

# CCMC 14003-R

## CCMC Canadian code compliance evaluation

|                           |   |
|---------------------------|---|
| <b>CCMC number:</b>       | 14003-R   |
| <b>Status:</b>            | Active  |
| <b>Issue date:</b>        | 2014-11-19  |
| <b>Modified date:</b>     | 2023-11-08  |
| <b>Evaluation holder:</b> | <p><b>Owens Corning Canada Inc.</b><br/>           3450 McNicoll Avenue<br/>           Scarborough ON M1V 1Z5<br/>           Canada<br/>           Website: <a href="http://owenscorning.ca/index.html">owenscorning.ca/index.html</a><br/>           Telephone: 1-800-988-5269</p> |
| <b>Product names:</b>     | <ul style="list-style-type: none"> <li>• FlashSealR®</li> <li>• JointSealR®</li> </ul>  |
| <b>Compliance:</b>        | NBC 2015  |
| <b>Criteria:</b>          | CCMC-TG-076526.02-15, "CCMC Technical Guide for Acrylic Polyolefin Sheathing Tape and Self-Adhering Flashing"   |

**In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.**

[Learn more about CCMC recognition](#) [Look for the trusted CCMC mark on products to verify compliance.](#)

## Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated products, when used as a water-resistant barrier material providing continuity of the second plane of protection along vertical or horizontal joints of insulating sheathing panels and around exterior wall penetrations (windows and doors), respectively, in accordance with the conditions and limitations stated in this evaluation, comply with the following code:

### National Building Code of Canada 2015

| Code provision  | Solution type      |
|---|--------------------|
| 9.20.13.6.(3) Where the frame wall is sheathed with a ... | <u>Alternative</u> |
| 9.27.3.7. Flashing Materials                              | <u>Alternative</u> |
| 9.27.3.8. Flashing Installation                           | <u>Alternative</u> |
| 9.27.4. Sealants  | <u>Acceptable</u>  |

The above opinion(s) is/are based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

# Product information

## Product names

- FlashSealR®
- JointSealR®

## Product description

“FlashSealR® Foam Board Flashing Tape” is a self-adhered, weatherproof tape designed for sealing around openings and penetrations through exterior walls.

“JointSealR® Foam Board Joint Tape” is a self-adhered, weatherproof tape designed for sealing vertical or horizontal joints between extruded polystyrene rigid insulating boards manufactured by Owens Corning (see CCMC 13430-L, 13431-L, 12935-R and 13387-R).

The products are composed of multi-layer polyolefin films. The films are 0.13 mm thick and the total thickness of the products is 0.25 mm. The products are available in rolls that are 90 mm, 102 mm, 152 mm, and 228 mm wide, and 27.4 m long.

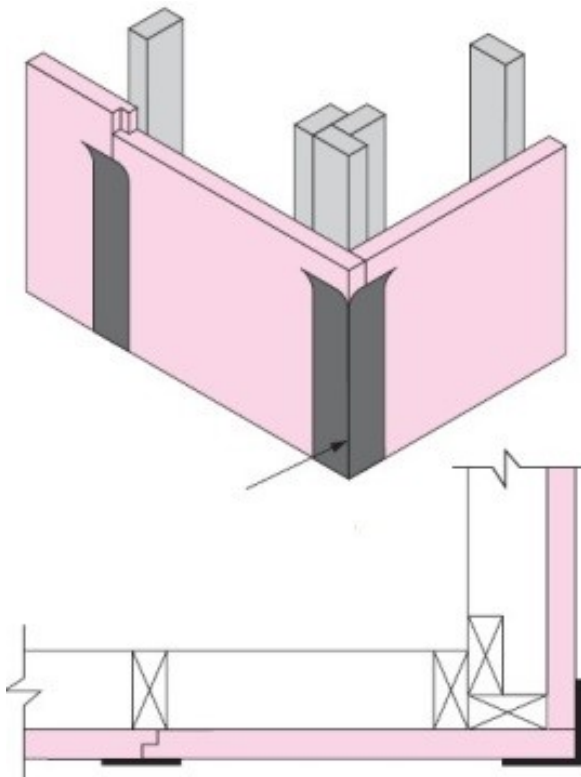


Figure 1. “JointSealR® Foam Board Joint Tape”

