

ULC Evaluation Report

ULC ER-R40155

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UL Category Code: ULEY7

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DIVISION: 07 25 00 WEATHER BARRIERS

Sub Level 1: 07 26 00 – Vapor Retarders

Sub Level 2: 07 26 13 – Above-Grade Vapor Retarders

Sub-Level 1: 07 27 00 – Air Barriers

Sub-Level 2: 07 27 19 – Plastic Sheet Air Barrier

COMPANY:

Certainteed Corporation Insulation Group

20 Moores Road

Malvern, PA, 19355

United States of America

800-233-8990

1. SUBJECT

MemBrain™ Continuous Air Barrier & Smart Vapor Retarder

2. SCOPE OF EVALUATION

2015 National Building Code of Canada, NBCC.

The product was evaluated for the following properties:

NBC Division B, Part 5 – Environmental Separation

NBC Division B, Part 5, Clause 5.4.1.1(1) – Required resistance to Air Leakage

NBC Division B, Part 5, Clause 5.4.1.2(1a) – Air Barrier Systems Properties

NBC Division B, Part 5, Clause 5.5.1.2(3) – Vapour Diffusion

NBC Division B, Part 9 – Housing & Small Buildings

NBC Division B, Part 9, Clause 9.25.3.1 – Required Barrier to Air leakage

NBC Division B, Part 9, Clause 9.25.3.2 – Air Barrier Systems Properties

NBC Division B, Part 9, Clause 9.25.3.3 – Continuity of the Air Barrier System

NBC Division B, Part 9, Clause 9.25.4.2(1) and (4) – Vapour Barrier

NBC Division B, Part 9, Clause 9.36.2.9(1) – Air Tightness



3.0 REFERENCED DOCUMENTS

ASTM:

ASTM D828-97 (Reapproved 2002), Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus
ASTM E96-13, Standard Test Method for Water Vapor Transmission of Materials
ASTM E2178-11, Standard Test Method for Air Permeance of Building Materials
ASTM E2357-11, Standard for Air Barrier Assemblies – Specification

CAN/CGSB:

CAN/CGSB 51.33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for use in Building Construction

CAN/ULC:

CAN/ULC-S742-11, Standard for Air Barrier Assemblies – Specification.

4.0. USES

“MemBrain™ Continuous Air Barrier & Smart Vapor Retarder” is an interior air and vapour barrier used for air leakage and vapour diffusion control of wall assemblies and ceilings. The vapour barrier is intended to be used behind the interior side of an exterior wall and installed behind the interior gypsum board as it requires support without exposure to direct elements or Ultraviolet (UV) exposure. Service penetration details, such as sheet terminations, lapped joints, circular penetrations, electrical outlet, junction box, PVC pipes, metal pipes, and window rough opening are to be used in conjunction with manufacturer approved sheathing tape, acoustical or silicone based sealant to provide continuity as an air and vapour barrier system. The sheathing tape, acoustical and silicone based sealant were not evaluated as part of this report. During installation of the product where ultraviolet (UV) exposure is imminent, the product must be covered from direct exposure, or the exposure shall be limited based on the manufacturer suggested timeframe.

5.0 PRODUCT DESCRIPTION

“MemBrain™ Continuous Air Barrier & Smart Vapor Retarder” is a semi-translucent 0.05 mm thick polyamide-6 (nylon-6) membrane. The product are offered in various width and roll length with individually cardboard packaging and labelling at 8' x 50' roll, 8' x 100' roll, 9' x 100' roll, 10' x 100', and 12' x 100' roll.

The air and vapour membrane has been tested in accordance for the performance characteristics reported in Section 6.0 of this report with the following test standards:

ASTM D828-97 (Reapproved 2002) for Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus
ASTM E96-13, Standard Test Method for Water Vapor Transmission of Materials
ASTM E2178-11, Standard Test Method for Air Permeance of Building Materials
CAN/CGSB 51.33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for use in Building Construction.

The product was evaluated as an assembly to ASTM E2357 and CAN/ULC S742. In order to create a continuous seal for the tested assemblies, the manufacturer specified sheathing tape, acoustical and silicone sealant were used for the construction. The sheathing tape, acoustical and silicone sealant are not part of the evaluation report. Refer to manufacture's instruction for use of sheathing tape, acoustical and silicone sealant.

The air and vapour membrane has only been tested as wall assemblies in accordance to the following test standards:

- o ASTM E2357-11, Standard for Air Barrier Assemblies – Specification
- o CAN/ULC-S742-11, Standard for Air Barrier Assemblies – Specification

6.0 PERFORMANCE CHARACTERISTICS

A. Water Vapour Permeance / Vapour Diffusion Properties:

The air and vapour membrane demonstrates the ability to provide vapour diffusion when tested in accordance to ASTM E96/E96M, desiccant method (Method A), with water vapour permeance of less than 45 ng/Pa·s·m². The material is intended to be positioned in the building component or assembly to minimize and reduce moisture transfer by diffusion.

