SCIENCE. SERVICE. SOLUTIONS.

CARLISLE COATINGS & WATERPROOFING

AIR & VAPOR BARRIER

Fire Resist Product Line

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Carlisle Coatings & Waterproofing's Fire Resist product line borrows technology from the aerospace industry to produce the first full line of fluid- and sheet-applied air and vapor barriers that can pass the tough National Fire Protection Association (NFPA) 285 test.

NFPA 285 is a large scale burn test performed on a 2-story height test wall. NFPA 285 is used to evaluate the flammability characteristics of exterior non-load bearing wall assemblies containing combustible components like membrane air barriers.

A product passes NFPA 285 by sufficiently resisting flame propagation vertically or laterally beyond an acceptable distance from the flame source on or within the wall assembly. With a push for continuous insulation growing among code enforcement authorities, NFPA 285 is becoming an industry standard (see chart to find out if your project needs to meet NFPA 285 requirements).

Meet Building Codes with Energy Efficiency & Fire Resistance

When projects call for an airtight building envelope, designers typically choose 40-mil-thick membranes made from rubberized asphalt or synthetic rubber. The same qualities that make these membranes superior water and vapor barriers also make them highly flammable.

For many years, the International Building Code has mandated NFPA 285 for wall assemblies containing foam insulation or combustible cladding. Significant changes in the 2012 edition of the IBC require new wall assemblies containing foam insulation, combustible cladding or combustible membrane to pass NFPA 285. As the use of foam insulation and membrane air barriers is becoming more common, so is awareness and enforcement of the NFPA 285 requirement in local codes.

Fire Resist Product Line Solves Dilemma

CCW is filling the gap created by increasingly stringent building code requirements with its Fire Resist product line, including Fire Resist Barritech VP (vapor-permeable), Fire Resist Barritech NP (non-permeable) and Fire Resist 705FR-A (self-adhered sheet). Each Fire Resist product draws upon thermal barrier technology developed by NASA. Firefighters, soldiers and race car drivers all wear fire-retardant clothing based on similar technology. In 2012, CCW brought this technology to the building envelope industry.

Fire Resist Barritech VP/VP-LT, Fire Resist Barritech NP/NP-LT and Fire Resist 705FR-A combine proprietary fire resistant formulations with the best air and vapor barriers available today. Fire Resist Barritech VP/VP-LT and Fire Resist Barritech NP/NP-LT are formulated for convenient one-part spray or roller applications, while Fire Resist 705FR-A is a self-adhered sheet membrane.

Fire Resist Barritech NP

Features & Benefits

Fire Resist Barritech VP/VP-LT & Barritech NP™/NP-LT

- Barritech VP/VP-LT is vapor permeable at 14 Perm per ASTM E96, Method B
- Barritech NP/NP-LT is a vapor barrier at <1 Perm per ASTM E96, Method B
- Proprietary formula is inherently fire resistant
- Simple one-part spray or roller application
- Fire Resist accessories
  - LiquiFiber™-W imbedded glass reinforcement
  - Self-adhered flashings: Aluma-Grip™ 701, 705FR-A Strips
- Barritech VP/VP-LT dries to a distinctive light-blue color and Barritech NP/NP-LT dries to a dark-blue color for easy product identification
- Self-sealing around fasteners per ASTM D1970
- Water-based, air drying
- Aggressive adhesion to common building materials
- Compatible with silicone & polyurethane sealants
- UV resistant – 6 months exposure allowed

705FR-A Self-Adhered Sheet Air/Vapor Barrier

- Simple peel & stick application
- Installation in temperatures down to 25°F
- Waterproof, “zero-perm” composition
- Facer is compatible with polyurethane and silicone sealants
- UV resistant - 6 months exposure allowed

