The Polyethylene Joint Sealant Filler or Back-up Material for Buildings (Including Aluminium & Thin Concrete Claddings) And Engineering Structures

The joints in the walls or roof of a building are important in the performance of the building. Joints should not be regarded as convenient gaps for the contractor to accommodate tolerances, or as unfortunate necessities to be made as small as possible and shamefully tucked away out of sight. The joint is a vital part of the building and needs to be designed, constructed and sealed in a professional manner so that it can perform its function throughout the life of the building.

In a survey done on buildings in the United Kingdom, it was found that 55% of the joints failed within less than 10 years' service and only 15% had lasted for more than 20 years. The re-sealing process is more difficult and complicated than sealing joints for the first time.

Movement in engineering structures is caused by variety of effects related to materials, construction, weather and use. Movement takes place in various ways depending on the cause. In order to design joints adequately, it is necessary to appreciate these causes and their effects on the engineering structure and the materials used to seal these joints.

The most widely-used joint sealant filler or back-up is low density cross-linked polyethylene foam. This material is available in various grades and forms. **FlexOfom®** has been developed to perform as a joint sealant filler.

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Manufacturer/Exporter of quality EVA/PE foams for thermal insulation, packaging, engineering, construction, agriculture, garments, baggage, sport-gear, footwar and toys.

FlexOfom® Product Features:

1) *FlexOfom*® can be without skin or with skin on one side

Polyethylene foam with a thin surface skin at the sealant contact surface ensures minimum adhesion between sealant and back-up. **FlexOfom**® can be with a thin skin on the side.

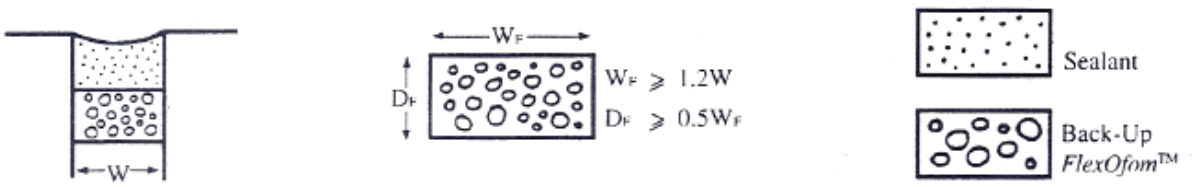
However, **FlexOfom**® without skin can be equally effective because **FlexOfom**® has very fine-closed cells. The cut cells of **FlexOfom**® is so fine that fluid sealant will be difficult to penetrate. Other foams with large cells or open cells with cause and interlocking effect which impedes the separation of sealant from back-up and reduces the ability of the joint to accommodate movement. Open-cell foam also has the disadvantage of being a wick, drawing water up behind the joint.

2) Dimensions of back-up *FlexOfom*®

Foam sections should be at least 20% wider than the joint to ensure the foam is under sufficient compression to expand and follow joint movement during the cure period. The section should be least half as deep as the width to minimized buckling when it is compressed in the joint.

Insufficient compression of the foam can result in a loose backing which does not support the sealant as it is applied, resulting in poor compaction and bulging or slump after tooling. Insufficient compression of the foam may also cause the back-up to become loose as the joint opens, placing stress on the corners and causing splits or tears in the back of the seal which may progress to cause premature failure.

Rod-form back-up has disadvantages in that for undersized rod, the difference in seal depth across the joint can cause excessive strain in the seal; also for oversized rod back-up, it requires a deep joint to accoomdate it. Cut **FlexOfom**®, either in sheet or section, is flexible, as it can be made available in any size (width & depth).



Recommended Retangular Cut Section of back-up **FlexOfom**®

3) Bond-Breaker Tapes

Self-adhesive strips of **FlexOfom®** (Polyethylene) are suitable bond-breaker tapes for use with most sealants. They have a skin surface form which the cured sealants can de-bond easily, allowing the sealant to deform as the joint moves.

Other materials, such as PVC insulating tape or paper masking tape can be used with some sealant. But many sealants can develop a strong bond to these materials, rendering them ineffective.

Thin self-adhesive strips of **FlexOfom®** are also used as bond-breakers, particularly for sealing joints which are not deep enough to accommodate a thick section joints, joints over filler boards where the board is not set back sufficiently to accommodate a normal foam back-up, or where joints are subject to traffic and need a firm support. Bond-breaker tapes are also used in oversealing situations to prevent adhesion of new sealant to old. Where cracks or joints are still active or moving, bond-breaker tape can be used to repair and hide the cracks.

4) FlexOfom® for Joint Filler in Brickwork

FlexOfom® meets the recommendation of BS 5628 : Part 3 : 1985 section 20.4 for movements joints in brickwork. The compressibility of the sealant joint filler or back-up is possibly the most critical factor in the design of an adequate joint for fired-clay brickwork. A pressure of about 0.1N/mm2 should be sufficient to compress the material to 50% of its original thickness. Flexible cellular polyethylene or cellular rubber foam are the most satisfactory materials. Hemp, fibreboard and similar materials should not be used for expansion joints in fired-clay brickwork.

5) FlexOfom® for Back-up in Aluminium and Thin Concrete Claddings.

The medium density **FlexOfom®** is widely used as a back-up in aluminium and thin concrete claddings to take up the slackness arising from the uneven surfaces. The self-adhesive **FlexOfom®** is used to cushion glass panels on to aluminium frames in buildings. The fine closed cells in **FlexOfom®** prevents migration of the adhesive into the foam before used and ensure its effectiveness when used.

6) Ease to Use

FlexOfom® can be easily cut to any length and width and is suitable for site preparations. It can be placed in the joints with ease.

FlexOfom® are available with flame retardant property (UL 94 HBF), if necessary. **FlexOfom®** cellular rubber foam for joint filler is also available.

7) General Precautions

Care should always be taken to ensure the back-up foam is not stretched as it is fitted, and left in tension, as the foam will gradually recover and can displace the sealant producing thin sections or gaps.

Special sections of back-up foam or very soft **FlexOfom®** may be necessary when sealing joints having an irregular or non-uniform section.