B. Air Leakage - Material Properties:

The air and vapour membrane complies and meets the air leakage characteristics of less than 0.02 L/(s·m²) when tested in accordance to ASTM E2178.

C. Air Leakage Resistance of Assemblies:

The air and vapour membrane complies and meets the air leakage characteristics of no greater than 0.20 L/(s·m²) when tested in accordance to CAN/ULC S742. When tested in accordance with ASTM E2357, the air leakage characteristics is no greater than 0.20 L/(s·m²) where air barrier is installed on the warm side of the thermal insulation (interior side) and the building shall not be subjected to 1-in-50 hourly wind pressure exceeding +/- 0.65 kPa.

D. Tensile Strength - Material Properties:

The air and vapour membrane provide a minimum average tensile strength of 3.5 N/mm per 24.93 mm wide sample when tested in accordance with CAN/CGSB 51.33-M89, Section 6.4, referencing ASTM D828.

E. Pliability - Material Properties:

The air and vapour membrane shows the material has the ability to remain pliable without cracks when tested in accordance with CAN/CGSB 51.33-M89, Section 6.3.

F. Membrane Material Properties:

The air and vapour membrane complies to the Type II material specification and characteristics when tested in accordance with CAN/CGSB 51.33-M89 test specification.

7.0 INSTALLATION

Installation of the air and vapour membrane must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions are to be available at the jobsite at all times during installation.

When air leakage can occur into and out of conditioned space, the air leakage shall be controlled by a continuous air barrier. Any service penetration shall be additionally sealed with manufacturer approved sheathing tape, acoustical and silicone based sealant.

- A. Acoustical or silicone based sealant must be applied on the studs, overlap joints, window and door frame rough opening, service penetrations such as electrical outlets, HVAC, plumbing, and other penetrations. The manufacturer requires the use of acoustical or silicone based sealants conforming to ASTM C920 or ASTM C834 test standard specifications.
- B. The membrane must be secured with T50 12.7 mm (1/2 inch) staples applied to the wooden studs or framing at 305 to 610 mm (12 to 24 inches) for vertical walls, attic or ceiling. The staples should be applied where acoustical or silicone based sealant were previously applied beneath the material to minimize potential air leakage.
- C. Sheathing tape shall be used around all overlap joints and patches with manufacturer specified code approved sheathing tape.
- D. Overlapping of the membrane material shall be a minimal of 76 mm (3 inches) and sealed with the aforementioned procedures.
- E. CertainTeed installation document No. 30-28-157 and No.30-28-137 for air barrier installation instructions for wood framing shall be followed.