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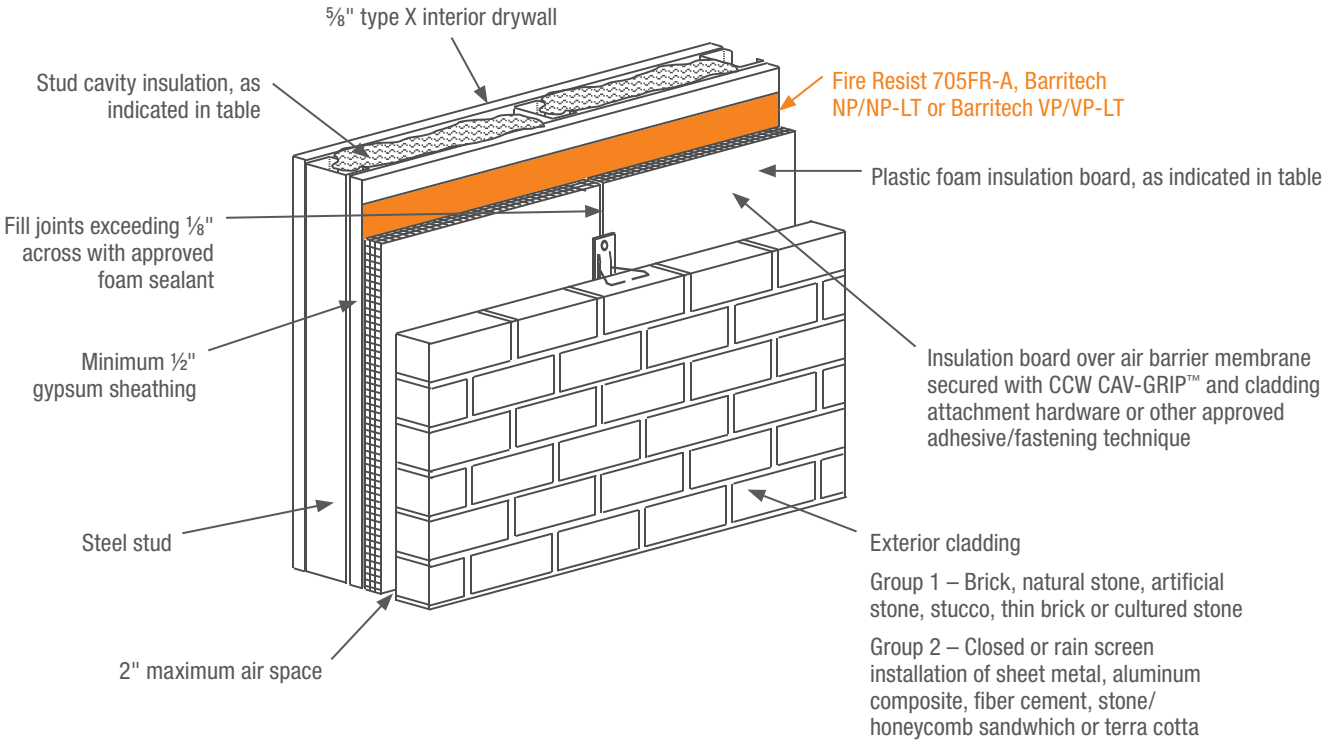
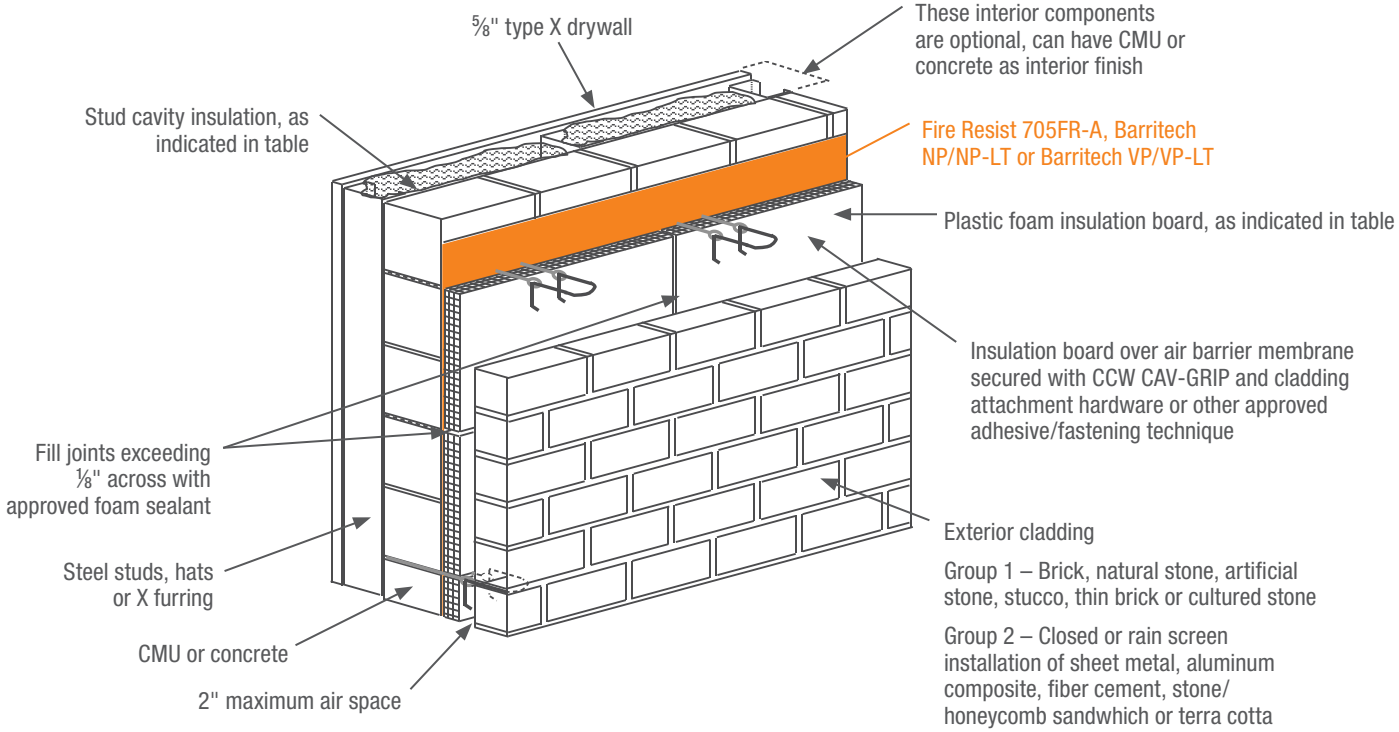
Fire Resist Product Line

