Dow Corning®

MOVEMENT JOINTS

AND

CORRECT SEALANT SPECIFICATION
TODAY’S AIM

• To discuss the functions of a movement joint

• To review the causes, types and characteristics of building movement

• To examine new and existing joint sealing materials
TODAY’S OBJECTIVE

• To understand the reasons and importance of movement joints and the risks associated with poor design and incorrect sealant choice

• To assist you in the correct sealant choice for future projects
TODAY’S OUTCOME

• To allow increased consideration to be given to future design of movement joints

• To enable an informed decision to be taken on sealant choice

• To provide sources of reference to assist in making the above decisions
PRESENTATION FORMAT

1. What is a movement joint?
2. Examples of joint failure
3. The functions of a movement joint
4. The geometry of joints
5. Types of joint sealing materials
6. Causes of movement in a building
7. Why is damage caused to a building?
8. Examples of damage caused to a building
9. Conclusion/summary
10. Question & Answer Session
EXAMPLES OF JOINT FAILURE
FUNCTIONS OF A MOVEMENT JOINT

In addition to permitting and accommodating the calculated movement, a movement joint should:

• Maintain the desired performance of the building

• Prevent stress or damage occurring during movement

• Permit large panels to be erected and jointed
FUNCTIONS OF A MOVEMENT JOINT

• Accommodate deviations in dimensions of the building components, during their manufacture or installation on site

• Accommodate induced and inherent deviations

• Provide sound insulation

• By closing an open joint, makes what would be a gap, visually acceptable
FILLET JOINT

Primarily a weatherseal, not a movement joint
Easy to install
Hide inconsistencies in gap sizes
BUTT JOINT

Movement and weather seal
Min 6 x 6mm, standard 2:1 ratio
Max width up to 60mm. Special techniques apply
Accommodates movement in extension and compression
Accessible, easy to install, very visible

DOW CORNING
We help you invent the future™
LAP JOINT

Movement and weather seal
Min 6 x 6mm. Standard 2:1 ratio
Max width 25mm – special application techniques apply
Good to accommodate movement in shear
Partially hidden
Good for window seals
Not easy to install
BANDAGE JOINT

Weather seal primarily but some movement
Lightweight capping materials
Refurbishment works – very labour intensive
Visible
Little movement accommodation
Bandage over top of butt that has failed
FLOOR JOINT

Standard width to depth ratio does not apply. Consideration needed for foot traffic.
TYPES OF JOINT SEALING MATERIALS

- Mastics
- Acrylies
- Polysulphides
- Polyurethanes
- MS Polymers
- Silicones
  - Acetoxy
  - Neutral
  - Non-staining
## CORRECT SEALANT SPECIFICATION