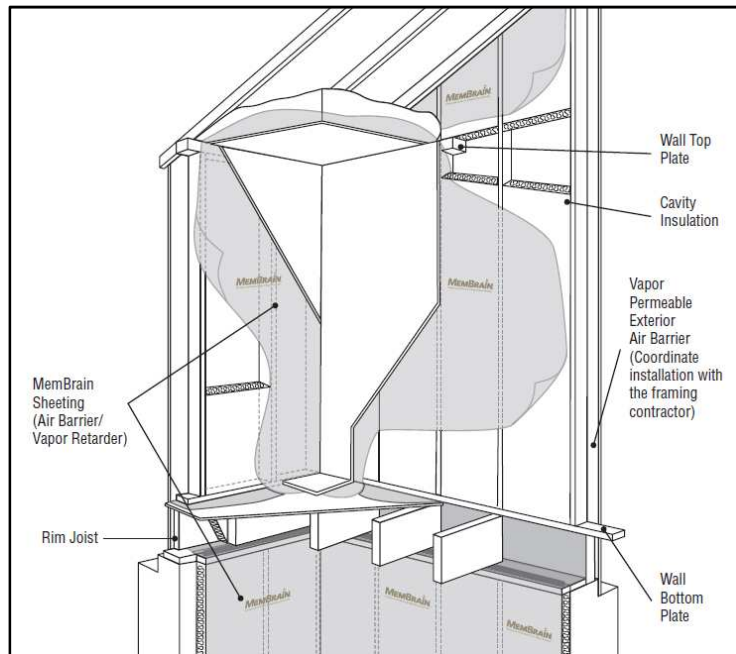


Image 1: Typical application location on walls and ceiling locations

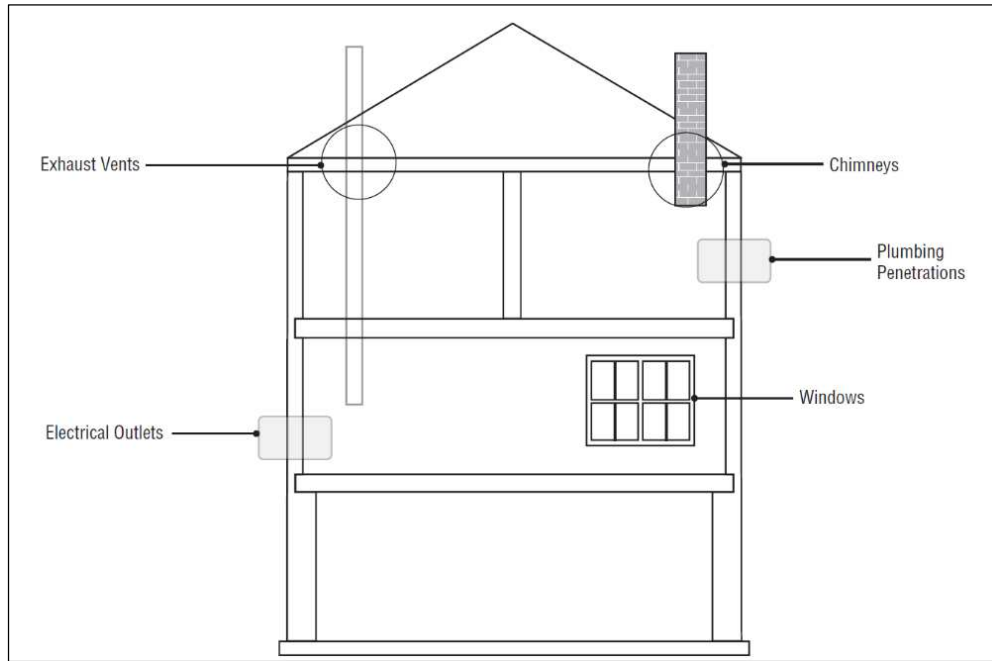


Image 2: Typical identification of building service penetrations

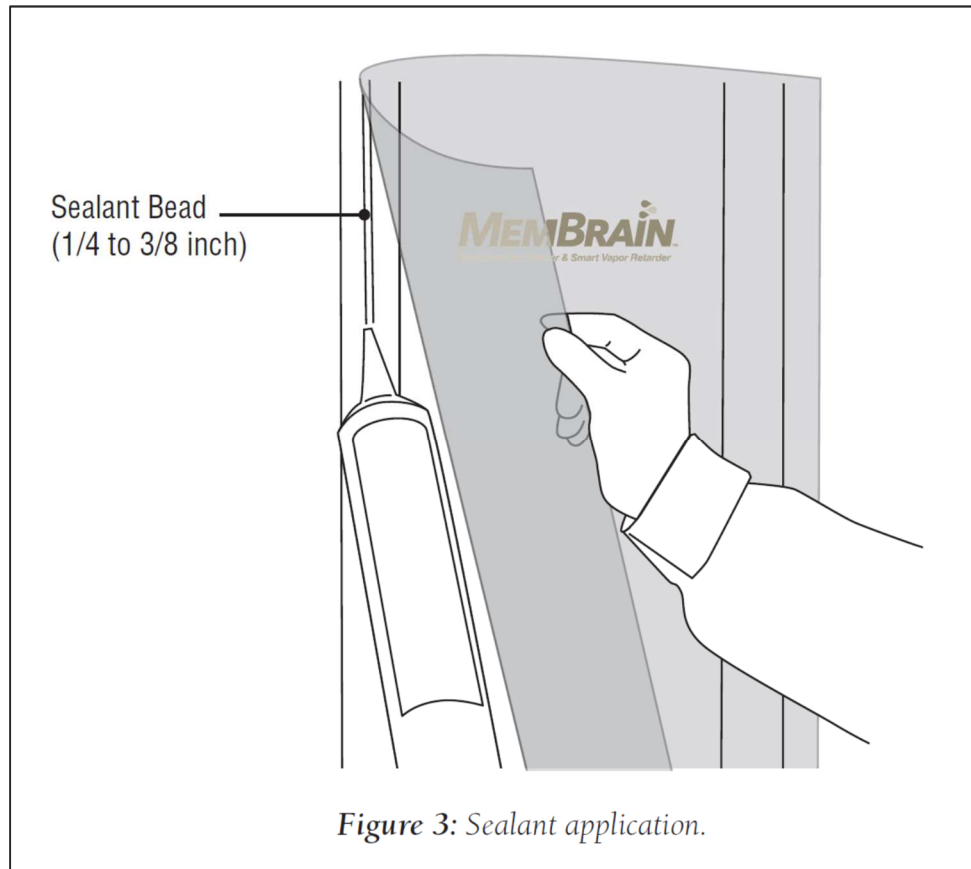


Figure 3: Sealant application.