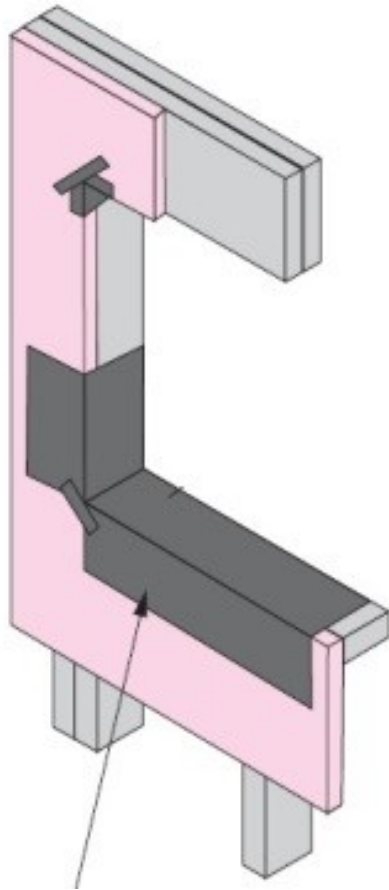


Figure 2. “FlashSealR® Foam Board Flashing Tape”

## Manufacturing plant

This evaluation is valid only for products produced at the following plant:

| Product names | Manufacturing plant |
|---------------|---------------------|
|               | Knoxville, IA, US   |
| FlashSealR®   | ☑                   |
| JointSealR®   | ☑                   |

☑ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

## Conditions and limitations

The CCMC's compliance opinion is bound by this product being used in accordance with the conditions and limitations set out below.

- The products are intended to be used to provide continuity to the second plane of protection in conjunction with all "Foamular®" XPS insulations manufactured by Owens Corning (see CCMC 13431-L, 13430-L, 12935-R and 13387-R).
- The "Foamular®" XPS insulation must not be exposed to ultraviolet (UV) irradiance greater than 20.2 kJ/m<sup>2</sup> prior to the application of the products. This value of UV irradiance exposure represents approximately four days in summer or 23 days in winter on a vertical, south-facing wall in the southern regions of Canada.
- Should the "Foamular®" XPS insulation be exposed to a UV irradiance greater than 20.2 kJ/m<sup>2</sup> prior to the application of the products, the surface of "Foamular®" XPS insulation must be scraped until no oxidation layer remains.
- When the products are used in conjunction with doors and windows, the doors and windows must be installed as per Subsection 9.7.6, Installation (Windows, Doors and Skylights), of Division B of the NBC 2015.
- The products must be used in conjunction with sealants installed to maintain the continuity with the penetrations (e.g., doors, windows), conforming to Subsection 9.27.4., Sealants, of Division B of the NBC 2015.
- The products must be used with cladding that incorporates a capillary break as per Sentence 9.27.2.2.(1), Minimum Protection from Precipitation Ingress, of Division B of the NBC 2015, unless the cladding has been deemed not to require an air space (e.g., by building officials based on past cladding performance or by the CCMC).
- The products must be installed in accordance with the manufacturer's installation manual (Foamular® CodeBord® Air Barrier System Installation Manual – 2016).
- The products or product packaging must be identified with the following information:
  - manufacturer's name or logo; and
  - the phrase "CCMC 14003-R."

## Technical information

This evaluation is based on demonstrated conformance with the following criteria:

| Criteria number      | Criteria name   |
|----------------------|---|
| CCMC-TG-076526.02-15 | CCMC Technical Guide for Acrylic Polyolefin Sheathing Tape and Self-Adhering Flashing |

The Report Holder has submitted technical documentation for the CCMC's evaluation. Testing was conducted at laboratories recognized by the CCMC. The corresponding technical evidence for this product is summarized below.

