Purpose of Test: To determine the adhesive bond characteristics and compatibility of 3M™ Air and Vapor Barrier 3015 to various Through Wall Flashing membranes.

Results: Adhesion of 3M™ Air and Vapor Barrier 3015 to York Manufacturing flashing materials was determined via ASTM D3330, Standard Test Method for Peel Adhesion of Pressure Sensitive Tape, Method F, 90° peel. The products tested were:

- **York™ Multi-Flash 500**
  - copper flashing with polymeric fabric coating on both sides

- **York™ Multi-Flash SS**
  - stainless steel flashing with polymeric fabric coating on one side

- **York™ Flash-Vent**
  - copper flashing with polymeric fabric coating, and drainage fabric

- **York™ 304 Self-Adhering Stainless Steel**
  - stainless steel flashing with butyl adhesive on one side

- **York™ UniverSeal US-100 Liquid Tape**
  - polyether based sealant

Adhesion to metal flashing products:
The York Manufacturing flashing materials were adhered to rigid metal panels with a double coated bonding tape. Then a 1" wide strip of 3M air and vapor barrier 3015 was attached to the face of the York flashing material. Samples were heat aged at various temperatures for one week to accelerate aging. The results are summarized in Table 1 below.

Table 1 – ASTM D3330, 90° degree peel adhesion (oz/in. width) of 3M 3015 to York materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Instant (%)</th>
<th>24 Hour Dwell (%)</th>
<th>65°C (149°F)</th>
<th>80°C (176°F)</th>
<th>104°C (220°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>York™ Multi-Flash 500</td>
<td>31.2</td>
<td>62.6</td>
<td>54.7</td>
<td>80.7</td>
<td>SF*</td>
</tr>
<tr>
<td>York™ Multi-Flash SS</td>
<td>36.6</td>
<td>63.1</td>
<td>SF*</td>
<td>SF*</td>
<td>SF*</td>
</tr>
<tr>
<td>York™ Flash-Vent</td>
<td>38.2</td>
<td>67.0</td>
<td>SF*</td>
<td>SF*</td>
<td>SF*</td>
</tr>
</tbody>
</table>

SF* = Substrate Failure, see explanation below

Acrylic Pressure Sensitive Adhesives (PSA), like that featured in 3M air and vapor barrier 3015, achieves its ultimate bond strength 24-72 hrs after application. This is readily observed in the “instant” versus “24 hour dwell” values observed in Table 1. These values also indicate that the adhesive bond to the York polymeric fabric coatings is very good.

Almost all of the heat aged samples exhibited substrate failure (SF*) upon peel adhesion testing. Substrate Failure means that the polymeric fabric or nonwoven in the York flashing material was destroyed before 3M 3015 released from the surface.
Results: (continued) Adhesion with York™ 304 Self-Adhering Stainless Steel:

Adhesion of 3M™ Air and Vapor Barrier 3015 with York™ 304 Self-Adhering Stainless Steel was determined via ASTM D3330, Standard Test Method for Peel Adhesion of Pressure Sensitive Tape, Method F, 90° peel. A small amount of York™ 304 was provided and heat aged samples were prepared. Initial Adhesion (24 hour dwell) was not obtained due to a lack of samples. The data is summarized below in Table 2.

<table>
<thead>
<tr>
<th>Aged 1 Week @:</th>
<th>65°C (149°F)</th>
<th>80°C (176°F)</th>
<th>104°C (220°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>York™ 304 adhered to 3M 3015</td>
<td>231.3</td>
<td>194.5 AF*</td>
<td>186.3 AF*</td>
</tr>
<tr>
<td>3M 3015 adhered to York™ 304</td>
<td>97.4</td>
<td>105.3</td>
<td>SF*</td>
</tr>
</tbody>
</table>

AF* = Adhesive Failure, see explanation below
SF* = Substrate Failure, see explanation below

In general, the York™ 304 had an outstanding bond to 3M air and vapor barrier 3015, and 3M 3015 had great bond to York™ 304.

The Adhesive Failure (AF*) reported for the York™ 304 was a result significant adhesive transfer from the stainless steel flashing product to the backing of 3M 3015.

The Substrate Failure (SF*) in the adhesion of 3M 3015 to York™ 304 was a result of the butyl adhesive of York™ 304 melt flowing during the 104°C (220°F) heat exposure and the York™ 304 releasing from the rigid metal panel used to fixture the test.

Adhesion of York™ UniverSeal US-100 Liquid Tape:

Compatibility of York™ UniverSeal US-100 Liquid Tape, a polyether based sealant, was performed by casting beads of the sealant onto 3M air and vapor Barrier 3015. Three beads, each roughly 4 inches long by 1/4 inch wide were allowed to cure for 1 week at room temperature and then heat aged at various temperatures. After heat exposure the bead samples were pulled by hand with a pliers to determine if the sealant had lost its bond integrity to the surface of 3M 3015. The results are summarized below in Table #3.

<table>
<thead>
<tr>
<th>Aged 1 Week @:</th>
<th>Cured 1 Week @ Room Temperature</th>
<th>65°C (149°F)</th>
<th>80°C (176°F)</th>
<th>104°C (220°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>York™ Multi-Flash 500</td>
<td>SF*</td>
<td>SF*</td>
<td>SF*</td>
<td>SF*</td>
</tr>
</tbody>
</table>

SF* = Substrate Failure, see explanation below

The bond between the York™ UniverSeal US-100 Liquid Tape to 3M air and vapor barrier 3015 was such that the bead of sealant could not be removed without destroying the membrane. Some shrinkage of the sealant, and subsequent wrinkling of the membrane, was observed after heat aging.
3M™ Air and Vapor Barrier 3015
Building Envelope Solutions
Adhesion to Through Wall Flashing

Conclusions: 3M™ Air and Vapor Barrier 3015 has excellent adhesive bond and compatibility with the listed Through Wall Flashing components from York™ Manufacturing.

For additional information, please contact 1-800-362-3550.

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