Image 3: Sealant application beneath MemBrain

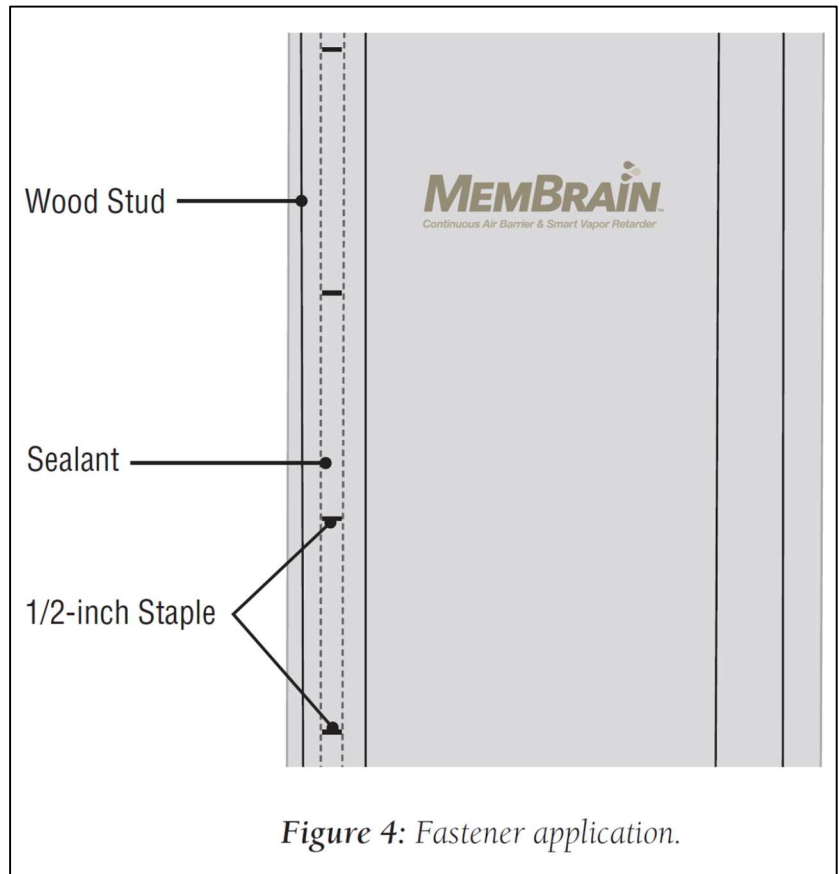


Image 4: Fastening Application of MemBrain

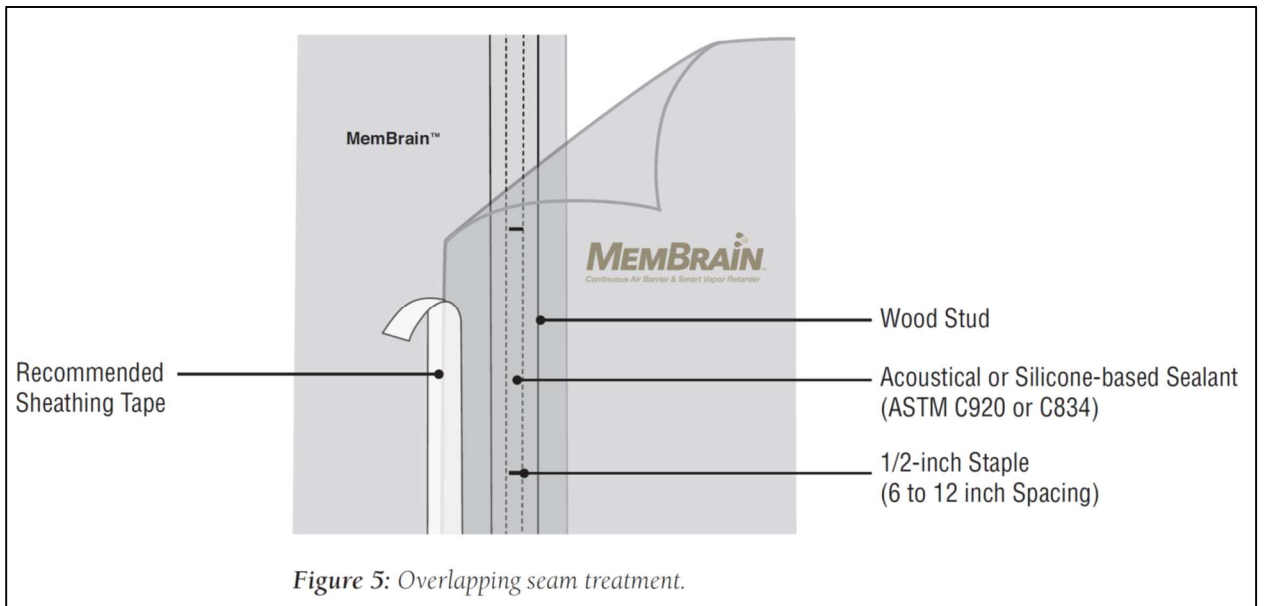


Image 5: Overlapping seam treatment of MemBrain with Sheathing Tape