## Material requirements

**Table 1. Results of testing of material properties of "JointSealR® Foam Board Joint Tape" and "FlashSealR® Foam Board Flashing Tape"**

| Property           | Unit | Requirement   | Declared value | Result |
|--------------------|------|---|----------------|--------|
| Thickness, average | mm   | $\geq$ (Declared value) and $\leq$ (Declared value + 0.025) | 0.25           | 0.25   |
| Width              | mm   | $\geq$ (Declared width) and $\leq$ (Declared width + 0.8)   | 88.9           | 89.4   |
| Width              | mm   |   | 101.6          | 102.4  |
| Width              | mm   |   | 152.4          | 152.8  |
| Width              | mm   |   | 228.6          | 229.0  |
| Length             | %    | $\geq$ (Declared length) and $\leq$ (Declared length + 1%)  | 27.4           | 28     |

## Performance requirements

**Table 2. Results of testing of initial performance properties of "JointSealR® Foam Board Joint Tape" and "FlashSealR® Foam Board Flashing Tape"**

| Property                                      | Unit | Requirement          | Result       |
|---|------|----------------------|--------------|
| Tensile breaking strength, MD <sup>(1)</sup>  | N/m  | Report value         | 3 523        |
| Tensile breaking strength, CMD <sup>(2)</sup> | N/m  | Report value         | 3 209        |
| Elongation, average, MD                       | %    | $\geq$ 400           | 1 033        |
| Elongation, average, CMD                      | %    | $\geq$ 400           | 1 037        |
| Load strain, MD                               | –    | 800 000              | 3 649<br>905 |
| Load strain, CMD                              | –    | 800 000              | 3 335<br>020 |
| Nail sealability                              | –    | No water penetration | Pass         |
| Water resistance                              | –    | No water seepage     | Pass         |

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| Property  | Unit | Requirement                         | Result |
|---|------|-------------------------------------|--------|
| Pliability at manufacturer's minimum specified installation temperature (-20°C) | –    | No cracking and no loss of adhesion | Pass   |
| Bond separation (flagging)  | mm   | ≤ 2                                 | ≤ 1    |

**Notes:**

- 1 MD – Machine direction
- 2 CMD – Cross-machine direction

**Table 3. Results of testing of performance properties after accelerated aging (UV- and Heat-aging)**

| Property                                      | Unit          | Requirement      | Result           |
|---|---------------|------------------|------------------|
| Tensile breaking strength, MD <sup>(1)</sup>  | % of original | ≥ 75             | 78 (2 760.4 N/m) |
| Tensile breaking strength, CMD <sup>(2)</sup> | % of original | ≥ 75             | 77 (2 466.8 N/m) |
| Elongation, average, MD                       | %             | ≥ 400            | 999              |
| Elongation, average, CMD                      | %             | ≥ 400            | 953              |
| Load strain, MD                               | –             | 800 000          | 2 761 139        |
| Load strain, CMD                              | –             | 800 000          | 2 353 490        |
| Water resistance                              | –             | No water seepage | Pass             |
| Pliability at low temperature (-20°C)         | –             | Pass             | Pass             |

**Notes:**

- 1 MD – Machine direction
- 2 CMD – Cross-machine direction

**Table 4. Results of testing of peel and shear adhesion at room temperature (23°C)**

| Property      | Substrate         | Unit | Requirement | Result |
|---------------|-------------------|------|-------------|--------|
| Peel adhesion | PVC               | N/m  | ≥ 200       | 569.5  |
|               | Window wood, pine | N/m  | ≥ 200       | 680.4  |
|               | Anodized aluminum | N/m  | ≥ 200       | 618.8  |

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| Property  | Substrate                                       | Unit                         | Requirement   | Result   |
|---|---|------------------------------|---------------|----------|
|   | Fibre-reinforced plastic (FRP)                  | N/m                          | ≥ 200         | 626.5    |
|   | Framing lumber, spruce                          | N/m                          | ≥ 200         | 641.1    |
|   | Non-adherent side of the tape backing           | N/m                          | ≥ 200         | 461.2    |
|   | Unexposed plane "Foamular®" XPS                 | N/m                          | ≥ 200         | 631.6    |
|   | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | N/m                          | ≥ 200         | 519.9    |
| Shear adhesion                                  | PVC   | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2 | Rating 1 |
|   | Window wood, pine                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|   | Anodized aluminum                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|   | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|   | Framing lumber, spruce                          | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|   | Non-adherent side of the tape backing           | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|   | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
| UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | Rating 1 to 4                                   | Rating 1 or 2                | Rating 1      |          |

**Notes:**

<sup>1</sup> The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.

