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# NEOPOR ThermaPlus™

## Installation Guidelines

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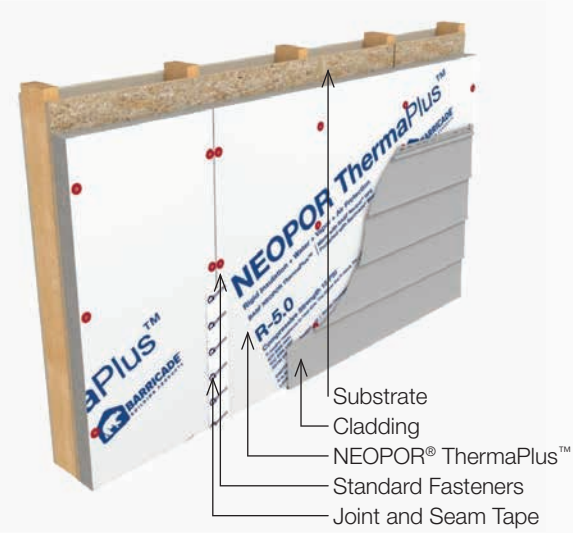


**Figure 1:** Typical Exterior Wall Assembly with NEOPOR® ThermaPlus™

## 1. INTRODUCTION

This document provides installation guidelines for NEOPOR® ThermaPlus™ along with general information about integration with other exterior wall assembly elements.

## 2. DESCRIPTION AND USES

NEOPOR ThermaPlus™ is a non-structural, rigid foam plastic insulated sheathing (FPIS) laminated with a proprietary building wrap that is breathable, resists air infiltration and bulk water. NEOPOR ThermaPlus™ provides a higher R-Value per inch than standard EPS along with consistent, long term thermal resistance that does not dissipate with time. With low water absorption and permeability above 1 Perm, helps prevent trapping moisture without affecting the R-Value.

NEOPOR ThermaPlus™ provides continuous insulation (CI) which reduces thermal bridging, functions as a water resistive barrier and is recognized as an air barrier material. It is for use in above grade exterior wall applications on residential and commercial buildings. NEOPOR ThermaPlus™ can be used on new and existing construction, applied over a variety of substrates including open framing, sheathing, CMU, concrete, etc. and is compatible with many types of claddings. NEOPOR ThermaPlus™ can also be used as an alternative to NEOPOR and the water resistive barrier in BASF HP+ Wall System applications (HP+ Wall System | BASF Neopor). Figure 1 illustrates a typical exterior wall assembly with NEOPOR ThermaPlus™.

## 3. GENERAL

A. Storage and handling

I. Precautionary measures must be taken during transportation, handling and storage, and installation of NEOPOR ThermaPlus™ to help minimize the potential for damage.

II. Keep product tarped or covered to protect from weather. Do not use clear plastic covering film. If possible, store in-doors. Care should be taken to keep exposed foam plastic insulated sheathing protected from reflective sunlight or prolonged solar exposure. If deformation of the insulation product occurs due to excessive heat transferred from reflected and concentrated sunlight, remove the reflective surface or shield the insulation product. A secondary method to protect the product from direct sunlight and heat is to install sunscreen or tarp on the outside of the scaffolding, much the same that is used on building construction that protects the public when it is necessary for them to pass by construction site underneath the scaffolding.

B. Tools

I. NEOPOR ThermaPlus™ can be installed with standard and regularly available tools such as a drill, hammer, utility knife, straight edge, tape measure, ruler, square, seam tape roller, etc.

C. Miscellaneous

I. NEOPOR ThermaPlus™ is not a structural or roof sheathing, nailing base for the cladding or other mounted objects such as lights, signage, etc.

II. Maximum allowable weather exposure prior to installation of the cladding or temporary protection is 90 days for NEOPOR® and 9 months for NEOPOR ThermaPlus™ provided all joints and seams are sealed with joint and seam tape.

III. Sheathing, diagonal or lateral bracing or other means shall be provided to accommodate structural loads and building code requirements.

IV. NEOPOR ThermaPlus™ has not been evaluated as a wind resisting element in exterior walls.

V. NEOPOR ThermaPlus™ shall be separated from the interior of the building by an approved thermal barrier.

VI. User is responsible to confirm compliance with local building codes and compatibility of NEOPOR ThermaPlus™ with cladding as well as other materials.