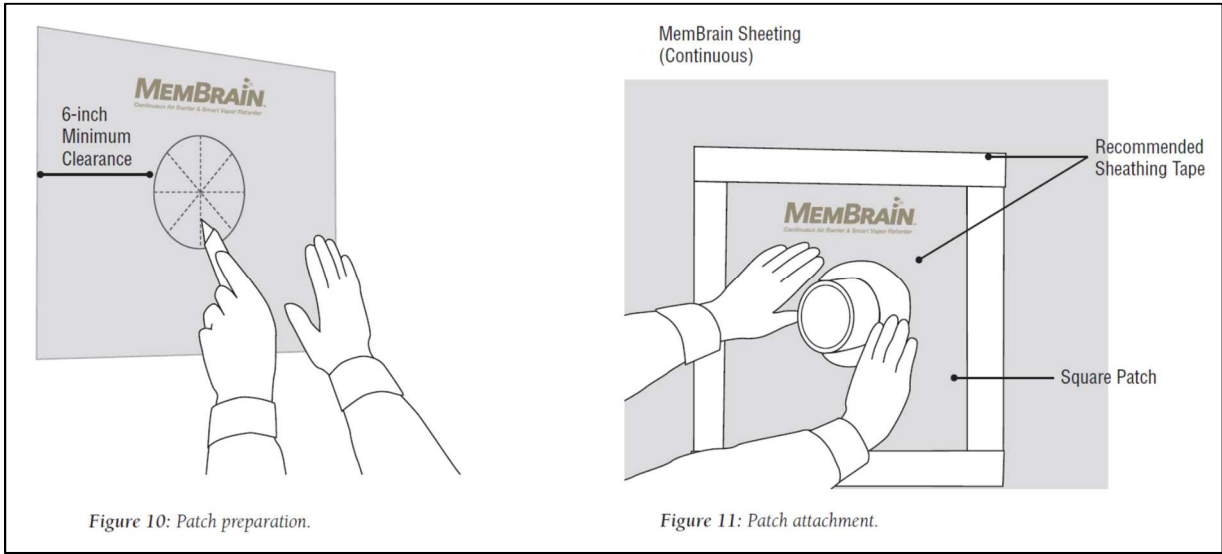


Image 6: Patch preparation and attachment of MemBrain with sheathing tape

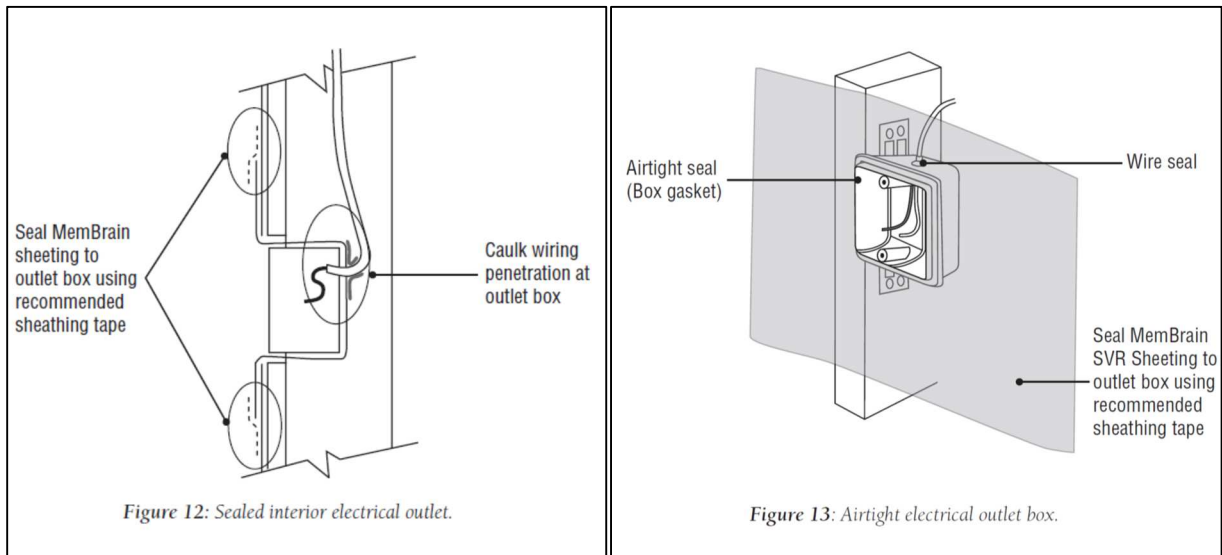


Image 7: MemBrain attachment detail at electrical outlet and attachment with sheathing tape