Fire Resist Product Line Wall Assemblies





NFPA 285 Wall Assemblies

Components acceptable for use with CCW Fire Resist AVBs in Wall Assemblies 1 and 2:

Wall Assembly 1 or 2	Stud Cavity Insulation	Foam Board Insulation	Exterior Cladding
CCW R2+ Insulation & Fire Resist AVB Wall Weatherization Package	• Non-combustible • None • Spray foam minimum 1½" thickness – Bayer EcoBay™ CC or BASF Walltite®	CCW Polyisocyanurate (polyiso) Insulation • R2+ SILVER • R2+ MATTE • R2+ SHEATHE • R2+ BASE	Cladding Group 1: OK with all CCW R2+ at 3½" maximum thickness Cladding Group 2: OK with R2+ MATTE, R2+ SHEATHE or R2+ BASE at 3½" maximum thickness
CCW Fire Resist AVB with Hunter Panels insulation	• Non-combustible • None • Spray foam minimum 1½" thickness – Bayer EcoBay CC or BASF Walltite	Hunter Panels Polyiso Insulation • XCI Foil • XCI CG • XCI Class A • XCI Ply	Cladding Group 1: OK with all Hunter XCI at 3½" maximum thickness Cladding Group 2: OK with XCI CG, XCI Class A or XCI Ply at 3½" maximum thickness
CCW Fire Resist AVB with Dow Thermax insulation	• Non-combustible • None • Dow Styrofoam® spray foam CM 2030, CM 2045 or CM 2060, up to stud cavity depth	Dow Polyiso Insulation • Thermax™ Sheathing • Thermax CI	Cladding Group 1: OK with Thermax Sheathing/CI at 4¼" maximum thickness Cladding Group 2: OK with Thermax Sheathing/CI at 3" maximum thickness
CCW Fire Resist AVB with XPS insulation	• Non-combustible • None	Extruded Polystyrene (XPS) Insulation • Dow Styrofoam • Owens-Corning Foamular®	Cladding Group 1: OK with XPS insulation at 3"maximum thickness

Drawings are for guidance, not for construction. These represent the most common types of cavity wall assemblies, which are acceptable for use in all USA Climate Zones. For an exhaustive list of NFPA 285 Approved Wall Assemblies with Fire Resist membranes, please consult the latest NFPA 285 extension letters for CCW R2+, Hunter Panels XCI, DOW Styrofoam, DOW Thermax and OC Foamular.

