FireSilicone-EMA

Elastic, Malleable, All-weather, Fire-rated silicone sealant for up to 4 hours fire protection

Installation Guide

Distributed By

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DESIGN CONSIDERATIONS

Sound practice exists for the prevention of failure and these should be carefully considered by designers, prior to writing specifications for sealants and their application:

1. Consider the movement of the joint to be sealed. This should include thermal, wind pressures, settlement and differential movement of components.

2. Consider the characteristics of the substrates as they affect the choice of sealant, i.e. how the surface finish may be affected by sealant compounds and the possibility of discolouration due to oil migration or staining.

3. Consider the location and environment of the joint to be sealed. Exposure to temperature extremes, ultra violet light, radiation, chemical attack, standing water and vibration.

4. Consider the characteristics of all available sealants for performance capabilities, hardness after weathering, movement capabilities in both extension and compression, adhesion properties and chemical resistance.

5. Adequate space and accessibility should be provided for applying and tooling the sealant. A suitable backing material to control the sealant depth should be used. Bond breaker materials should also be used to prevent three sided adhesion which causes sealant failure – see Figure 2.

Figure 1

Figure 2
Three sided adhesion gives cohesive failure of sealant

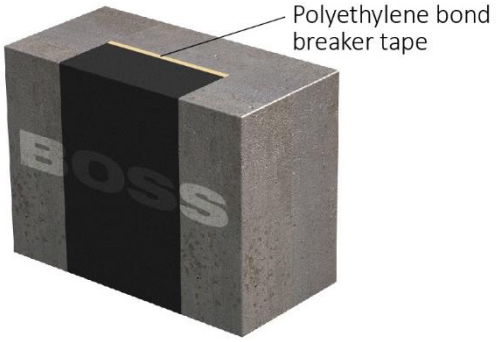

Figure 3

Figure 4
Use of bond breaker tape gives two sided adhesion and allows the sealant to stretch freely with the joint

STRUCTURAL MOVEMENT IN SEALANTS

In structural sealing situations, the joint dimensions are critical. In Figure 5 one can see the stresses encountered due to structural movement. The sealants cross sectional shape changes but the volume remains constant. Therefore when joints are designed, it is essential to provide a suitable width-to-depth ratio which will enable the sealant to withstand the maximum strain anticipated due to the structural movement of the joint.

Figure 5
Expanded State: Maximum Strain

Figure 6
Normal State

Figure 7
Compressed State: Maximum Strain

DIMENSIONAL REQUIREMENTS

1. The joint depth should be such as to provide a minimum sealant depth of 6mm.
2. In concrete or masonry joints where structure movement is expected the sealant depth should be 12-18mm dependent on the joint width.
3. If the joint width is less than 12mm, the depth of sealant should be not less than one half of the width and not greater than the width. (The minimum depth of 6mm still applies) **N.B**. If the joint width is 6mm then the joint depth is 6mm. This is the minimum joint size.
4. For joints between 12mm and 50mm the sealant depth should be one half of the joint width.

TYPICAL EXAMPLE OF INSTALLATIONS

The following is a guide for those responsible for writing specifications and installation schedules.

1. Ensure that all surfaces are dry and free from contamination, dust, grit, frost, moisture, etc.
2. Where applicable i.e. to reduce the joint depth to an acceptable level (usually D = W / 2 with a minimum depth of 6mm) a joint backer rod is used. The backing material is tamped into position to give the required joint depth.

   N.B. An oversized backing rod should be used to ensure that it remains in position, i.e., a 12mm wide joint requires a 15mm diameter backing rod.
3. The primer, if required, should be applied to the two opposite vertical faces taking care not to prime the backing material. (This will eliminate the possibility of failure due to three sided adhesion). The primer should be applied according to manufacturer's instructions.
4. To obtain a neat finish, masking tape should be applied to the face edgings for protection during application of the sealant.

Figure 8. *Apply Masking Tape*

TYPICAL EXAMPLE OF INSTALLATIONS CONTINUES

5. If using a two-part sealant, the sealant should be mixed according to the manufacturer's instructions and then placed in a cartridge for applications. The sealant should be gunned firmly into the joint ensuring that it is in full contact with the sides of the joint. Failure to carry this out may result in poor adhesion of the sealant and ultimate failure to the joint.
6. Tooling of the sealant may be necessary to achieve an acceptable appearance. This is accomplished by drawing a flat tool over the surface of the sealant to produce a smooth neat finish. Tooling also compresses the sealant into the joint enhancing the adhesion to the joint sides.
7. Once a smooth acceptable appearance has been achieved, remove the masking tape by drawing it across the joint. This will ensure that any 'tails' of sealant fall into the joint, ensuring that there are no unsightly marks on the substrate. The type of sealant required for any given application, is dependent on the amount of movement expected from the joint.

Floor & Wall Joint Size (Width x Depth)	Backing	Linear Metres per Cartridge
5mm x 10mm	PE Open Cell Foam	6.2
10mm x 10mm	PE Open Cell Foam	3.1
15mm x 10mm	PE Open Cell Foam	2.04
20mm x 10mm	PE Open Cell Foam	1.55
25mm x 15mm	PE Open Cell Foam	0.83
30mm x 15mm	PE Open Cell Foam	0.69
35mm x 20mm	PE Open Cell Foam	0.44
40mm x 20mm	PE Open Cell Foam	0.39
45mm x 25mm	PE Open Cell Foam	0.28
50mm x 25mm	PE Open Cell Foam	0.25
5mm x 15mm	PE Open Cell Foam	4.13
10mm x 15mm	PE Open Cell Foam	2.07
15mm x 15mm	PE Open Cell Foam	1.38
20mm x 15mm	PE Open Cell Foam	1.03

Figure 9

Figure 10

Figure 11

STORAGE & DISPOSAL

FireSilicone-EMA is not affected by an outdoor environment, it is recommended for ease of installation that the product is stored indoors, ideally in dry frost free conditions between +5°C and +30°C. For health and safety details, contact our Technical Services team on 1300 502 677.

LIMITATION

BOSS Fire & Safety Pty Ltd has provided the above information in good faith and to the best of its knowledge. This information was deemed to be correct at the time of publication. Should any data come to BOSS Fire & Safety's attention relating to the fire resistance or performance of the product described, BOSS Fire & Safety reserve the right to amend this report.

BOSS Fire & Safety strive to constantly improve and develop products so this information may change without notice.

FURTHER TECHNICAL INFORMATION

For additional technical information on the performance of FireSilicone-EMA or other BOSS products please contact our Technical Services team on:

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