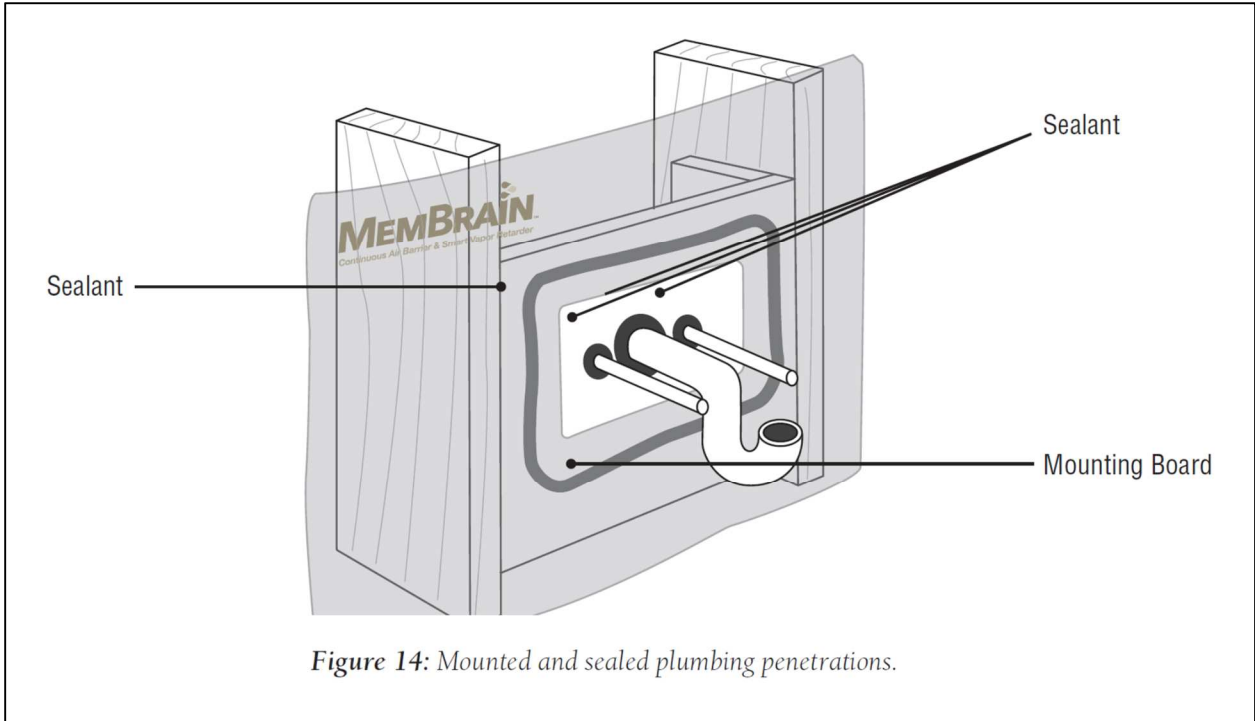


Image 8: MemBrain attachment around plumbing penetration

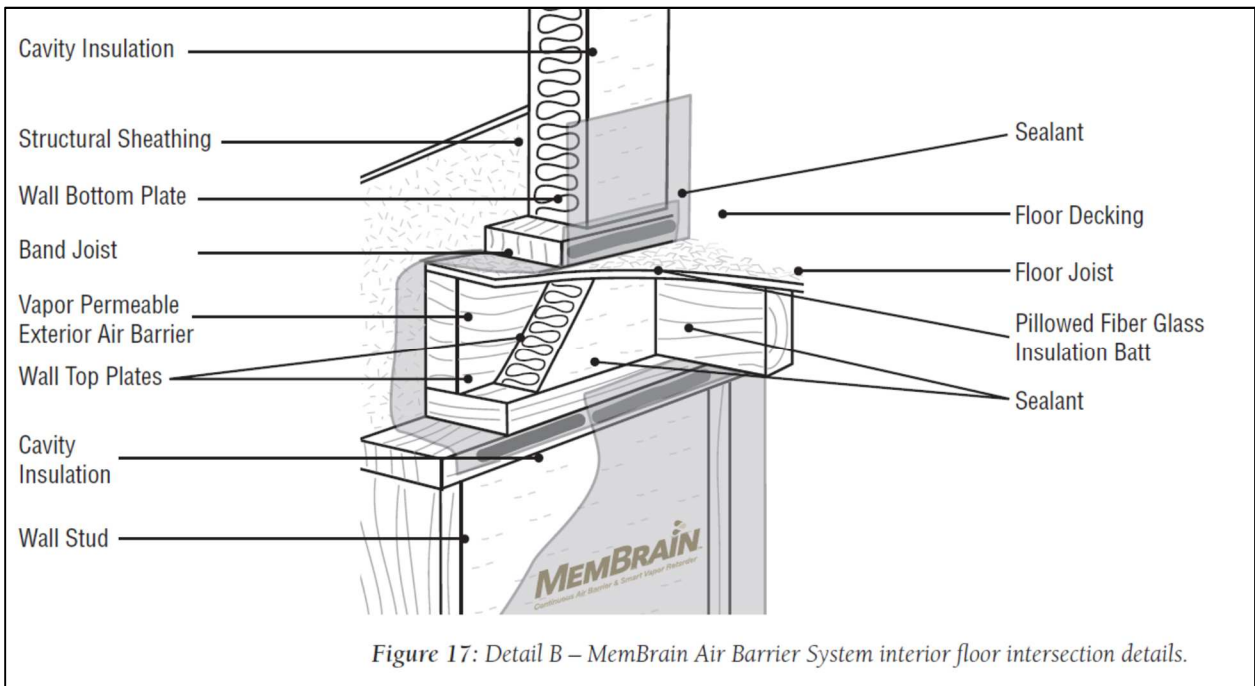


Image 9: Typical installation and transition detail between floors

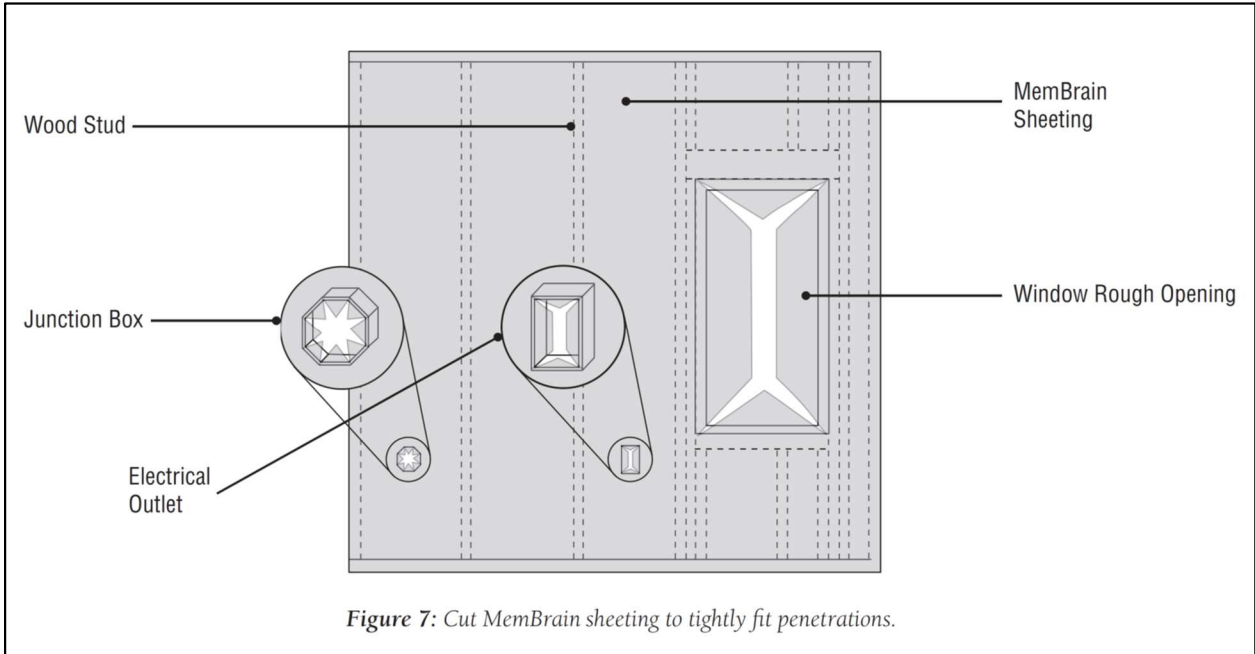


Image 10: Typical trimming method for rough opening and junction boxes

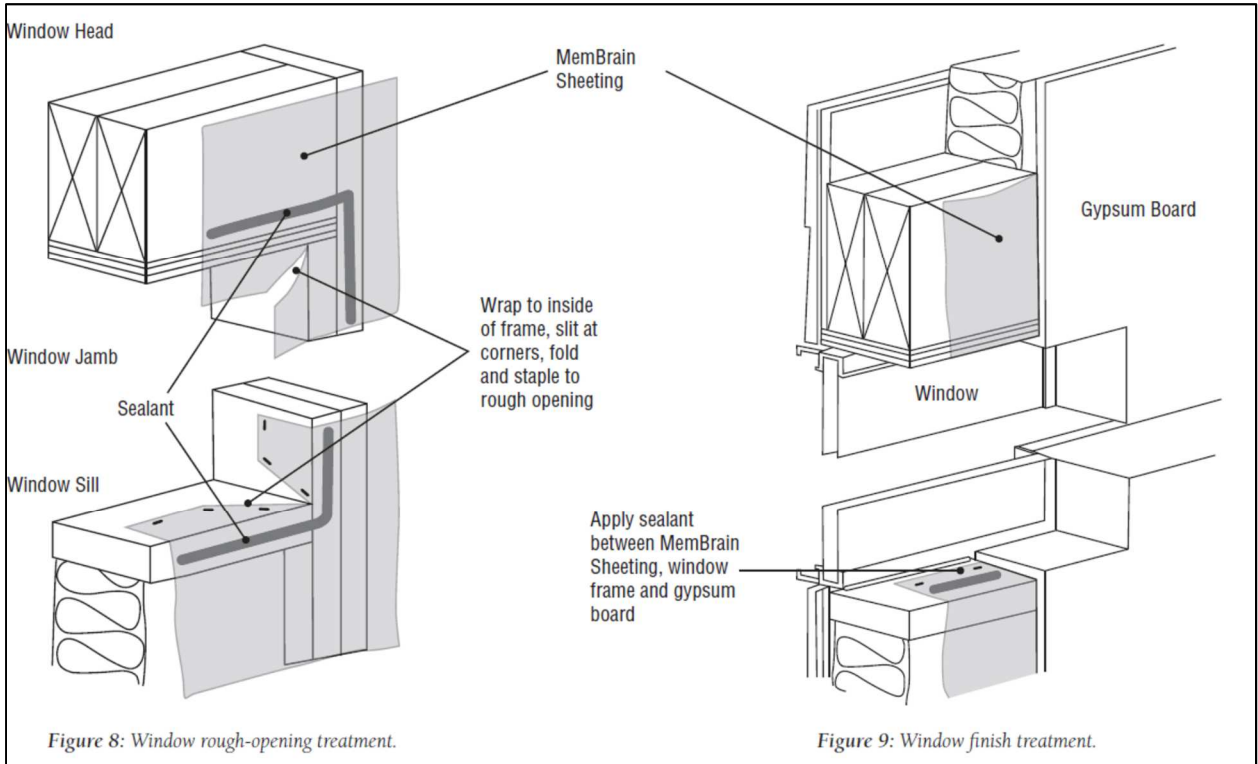


Image 11: Typical sealing and MemBrain attachment method around window rough opening

8.0 CONDITIONS OF USE

The “MemBrain™ Continuous Air Barrier & Smart Vapor Retarder” described in this report complies with code section listed in Section 2.0, subject to the following conditions:

- A. Materials and methods of installation must comply with this report and the manufacturer’s published installation instructions. In the event of a conflict between the manufacturer’s published installation instructions and this report, the manufacturer shall be consulted.
- B. The membrane is intended to be used as an interior air and vapour barrier, supported behind the interior side of an exterior wall and installed behind the interior gypsum board as it requires to be supported without exposure to direct elements or Ultraviolet (UV) exposure.