<sup>2</sup> Rating 1 means ≥ 75% of the surface remains adhered.  
Rating 2 means 50% to 75% of the surface remains adhered.  
Rating 3 means 25% to 50% of the surface remains adhered.  
Rating 4 means less than 25% of the surface remains adhered.

**Table 5. Results of testing of peel and shear adhesion for the products installed at room temperature and tested at high temperature (50°C)**

| Property      | Substrate                             | Unit | Requirement | Result |
|---------------|---------------------------------------|------|-------------|--------|
| Peel adhesion | PVC                                   | N/m  | ≥ 200       | 352.4  |
|               | Window wood, pine                     | N/m  | ≥ 200       | 267.0  |
|               | Anodized aluminum                     | N/m  | ≥ 200       | 329.8  |
|               | Fibre-reinforced plastic (FRP)        | N/m  | ≥ 200       | 335.2  |
|               | Framing lumber, spruce                | N/m  | ≥ 200       | 212.7  |
|               | Non-adherent side of the tape backing | N/m  | ≥ 200       | 294.8  |

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| Property       | Substrate                                       | Unit                         | Requirement   | Result   |
|----------------|---|------------------------------|---------------|----------|
|                | Unexposed plane "Foamular®" XPS                 | N/m                          | ≥ 200         | 359.8    |
|                | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | N/m                          | ≥ 200         | 321.8    |
| Shear adhesion | PVC   | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2 | Rating 1 |
|                | Window wood, pine                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Anodized aluminum                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Framing lumber, spruce                          | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Non-adherent side of the tape backing           | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |

**Notes:**

<sup>1</sup> The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.

<sup>2</sup> Rating 1 means ≥ 75% of the surface remains adhered.  
Rating 2 means 50% to 75% of the surface remains adhered.  
Rating 3 means 25% to 50% of the surface remains adhered.  
Rating 4 means less than 25% of the surface remains adhered.

**Table 6. Results of testing of peel and shear adhesion for the products installed at room temperature and tested at low temperature (-20°C)**

| Property       | Substrate                                       | Unit                         | Requirement   | Result   |
|----------------|---|------------------------------|---------------|----------|
| Peel adhesion  | PVC   | N/m                          | ≥ 200         | 809.5    |
|                | Window wood, pine                               | N/m                          | ≥ 200         | 895.7    |
|                | Anodized aluminum                               | N/m                          | ≥ 200         | 813.6    |
|                | Fibre-reinforced plastic (FRP)                  | N/m                          | ≥ 200         | 916.0    |
|                | Framing lumber, spruce                          | N/m                          | ≥ 200         | 936.5    |
|                | Non-adherent side of the tape backing           | N/m                          | ≥ 200         | 625.8    |
|                | Unexposed plane "Foamular®" XPS                 | N/m                          | ≥ 200         | 547.3    |
|                | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | N/m                          | ≥ 200         | 491.7    |
| Shear adhesion | PVC   | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2 | Rating 1 |

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| Property | Substrate                                       | Unit          | Requirement   | Result   |
|----------|---|---------------|---------------|----------|
|          | Window wood, pine                               | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Anodized aluminum                               | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Framing lumber, spruce                          | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Non-adherent side of the tape backing           | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |

**Notes:**

- 1 The "Foamular®" XPS was exposed to 48 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.
- 2 Rating 1 means ≥ 75% of the surface remains adhered.  
Rating 2 means 50% to 75% of the surface remains adhered.  
Rating 3 means 25% to 50% of the surface remains adhered.  
Rating 4 means less than 25% of the surface remains adhered.