Breaking the Codes

Code Requirement	Performance	705FR-A	Barritech NP	Barritech VP
Continuous Air Barrier	Fully adhered membrane. Architectural details showing continuous installation. • Self-sealing around fasteners per ASTM D1970 • Air permeance ≤ 0.004 L/s*m² @ 1.57 PSF [0.02 L/s*m² @ 75 Pa], ASTM E2178 • Air leakage through assembly ≤ 0.04 L/s*m² @ 1.57 PSF [0.2 L/s*m² @ 75 Pa], ASTM E2357	✓	✓	✓
Water-Resistive Barrier	Water does not leak through membrane or seams according to modified AATCC 127, 22" column of water for 5 hours	✓	✓	✓
Vapor Barrier	Water Vapor Permeance of 1 Perm or less, ASTM E96, Method B (water method)	✓	✓	
Vapor-Permeable Barrier	Water Vapor Permeance of 10 Perms or greater, ASTM E96, Method B (water method)			✓
Surface-Burning Material	Flame Spread Index ≤ 25, smoke generation index ≤ 450, ASTM E84. Full coverage of membrane on gypsum sheathing. Primer used with peel & stick product.	✓	✓	✓
Vertical & Lateral Propagation of Fire in Wall Assembly	Wall assemblies pass NFPA 285 with the air barrier membrane incorporated in the assembly as shown in Figures 1 and 2.	✓	✓	✓

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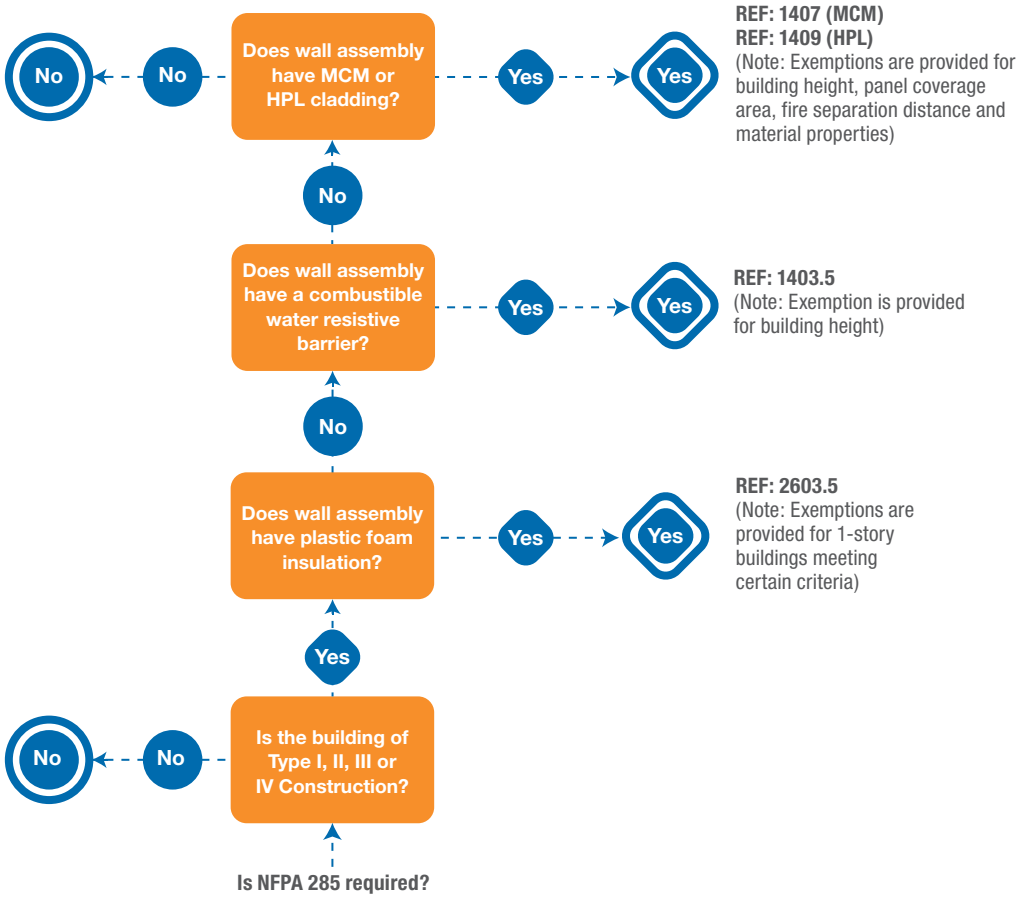
Fire Resist Product Line

Where is NFPA 285 Required?

IBC 2012

Requires NFPA 285 in walls of non-combustible construction if the wall assembly has foam plastic insulation, a combustible membrane or combustible cladding. Follow the decision tree below to see if your wall requires NFPA 285.