- C. The air barrier must be applied when the requirements of a building component or assembly separates interior conditioned space from the exterior space, interior space from the ground or environmentally dissimilar interior spaces. The components or assemblies shall control air leakage or permit venting to the exterior of the building per the requirements of NBCC 2015 or local jurisdiction.
- D. The vapour barrier must be applied to meet the requirements of control and resistance of vapour diffusion or permit venting to the exterior by minimizing the accumulation of condensation in the building component or assembly per the requirements of NBCC 2015 or local jurisdiction.
- E. The product can be installed in new or retrofit constructions. In all cases, the product must be installed in accordance to manufacturer’s instruction in wooden construction that meets the requirements of the NBCC 2015:
- F. “MemBrain™ Continuous Air Barrier & Smart Vapor Retarder” are manufactured in (3 Earl St. Schuylkill Haven, Pennsylvania, 17972, USA).

9.0 SUPPORTING EVIDENCE

Certainteed Corporation has submitted technical documentation for ULC’s review. Testing was conducted at laboratories recognized as ISO 17025 compliant. The test data submitted for this product is summarized below.

- A. Data and information in accordance with ULC EC-R40155, including:
 - (i) Exova test report (#13-06-M0383) in accordance with ASTM E2178 test standard
 - (ii) Exova test report (#13-06-M0383-ASTM) in accordance with ASTM E2357 test standard