**Table 7. Results of testing of peel and shear adhesion after 7-day water immersion**

| Property       | Substrate                                       | Unit                         | Requirement   | Result   |
|----------------|---|------------------------------|---------------|----------|
| Peel adhesion  | PVC   | N/m                          | ≥ 200         | 567.0    |
|                | Window wood, pine                               | N/m                          | ≥ 200         | 568.2    |
|                | Anodized aluminum                               | N/m                          | ≥ 200         | 621.2    |
|                | Fibre-reinforced plastic (FRP)                  | N/m                          | ≥ 200         | 660.5    |
|                | Framing lumber, spruce                          | N/m                          | ≥ 200         | 713.1    |
|                | Non-adherent side of the tape backing           | N/m                          | ≥ 200         | 468.5    |
|                | Unexposed plane "Foamular®" XPS                 | N/m                          | ≥ 200         | 681.9    |
|                | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | N/m                          | ≥ 200         | 565.3    |
| Shear adhesion | PVC   | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2 | Rating 1 |
|                | Window wood, pine                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Anodized aluminum                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |

| Property | Substrate                                       | Unit          | Requirement   | Result   |
|----------|---|---------------|---------------|----------|
|          | Framing lumber, spruce                          | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Non-adherent side of the tape backing           | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |
|          | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | Rating 1 to 4 | Rating 1 or 2 | Rating 1 |

**Notes:**

1 The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.

2 Rating 1 means ≥ 75% of the surface remains adhered.  
Rating 2 means 50% to 75% of the surface remains adhered.  
Rating 3 means 25% to 50% of the surface remains adhered.  
Rating 4 means less than 25% of the surface remains adhered.

**Table 8. Results of testing of peel and shear adhesion installed 25 % <sup>(1)</sup> elongation**

| Property              | Substrate                                       | Unit                         | Requirement   | Result   |
|-----------------------|---|------------------------------|---------------|----------|
| <b>Peel adhesion</b>  | PVC   | N/m                          | ≥ 200         | 681.2    |
|                       | Window wood, pine                               | N/m                          | ≥ 200         | 692.1    |
|                       | Anodized aluminum                               | N/m                          | ≥ 200         | 678.7    |
|                       | Fibre-reinforced plastic (FRP)                  | N/m                          | ≥ 200         | 703.9    |
|                       | Framing lumber, spruce                          | N/m                          | ≥ 200         | 723.0    |
|                       | Non-adherent side of the tape backing           | N/m                          | ≥ 200         | 615.4    |
|                       | Unexposed plane "Foamular®" XPS                 | N/m                          | ≥ 200         | 585.1    |
|                       | UV-exposed plane "Foamular®" XPS <sup>(2)</sup> | N/m                          | ≥ 200         | 508.5    |
| <b>Shear adhesion</b> | PVC   | Rating 1 to 4 <sup>(3)</sup> | Rating 1 or 2 | Rating 2 |
|                       | Window wood, pine                               | Rating 1 to 4                | Rating 1 or 2 | Rating 2 |
|                       | Anodized aluminum                               | Rating 1 to 4                | Rating 1 or 2 | Rating 2 |
|                       | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4                | Rating 1 or 2 | Rating 2 |
|                       | Framing lumber, spruce                          | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                       | Non-adherent side of the tape backing           | Rating 1 to 4                | Rating 1 or 2 | Rating 1 |
|                       | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4                | Rating 1 or 2 | Rating 2 |

| Property | Substrate                                       | Unit          | Requirement   | Result   |
|----------|---|---------------|---------------|----------|
|          | UV-exposed plane "Foamular®" XPS <sup>(2)</sup> | Rating 1 to 4 | Rating 1 or 2 | Rating 2 |

**Notes:**

- 1 The product is elongated to 125% of its original length and installed on substrates.
- 2 The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.
- 3 Rating 1 means ≥ 75% of the surface remains adhered.  
Rating 2 means 50% to 75% of the surface remains adhered.  
Rating 3 means 25% to 50% of the surface remains adhered.  
Rating 4 means less than 25% of the surface remains adhered.

