

Promat PROMASEAL® Intumescent Acrylic or Silicone Sealants vary in their movement capabilities. As a general rule, acrylic sealants have low movement properties (typically between 5% and 10%) and should not be used where movement is a high priority. For good adhesion the surfaces of the building element must be free of any dust or grease and be suitably primed. Please contact Promat Technical Services Department for details. For high movement joints please refer to the section on Promat PROMASEAL® Expansion Joint Strip.

TECHNICAL DATA

Up to 240 minutes fire rating, integrity in accordance with the criteria of BS 476: Part 20: 1987.

1. Typical Promat PROMASEAL® Intumescent Acrylic Sealant or Silicone, sealing depth as below. Please check with the Promat Technical Services Department to ensure correct use of the sealant specified:
2. Polyethylene backing rod.
3. Concrete wall or floor.
4. Light weight fire rated partitions.
5. Rock wool.

NOTE: For application on the unexposed face only, please contact Promat Technical Services Department.