VII. Comply with applicable manufacturer's instructions for other materials and accessories including joint and seam tapes, flashing materials, and fasteners.

VIII. NEOPOR ThermaPlus™ has recognition for use on all structures under the 2021 International Residential Code (IRC) and Type V construction under the 2021 International Building Code (IBC).

IX. Spacing of exterior wall framing shall not exceed 24" o.c. for sheathed applications and 16" o.c. on open framing.

X. Project conditions and other elements such as window type, installation, fasteners, cladding materials, etc. may limit the thickness of NEOPOR ThermaPlus™.

XI. A separate, additional water resistive barrier can be installed over NEOPOR ThermaPlus™ if necessary or required. Drainage or ventilation spaces may be required based on building codes and type of cladding or climate zone. NEOPOR ThermaPlus™ is a breathable material therefore wall assemblies may need a vapor retarder or additional vapor control layer depending on project conditions.

XII. For water resistive barrier continuity, all seams and joints between adjacent pieces of NEOPOR ThermaPlus™ must be sealed with Joint and Seam Tape.

XIII. Water resistive barrier requirements can differ depending on building codes, type of substrate, climate zone, and cladding type.

NEOPOR ThermaPlus™ is a recognized alternative to the water resistive barrier requirements under 2021 IBC section 1403.2 and 2021 IRC section 703.2 as described in ICC ESR 4431. Users are responsible to confirm compliance of NEOPOR® ThermaPlus™ with all applicable requirements.

XIV. NEOPOR ThermaPlus™ is recognized as an air barrier per ICC ESR 4431. Contact www.Neopor-Insulation.com for information regarding air barrier systems.

XV. Follow all applicable standards and requirements related to safety and personal protective equipment (PPE).

XVI. The BASF HP+ Wall System is a complete wall assembly that uses NEOPOR® ThermaPlus™ and Walltite HP+ structural closed cell spray foam application on the inside to give a system that is continuously insulated (ci), water resistive, and an air barrier. Refer to BASF HP + Wall System website for additional information.

## 4. WARRANTY

Ten (10) years from the date of installation as documented by the project registration form. See complete details at www.neopor-insulation.com.

## 5. PRODUCTS AND MATERIALS

A. NEOPOR ThermaPlus™ Foam Plastic Insulated Sheathing (FPIS)

I. ASTM C 578 Type 2

II. Dimensions – 4’ x 8’, 9’ or 10’ and custom

III. Edges - square

IV. Thickness and R Value – 1 1/16” (R 5) and 2 1/8” (R 10)

B. Products and materials (by others)

I. Corrosion resistant fasteners and washers

1. Woodframesubstrate

a. 16 gauge staples with 1” crown, 1” minimum penetration into framing

b. Nails with 1” diameter plastic caps, 1” minimum penetration into framing

c. Nails or Grip Deck Hi Lo screws with 2” diameter Trufast Thermal-Grip Flat or ci Prong Washer, 3/4” minimum penetration into framing for screws and minimum 1” penetration for nails

2. Steel frame substrate

    a. Self drilling screws with 1” diameter plastic caps, 7/16” minimum penetration into framing

    b. Trufast Grip Lok Self drilling or HiLo screws with 2” diameter Thermal-Grip Flat or ci Prong Washer, minimum 7/16” penetration into framing

3. Concrete and concrete masonry units (CMU)

    a. Masonry fasteners with 1” diameter plastic cap, 1” minimum penetration into concrete

    b. 2 1/4” diameter Trufast Plasti Grip PMF Anchor or masonry fasteners with 2” diameter Trufast Thermal-Grip Flat or ci Prong Washer, 1” minimum penetration into concrete

4. Contact manufacturers of fasteners for recommendations and use of products other than those listed.

II. Joint and seam tape - Use minimum 3” wide tape for applications with staples and fasteners with 1” diameter washers. Use minimum 4” wide tape for applications with fasteners and 2” or 2 1/4” diameter washers

1. 3” wide Barricade® Building Products Construction/Seam Tape [Construction Seam Tape - Barricade Building Products (barricadebp.com)]

2. 3” wide 3M™ Construction Tape 8087 (3M™ Construction Seaming Tape 8087CW)

3. 4” wide Barricade® Building Products Construction/Seam Tape [Construction Seam Tape - Barricade Building Products (barricadebp.com)]

4. Contact manufacturers of joint and seam tape for uses, applications and recommendations for products other than those listed.