**Table 9. Results of testing of peel and shear adhesion after accelerated aging (UV- and Heat-Aging)**

| Property              | Substrate                                       | Unit                         | Requirement   | Result          |
|-----------------------|---|------------------------------|---------------|-----------------|
| <b>Peel adhesion</b>  | PVC   | % of original                | ≥ 75          | 158 (675.2 N/m) |
|                       | Window wood, pine                               | % of original                | ≥ 75          | 151 (771.1 N/m) |
|                       | Anodized aluminum                               | % of original                | ≥ 75          | 154 (715.7 N/m) |
|                       | Fibre-reinforced plastic (FRP)                  | % of original                | ≥ 75          | 170 (798.3 N/m) |
|                       | Framing lumber, spruce                          | % of original                | ≥ 75          | 162 (775.0 N/m) |
|                       | Non-adherent side of the tape                   | % of original                | ≥ 75          | 161 (557.8 N/m) |
|                       | Unexposed plane "Foamular®" XPS                 | % of original                | ≥ 75          | 135 (639.2 N/m) |
|                       | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | % of original                | ≥ 75          | 133 (519.2 N/m) |
| <b>Shear adhesion</b> | PVC   | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2 | Rating 1        |
|                       | Window wood, pine                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | Anodized aluminum                               | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | Fibre-reinforced plastic (FRP)                  | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | Framing lumber, spruce                          | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | Non-adherent side of the tape backing           | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | Unexposed plane "Foamular®" XPS                 | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |
|                       | UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | Rating 1 to 4                | Rating 1 or 2 | Rating 1        |

**Notes:**

- 1 The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.
- 2 Rating 1 means ≥ 75% of the surface remains adhered.  
 Rating 2 means 50% to 75% of the surface remains adhered.  
 Rating 3 means 25% to 50% of the surface remains adhered.  
 Rating 4 means less than 25% of the surface remains adhered.

**Table 10. Results of testing of peel adhesion of substrate after shelf-life test (equivalent to 12 months at 20°C)**

| Substrate                                       | Unit | Requirement | Result |
|---|------|-------------|--------|
| PVC   | N/m  | ≥ 200       | 585.0  |
| Window wood, pine                               | N/m  | ≥ 200       | 671.3  |
| Anodized aluminum                               | N/m  | ≥ 200       | 682.5  |
| Fibre-reinforced plastic (FRP)                  | N/m  | ≥ 200       | 726.1  |
| Framing lumber, spruce                          | N/m  | ≥ 200       | 671.3  |
| Non-adherent side of the tape backing           | N/m  | ≥ 200       | 451.6  |
| Unexposed plane "Foamular®" XPS                 | N/m  | ≥ 200       | 611.3  |
| UV-exposed plane "Foamular®" XPS <sup>(1)</sup> | N/m  | ≥ 200       | 379.5  |

**Notes:**

- 1 The "Foamular®" XPS was exposed to 96 hours of UV radiation at irradiance of 0.35 W/m<sup>2</sup>.

**Table 11. Results of testing of performance properties of substrate after thermal cycling <sup>(1)</sup>**

| Substrate                          | Unit                         | Requirement          | Result   |
|------------------------------------|------------------------------|----------------------|----------|
| Nail sealability                   | –                            | No water penetration | Pass     |
| Peel adhesion (anodized aluminum)  | N/m                          | ≥ 200                | 647.9    |
| Shear adhesion (anodized aluminum) | Rating 1 to 4 <sup>(2)</sup> | Rating 1 or 2        | Rating 1 |

**Notes:**

- 1 Specimens have been submitted to 25 thermal cycles. Each thermal cycle includes 8 hours at 50°C and 16 hours at –40°C.

- 2 Rating 1 means  $\geq 75\%$  of the surface remains adhered.  
 Rating 2 means 50% to 75% of the surface remains adhered.  
 Rating 3 means 25% to 50% of the surface remains adhered.  
 Rating 4 means less than 25% of the surface remains adhered.