 - (iii) Exova test report (#13-06-M0383-ULC) in accordance with CAN/ULC S742 test standard
 - (iv) Exova test report (#13-06-M0397) in accordance with CAN/CGSB 51.33-M89 test standard
- B. Manufacturer’s installation instructions and descriptive literature:
 - (i) Air Barrier Installation Instructions for Wood Framing – Document #30-28-137
 - (ii) Installation Instructions for Wood Framing – Document #30-28-142
 - (iii) Installation Instructions for Wood Framing – Document #30-28-157
- C. Quality documentation:
 - (i) Chemical formulation such as Resin, additives, and colorant.
 - (ii) Incoming material quality and quantity verification
 - (iii) Extrusion quality inspection per master roll or start of production run
 - (iv) Packaging and labelling

10. IDENTIFICATION

MemBrain™ Continuous Air Barrier & Smart Vapor Retarder described in this evaluation report is identified by a marking bearing the report holder's name (**Certainteed Corporation Insulation Group**) and the evaluation report number **ULC ER-R40155**. The validity of the evaluation report is contingent upon this identification appearing on the product.

11.0 CLIENT LOCATIONS / CONTACT

Certainteed Corporation Insulation Group
20 Moores Road
Malvern, PA, 19355
United States of America

Phone Number: 800-233-8990

12.0 USE OF UL EVALUATION REPORT

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