III. Flashing tape (use and width varies based on application and flashing tape manufacturers recommendations)

1. Barricade® Building Flash Conform™ [Window & Door Flashing — Barricade Building Products (barricadebp.com)]

2. Contact manufacturers of flashing tape for recommendations and use of products other than those listed.

## 6. INSTALLATION

A. Substrate

I. NEOPOR ThermaPlus™ can be installed over many common exterior wall substrates including concrete, concrete masonry units (CMU), open or framed construction with sheathings such as gypsum, cement board, plywood, and oriented strand board (OSB).

B. NEOPOR ThermaPlus™

I. Inspect all materials and confirm substrate is properly prepared prior to installation of NEOPOR ThermaPlus™.

II. Install NEOPOR ThermaPlus™ with the printed, water resistive barrier facing the building exterior.

III. All edges of NEOPOR ThermaPlus™ shall be supported by blocking, framing, sheathing or substrate material. On sheathed construction, stagger joints of NEOPOR ThermaPlus™ from underlying sheathing joints. Install NEOPOR ThermaPlus™ vertically or horizontally with adjoining pieces butted tight together. Fit NEOPOR ThermaPlus™ tight around openings and penetrations. Although not required, common construction practice is to stagger or offset NEOPOR ThermaPlus board joints in a running bond pattern.

IV. Attachment

1. General

a. The type of fastener determines use of standard or alternative fastening pattern as described in Sections 6.b.iv.2 and 6.b.iv.3

2. Standard fasteners and fastening pattern

a. Framed construction with or without sheathing

i. Fastener placement shall be as shown in Figure 2 for fasteners with 1" diameter washers or staples. NEOPOR ThermaPlus™ is fastened into framing 12" o.c. vertically and, based on stud spacing, 16" or 24" o.c. horizontally. When abutting adjacent pieces of NEOPOR® ThermaPlus™, fasteners shall be placed on both sides of board joint as shown.

b. Concrete and CMU

i. Fastener placement shall be as shown in Figure 2 for fasteners with 1" cap washers. NEOPOR ThermaPlus™ is fastened 12" o.c. vertically and 16" o.c. horizontally.

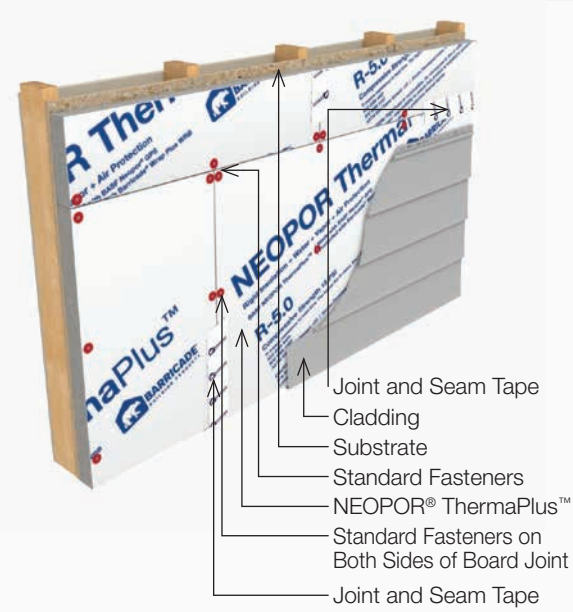


**Figure 2:** Standard Fasteners and Fastening Pattern

When abutting adjacent pieces of NEOPOR ThermaPlus™, fasteners shall be placed on both sides of board joint as shown.

3. Alternative fasteners and fastening pattern

   a. Framed construction with or without sheathing

      i. Fastener placement shall be as shown in Figure 3 for Trufast Thermal-Grip Flat or ci Prong Washer. NEOPOR ThermaPlus™ is fastened into framing 12" o.c. vertically and, based on stud spacing, 16" or 24" o.c. horizontally. When abutting adjacent pieces of NEOPOR ThermaPlus™, fasteners shall span board joints as shown.

   b. Concrete and CMU

      i. Fastener placement shall be as shown in Figure 3 for 2 1/4" diameter Trufast Plasti Grip PMF Anchor or masonry fasteners with Trufast 2" diameter Thermal-Grip Flat or ci Prong Washer.

      ii. NEOPOR ThermaPlus™ is fastened 12" o.c. vertically and 16" o.c. horizontally. When abutting adjacent pieces of NEOPOR ThermaPlus™, fasteners shall span board joints as shown.