## Air leakage of window flashing system

Table 12. Results of testing of air leakage of window installations at exterior wall openings <sup>(1)</sup>

| Flashing system   | Window installation    | Unit               | Requirement   | Result |
|---|------------------------|--------------------|---------------|--------|
| "FlashSealR <sup>®</sup> Foam Board Flashing Tape" <sup>(2)</sup> | Flanged                | L/s-m <sup>2</sup> | ≤ Benchmark   | 0.087  |
| Benchmark <sup>(3)</sup>  | Flanged <sup>(4)</sup> | L/s-m <sup>2</sup> | Report result | 0.22   |
| "FlashSealR <sup>®</sup> Foam Board Flashing Tape"                | Boxed                  | L/s-m <sup>2</sup> | ≤ Benchmark   | 0.052  |
| Benchmark   | Boxed <sup>(5)</sup>   | L/s-m <sup>2</sup> | Report result | 0.12   |

### Notes:

- 1 Air leakage rate measured at 75 Pa.
- 2 "FlashSealR<sup>®</sup> Foam Board Flashing Tape" was installed in accordance to the manufacturer's instructions, with the following modifications: corner pieces of 75 mm wide were used at the base of the corner sill and a metal head flashing was extended 50 mm beyond the rough opening of the window.
- 3 The benchmark flashing is based on the installation requirements of the NBC 2015 and CAN/CSA-A440.4-07 (R2012), "Window, Door, and Skylight Installation." A breather-type sheathing membrane was wrapped around the header, with a second piece of breather-type sheathing membrane covering the rough opening. The membrane was cut using the "I-cut" method. The window sill was covered with an impermeable adhesive flashing that continued up the sides of the rough opening for a distance of 200 mm.
- 4 The flanged window was fastened using cap-nail fasteners through the nailing fins located on top of the "Foamular<sup>®</sup>" XPS insulation and into the studs.
- 5 The boxed window was installed using clips and fasteners through the shims into the sides of the stud frame.

## Water tightness of window flashing system

The water tightness of "FlashSealR<sup>®</sup> Foam Board Flashing Tape" was compared with a benchmark flashing system conforming to the window installation and flashing system requirements of the NBC 2015. The flashing systems were compared with two window installation scenarios: a window installation with no deficiency and a window installation with a deficiency. The deficiency is a 3-mm-diameter hole drilled into the bottom left corner of the window sash through to the sloped window sill. The deficiency is designed to mimic a joint failure in the window sash allowing water to enter through to the flashing system at the window sill.

**Table 13. Results of testing of window installation with no deficiency <sup>(1)</sup>**

| Flashing system                                    | Window installation | Requirement    | Result |
|--|---------------------|----------------|--------|
| "FlashSealR <sup>®</sup> Foam Board Flashing Tape" | Flanged             | No water entry | Pass   |
| Benchmark  | Flanged             | No water entry | Pass   |
| "FlashSealR <sup>®</sup> Foam Board Flashing Tape" | Boxed               | No water entry | Pass   |
| Benchmark  | Boxed               | No water entry | Pass   |

**Notes:**

- 1 The window installations were tested with applied pressures ranging from 0 to 700 Pa, and water spray rates ranging from 1.0 L/min/m<sup>2</sup> to 3.2 L/min/m<sup>2</sup>.

**Table 14. Results of testing of flanged window installation with a deficiency – water spray rate 1.0 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |                            | Requirement   | Result    |                            |
|-----------------------|---------------------------|----------------------------|---|-----------|----------------------------|
|                       | Benchmark                 | "FlashSealR <sup>®</sup> " |   | Benchmark | "FlashSealR <sup>®</sup> " |
| 0                     | 4                         | 12                         | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass                       |
| 50                    | 5                         | 9                          |   | Pass      | Pass                       |
| 80                    | 4                         | 17                         |   | Pass      | Pass                       |
| 160                   | 14                        | 14                         |   | Pass      | Pass                       |
| 310                   | 14                        | 25                         |   | Pass      | Pass                       |
| 520                   | 17                        | 31                         |   | Pass      | Pass                       |
| 730                   | 18                        | 60                         |   | Pass      | Pass                       |