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>MATERIAL TYPE</th>
<th>CURE SYSTEM</th>
<th>MOVEMENT ACCOMMODATION</th>
<th>APPLICABLE STANDARD</th>
<th>SPECIAL FEATURES/MAIN USES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SILICONE WEATHERSEALING PRODUCTS</strong></td>
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<tr>
<td><strong>Dow Corning 781</strong></td>
<td>One part silicone</td>
<td>Acetoxy</td>
<td>+/- 25%</td>
<td>BS 5889/B</td>
<td>Listed for use with potable water. Non-porous substrates, glazing, sheet cladding, etc</td>
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<tr>
<td><strong>Dow Corning 785</strong></td>
<td>One part silicone</td>
<td>Acetoxy</td>
<td>+/- 25%</td>
<td>BS 5889/B</td>
<td>Contains fungicide. Sealing sanitaryware.</td>
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<tr>
<td><strong>Dow Corning 786</strong></td>
<td>One-part silicone</td>
<td>Acetoxy</td>
<td>+/- 25%</td>
<td>BS 5889/B</td>
<td>Mildew resistant, FDA approved. Sealing refrigeration units.</td>
</tr>
<tr>
<td><strong>Dow Corning 794</strong></td>
<td>One part silicone</td>
<td>Neutral Alkoxy</td>
<td>+/- 50%</td>
<td>BS 5889/A</td>
<td>Neutral cure clear. Planar glazing weatherseal. Glazing inc. polycarbonate sheet.</td>
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<tr>
<td><strong>Dow Corning 796</strong></td>
<td>One part silicone</td>
<td>Neutral Alkoxy</td>
<td>+/- 50%</td>
<td>BS 5889/A</td>
<td>Good adhesion to PVC-U. Sealing of windows.</td>
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<tr>
<td><strong>Dow Corning 791</strong></td>
<td>One part silicone</td>
<td>Neutral Alkoxy</td>
<td>+/- 50%</td>
<td>BS 5889/A</td>
<td>Structural glazing and planar weatherseal. Good adhesion to concrete. Movement joints.</td>
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<tr>
<td><strong>Dow Corning 798</strong></td>
<td>One part silicone</td>
<td>Neutral Alkoxy</td>
<td>+/- 50%</td>
<td>BS 5889/A</td>
<td>Mildew resistant, neutral cure. EEC approved for food contact</td>
</tr>
<tr>
<td><strong>Dow Corning 756 SMS</strong></td>
<td>One part silicone</td>
<td>Neutral</td>
<td>+/- 50%</td>
<td>ISO 11600</td>
<td>Non staining. Natural stone sealing</td>
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<td><strong>ORGANIC WEATHERSEALING PRODUCTS</strong></td>
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<tr>
<td>Geocel MS 945</td>
<td>One part MS</td>
<td>Neutral</td>
<td>+/- 25%</td>
<td>ISO 11600</td>
<td>Concrete retaining structures. Floor joints</td>
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<td>Geocel MS 925</td>
<td>One part MS</td>
<td>Neutral</td>
<td>+/- 50%</td>
<td>ISO 11600</td>
<td>Façade sealing, natural stone weathersealing. Non-staining.</td>
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<tr>
<td>Geocel 480</td>
<td>Acrylic</td>
<td>Water evaporation</td>
<td>+/- 7.5%</td>
<td>N/A</td>
<td>Fungus resistant. Internal gap filling</td>
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<tr>
<td>Geocel 201</td>
<td>One part polysulphide</td>
<td>Barium</td>
<td>+/-17.5%</td>
<td>BS 5215</td>
<td>Overpaintable. Sealing windows, expansion joints</td>
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<td><strong>FIRE RATED PRODUCTS</strong></td>
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<td>Dow Corning Firestop 700</td>
<td>One part silicone</td>
<td>Neutral Alkoxy</td>
<td>+/- 50% Low Modulus</td>
<td>BS 5889/A BS 476 Pt 22</td>
<td>Fire rated silicone. Weatherproofing and expansion joints</td>
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<tr>
<td>Dow Corning Firestop 400</td>
<td>Acrylic</td>
<td>Water evaporation</td>
<td>+/- 7.5%</td>
<td>BS 476 Pt 22 and Pt 7</td>
<td>Intumescent sealant. Perimeter pointing of doors, etc</td>
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<tr>
<td>Geocel 921</td>
<td>One part MS</td>
<td>Neutral</td>
<td>+/- 25%</td>
<td>BS 5889/A BS 476 Pt 22</td>
<td>Intumescent sealant. Overpaintable.</td>
</tr>
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CAUSES OF MOVEMENT

- Differential settlement
- Shrinkage of the structure
- Weather - thermal changes
- Wind/snow/component loading
- Insulation
- Concrete frame creep
- Vibration
WHY IS DAMAGE CAUSED TO A BUILDING?

• Incorrect joint design
• Incorrect sealant specification
• Time and cost considerations
• Lack of consultation
• Lack of control
TYPES OF DAMAGE CAUSED BY BUILDING MOVEMENT

- Cohesive failure of joint closing material
- Adhesive failure of joint closing material
- Cracking of substrates
- Water penetration into a building
- Freeze/thaw building fabric deterioration
CONCLUSION

All specifications carry a level of importance which can vary with their overall cost, in relation to the total building cost. It is important to review not only the cost of a product at the beginning but also the long term effects and costs if a product is not suitable, eg in fire situations - correct and appropriate product specification is paramount.
AND FINALLY ……

Sealant contracts represent 0.02% of the total project value and typically the replacement cost would be 8-9% of the total project value. The choice of sealant and accommodation of the calculated movement should therefore be given due consideration at design stage.
Question & Answer

Session