4. All fasteners shall be flush with the surface of NEOPOR ThermaPlus™ as shown in Figure 4. Fasteners shall not be underdriven, countersunk or otherwise damage face of NEOPOR ThermaPlus™.

5. Attachment of the cladding fully secures the NEOPOR ThermaPlus™ insualtion board.

   a. Joints and seams

      i. NEOPOR ThermaPlus™ shall be clean, dry, and undamaged prior to proceeding with installation of joint and seam tape.

      ii. Use minimum 4" wide seam tape with 2" and 2 ¼" diameter washers/fasteners. Use minimum 3" wide seam tape with 1" diameter washers/fasteners or staples. Seam tape shall fully cover fasteners/washers as illustrated in Figure 5. All inside and outside corners, vertical, horizontal, and other seams between adjacent pieces of NEOPOR ThermaPlus™ shall be covered and sealed by joint and seam tape to maintain continuity of the water resistive barrier.

      iii. Follow the joint and seam material manufacturer's instructions regarding uses, installation, limitations, temperature requirements, splices, overlaps, etc.


**Figure 3:** Alternative Fasteners and Fastening Pattern

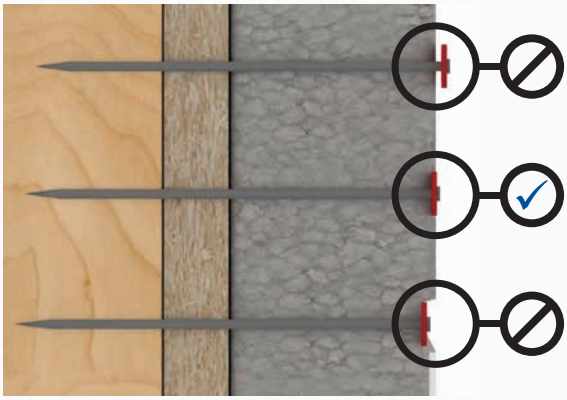

**Figure 4:** Fastener – Flush with Surface of NEOPOR® ThermaPlus™

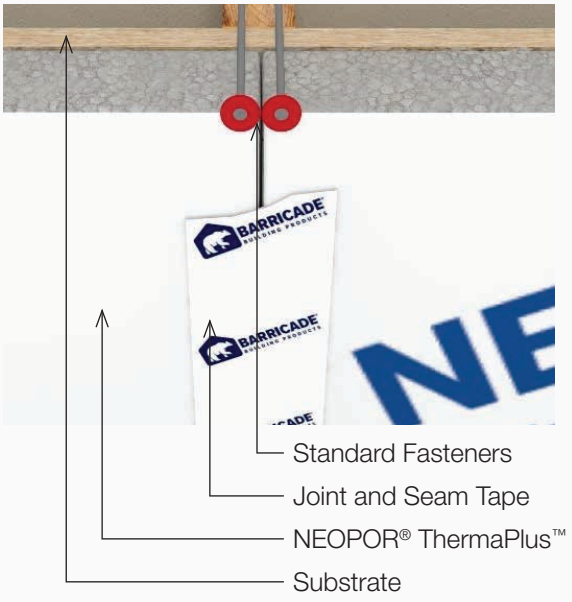


**Figure 5:** Joint and Seam Tape Covers Fasteners

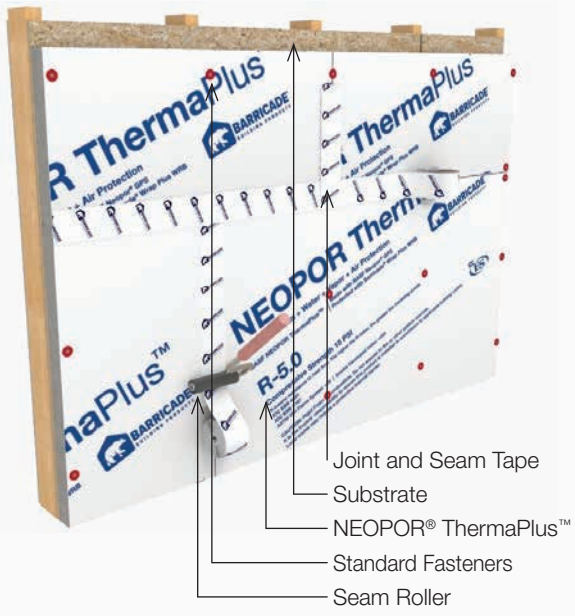


**Figure 6:** Typical Joint and Seam Tape Application


**Figure 7:** Typical Flanged Penetration (Vent, Box, etc.)


**Figure 8:** Typical Unflanged Penetration (Pipe, etc.)

iv. Preferred practice is to install joint and seam tape in weatherboard or shingle fashion with lower layers overlapped by upper layers.

v. After joint and seam tape installation, use manufacturers recommended seam roller to apply uniform pressure along entire surface of tape to assure adhesion to NEOPOR® ThermaPlus™.