**Table 15. Results of testing of flanged window installation with a deficiency – water spray rate 2.0 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |                            | Requirement   | Result    |                            |
|-----------------------|---------------------------|----------------------------|---|-----------|----------------------------|
|                       | Benchmark                 | "FlashSealR <sup>®</sup> " |   | Benchmark | "FlashSealR <sup>®</sup> " |
| 0                     | 6                         | 11                         | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass                       |
| 50                    | 6                         | 11                         |   | Pass      | Pass                       |
| 70                    | 7                         | 12                         |   | Pass      | Pass                       |
| 150                   | 11                        | 13                         |   | Pass      | Pass                       |
| 310                   | 13                        | 24                         |   | Pass      | Pass                       |

| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement | Result    |               |
|-----------------------|---------------------------|---------------|-------------|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |             | Benchmark | "FlashSealR®" |
| 520                   | 16                        | 26            |             | Pass      | Pass          |
| 720                   | 19                        | 40            |             | Pass      | Pass          |

**Table 16. Results of testing of flanged window installation with a deficiency – water spray rate 3.2 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement   | Result    |               |
|-----------------------|---------------------------|---------------|---|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |   | Benchmark | "FlashSealR®" |
| 0                     | 5                         | 9             | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass          |
| 60                    | 8                         | 19            |   | Pass      | Pass          |
| 80                    | 10                        | 17            |   | Pass      | Pass          |
| 160                   | 10                        | 20            |   | Pass      | Pass          |
| 310                   | 15                        | 21            |   | Pass      | Pass          |
| 520                   | 18                        | 24            |   | Pass      | Pass          |
| 720                   | 21                        | 45            |   | Pass      | Pass          |

**Table 17. Results of testing of boxed window installation with a deficiency – water spray rate 1.0 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement   | Result    |               |
|-----------------------|---------------------------|---------------|---|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |   | Benchmark | "FlashSealR®" |
| 0                     | 13                        | 3             | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass          |
| 50                    | 14                        | 5             |   | Pass      | Pass          |
| 80                    | 15                        | 7             |   | Pass      | Pass          |
| 150                   | 16                        | 6             |   | Pass      | Pass          |
| 310                   | 16                        | 8             |   | Pass      | Pass          |
| 520                   | 17                        | 9             |   | Pass      | Pass          |
| 700                   | 18                        | 10            |   | Pass      | Pass          |

**Table 18. Results of testing of boxed window installation with a deficiency – water spray rate 2.0 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement   | Result    |               |
|-----------------------|---------------------------|---------------|---|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |   | Benchmark | "FlashSealR®" |
| 0                     | 13                        | 3             | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass          |
| 50                    | 16                        | 8             |   | Pass      | Pass          |

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| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement | Result    |               |
|-----------------------|---------------------------|---------------|-------------|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |             | Benchmark | "FlashSealR®" |
| 80                    | 15                        | 12            |             | Pass      | Pass          |
| 160                   | 13                        | 14            |             | Pass      | Pass          |
| 310                   | 15                        | 16            |             | Pass      | Pass          |
| 510                   | 17                        | 18            |             | Pass      | Pass          |
| 720                   | 19                        | 19            |             | Pass      | Pass          |

**Table 19. Results of testing of boxed window installation with a deficiency – water spray rate 3.2 L/min/m<sup>2</sup>**

| Applied pressure (Pa) | Water entry rate (mL/min) |               | Requirement   | Result    |               |
|-----------------------|---------------------------|---------------|---|-----------|---------------|
|                       | Benchmark                 | "FlashSealR®" |   | Benchmark | "FlashSealR®" |
| 0                     | 10                        | 15            | No water entry beyond the sill or to the stud cavity. No accumulation of water on the sill. | Pass      | Pass          |
| 50                    | 11                        | 19            |   | Pass      | Pass          |
| 80                    | 14                        | 20            |   | Pass      | Pass          |
| 150                   | 12                        | 17            |   | Pass      | Pass          |
| 320                   | 13                        | 18            |   | Pass      | Pass          |
| 520                   | 15                        | 22            |   | Pass      | Pass          |
| 710                   | 18                        | 22            |   | Pass      | Pass          |

# Administrative information

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# Code compliance as an acceptable solution

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## Code Compliance via Acceptable Solutions

If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

### CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

# Code compliance as an alternative solution

## Code Compliance via Alternative Solutions

Where a design differs from the acceptable solutions in Division B, then it should be treated as an **"alternative solution."** A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

### CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
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