vi. Joint and seam tape shall be free of bubbles, wrinkles, fishmouths, trapped air, etc.

vii. Refer to Figure 6 for typical joint and seam tape application.

## 7. FENESTRATIONS, PENETRATIONS AND OPENINGS

A. Fenestrations shall be installed per manufacturer's instructions, recognized industry standards and properly interfaced with NEOPOR ThermaPlus™.

B. Pipes and other penetrations through the NEOPOR ThermaPlus™ shall be securely fastened to framing or substrate and resist all loads.

C. Fenestrations, penetrations and openings shall comply with applicable building code requirements. Edges of NEOPOR ThermaPlus™ shall be supported by blocking, framing, sheathing, or substrate material.

D. Seal all penetrations (plumbing, electrical, mechanical, etc.) according to joint and seam tape or flashing tape manufacturer instructions using appropriate joint and seam tape, flashing or other suitable method.

E. Flashing, sealing, interfacing and detailing

I. Various methods and materials are available to flash, seal and interface NEOPOR ThermaPlus™ with fenestrations, penetrations and openings. Figures 7 through 17 are examples of common flashing, sealing and interface details. Techniques will vary depending on project conditions, design, details, fenestration installation method, etc.

II. Follow the joint, seam and flashing material manufacturer's instructions regarding uses, installation recommendations, limitations, temperature requirements, etc.

III. Flash and seal to the water resistive barrier face of NEOPOR ThermaPlus™.

F. Figures 10, 11 and 12 are based on a standard installation of nail flange windows with up to 2" thick NEOPOR ThermaPlus™. Refer to applicable standards, window manufacturers instructions or www.continuousinsulation.org for other means, methods, and window types.

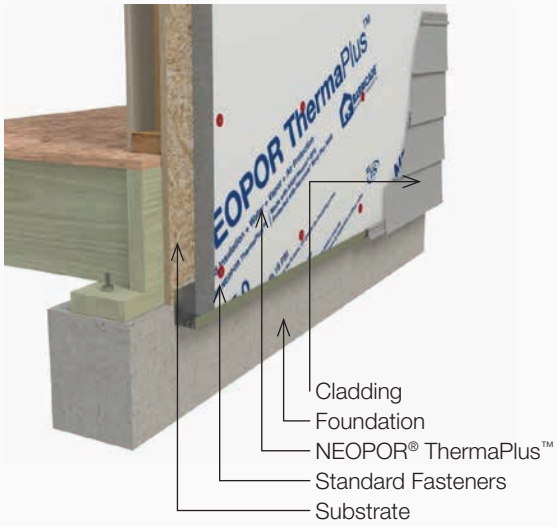


**Figure 9:** Typical Foundation

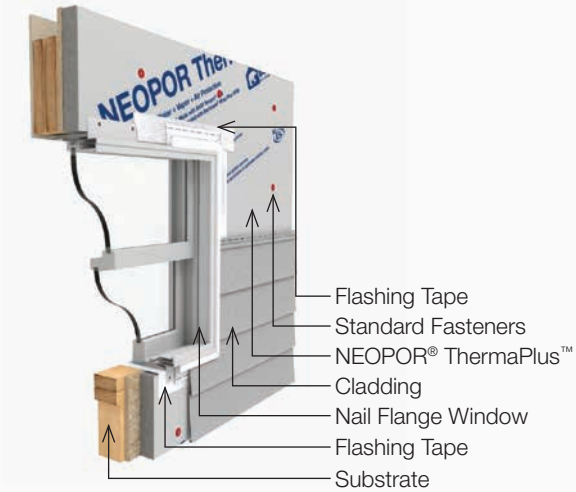


**Figure 10:** Typical Nail Flange Window


**Figure 11:** Typical Window Sill - Nail Flange Window


**Figure 12:** Typical Window Head (Jamb Similar) – Nail Flange Window

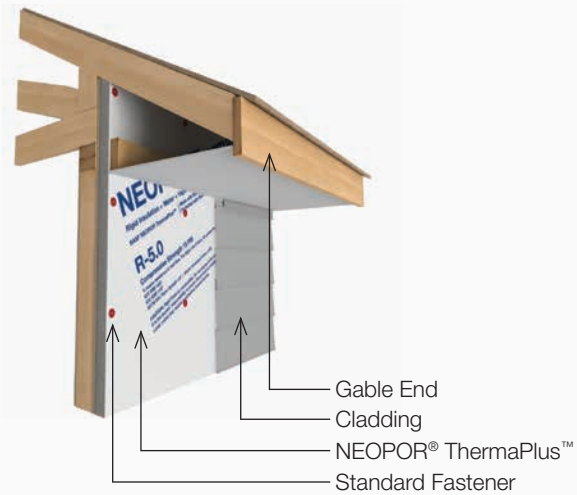


**Figure 13:** Typical Gable End/Top of Wall


**Figure 14:** Typical Roof Diverter

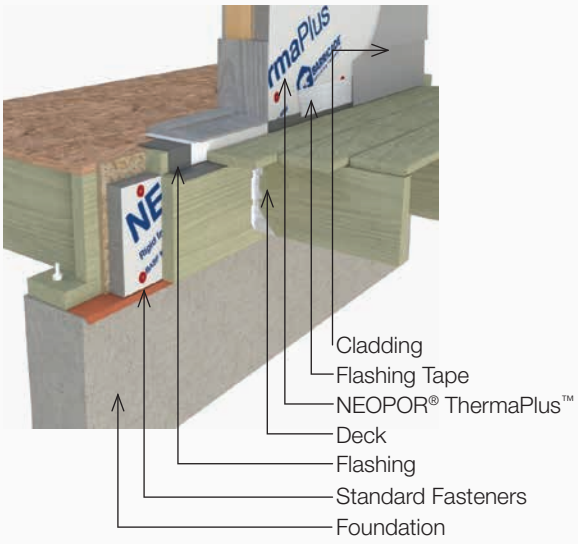


**Figure 15:** Typical Deck/Ledger

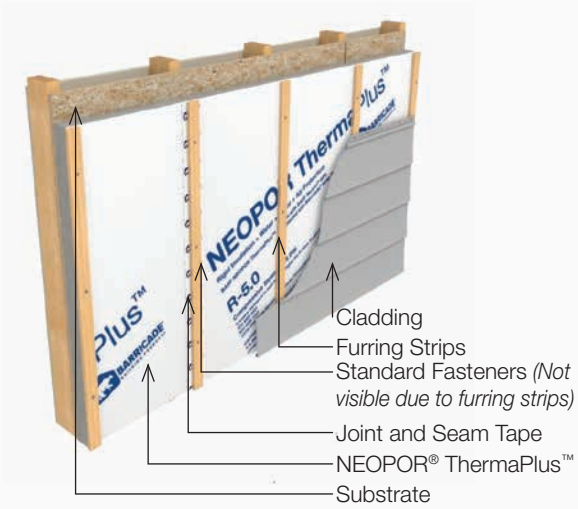


**Figure 16:** Typical Rainscreen Cladding on Furring Strips

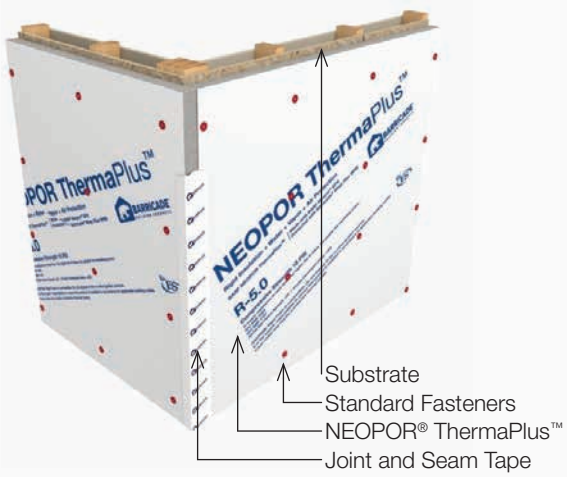


**Figure 17:** Typical Exterior Corner

## 8. AIR BARRIER

NEOPOR ThermaPlus™ is an air barrier material that reduces or restricts air movement between different building environments. Air barrier systems are comprised of air barrier materials along with accessory products such as tapes, flashings, etc. that provide continuity across the building enclosure and its elements. Contact https://neopor.basf.us/residential/thermaplus for information regarding air barrier systems.

## 9. CLADDING

A. Inspect NEOPOR ThermaPlus™, joints, seams and flashings for damage and repair as necessary prior to installation of the cladding.

B. Repair damage, if any, to NEOPOR ThermaPlus™, seams, etc. Minor, localized damage can often be repaired with joint and seam or flashing tape. Larger areas may require removal and replacement with new NEOPOR ThermaPlus™.

C. Many types of claddings can be installed over NEOPOR ThermaPlus™. Confirm suitability and compatibility of the cladding with NEOPOR ThermaPlus™.

D. Confirm the water resistive barrier meets all requirements for the application as requirements differ depending on building codes, type of substrate, climate zone, and cladding. Some claddings such as stucco may, under some conditions, require multiple water resistive barriers, designed drainage spaces or air gaps.

E. Claddings shall be installed per manufacturer's instructions and building code requirements through the NEOPOR ThermaPlus™. Claddings may be applied directly over NEOPOR ThermaPlus™ or as illustrated in Figure 16 in conjunction with furring strips, drainage mediums, spacers, or drainage mats attached to the framing, concrete or concrete masonry units. Attachment methods are influenced by many factors including cladding weight, insulated sheathing thickness, substrate to which the cladding will be attached, spacing and type of cladding fasteners, Provisions in 2021 International Building Code (IBC) Chapter 26 and 2021 International Residential Code (IRC) Chapter 7 contain cladding attachment requirements over foam plastic insulated sheathing.

## 10. EXISTINGCONSTRUCTION CONSIDERATIONS

A. Below is a starting list of items to consider when using NEOPOR ThermaPlus™ in existing construction. Project conditions and requirements will differ therefore this is presented as a good faith guideline to be modified by the user based on design requirements, existing project conditions, type of exterior wall covering, code requirements, etc. For the purposes of this list, it is assumed the existing cladding is being removed, existing conditions evaluated

and remediated as necessary followed by installation of NEOPOR® ThermaPlus™ and cladding.

I. Substrate condition including existing structural elements such as framing/sheathing.

II. Air sealing to existing building elements.

III. Detailing, constructability and weatherproofing such as tops and bottoms of walls, roof to wall transitions, fenestrations such as windows and doors, pipes, surface mounted objects, etc.

IV. Thickness of NEOPOR ThermaPlus™ and new cladding relative to existing system and impact on details, flashings, etc.

## 11. BUILDING CODE COMPLIANCE

A. NEOPOR ThermaPlus™ – ICC ESR 4431 – International Building Code (IBC) Type V construction and all structures under the International Residential Code (IRC) Barricade Wrap Plus – ICC ESR 1197

## 12. ADDITIONAL INFORMATION AND RESOURCES

A. ICC ES AC 12 – Acceptance Criteria for Foam Plastic Insulation

B. Barricade Building Products - www.barricadebp.com

C. 2021 International Building Code (IBC)

D. 2021 International Residential Code (IRC)

E. 2021 International Energy Conservation Code (IECC)

F. Continuous Insulation for Foam Sheathing- www.continuousinsulation.org

G. ICC ES AC 71 – Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water Resistive Barriers

H. Neopor website https://neopor.basf.us/residential/thermaplus

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