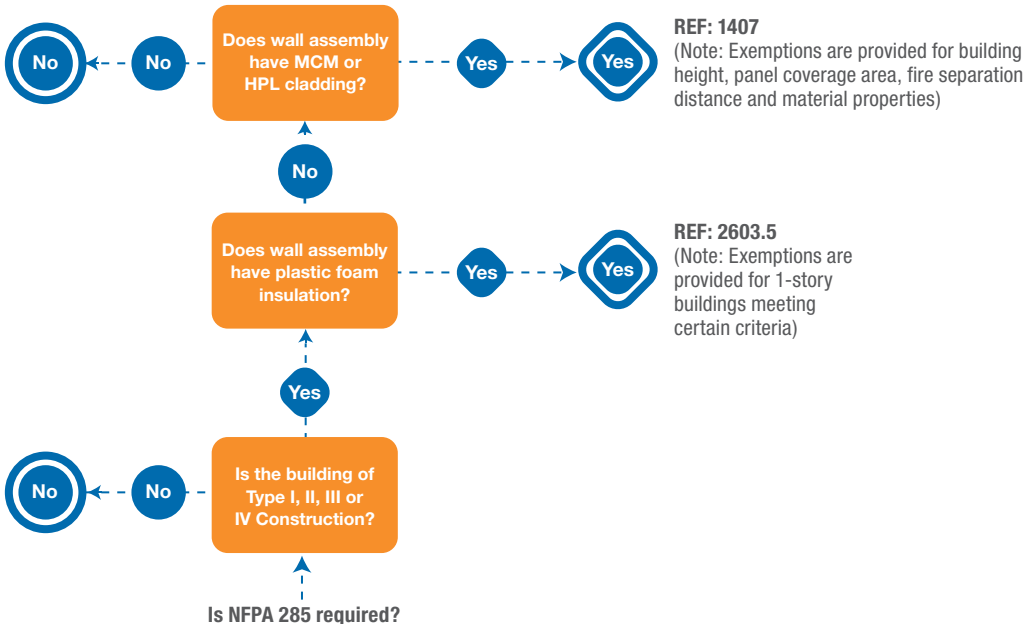
REF: 1407 (MCM)
REF: 1409 (HPL)
(Note: Exemptions are provided for building height, panel coverage area, fire separation distance and material properties)

REF: 1403.5
(Note: Exemption is provided for building height)

REF: 2603.5
(Note: Exemptions are provided for 1-story buildings meeting certain criteria)

IBC 2009 & Earlier Versions

Requires NFPA 285 in walls of non-combustible construction if the wall assembly has foam plastic insulation or combustible cladding. Follow the decision tree below to see if your wall requires NFPA 285.



REF: 1407
(Note: Exemptions are provided for building height, panel coverage area, fire separation distance and material properties)

REF: 2603.5
(Note: Exemptions are provided for 1-story buildings meeting certain criteria)

Total NFPA 285 Wall Solution

CCW's R2+ polyiso wall insulation products work together with CCW air and vapor barrier systems to create a total wall system that protects your building from moisture infiltration while keeping your building well insulated and reducing energy costs. These products also provide fire resistance and are especially suited to projects that require NFPA 285 testing.

NFPA 285 Table of Substitutions: CCW Membranes & R2+ Exterior Insulation

Wall Component	
Base Wall – Use either 1, 2 or 3	1. Cast Concrete Walls 2. CMU Concrete Walls 3. 25 GA. or thicker 3" (min) steel studs spaced 24 in. o.c (max) a. 5/8" type X Gypsum Wallboard Interior b. ½" Exterior Gypsum Sheathing c. Lateral Bracing Every 4 ft
Fire-Stopping at Floor Lines	1. Any approved mineral fiber based safing insulation in each stud cavity at floor-line. Safing thickness must match stud cavity depth.
Cavity Insulation – Use either 1, 2, 3, 4, 5, 6 or 7. Note: For items 2 & 3, spray foam may not be used in constructions that utilize a foil faced exterior insulation and does not utilize an exterior sheathing.	1. None 2. 1½" (min.) of Bayer EcoBay CC SPF (up to full cavity thickness) 3. 1½" (min.) of BASF Walltite SPF (up to full cavity thickness) 4. Any noncombustible insulation per ASTM E136 5. Any Mineral Fiber (Board type Class A ASTM E84 faced or unfaced) 6. Any Fiberglass (Batt Type Class A ASTM E84 faced or unfaced) 7. Any foam plastic insulation (SPF or board type) which has been tested per ASTM E1354 (at a minimum of 20 kW/m^2 heat flux) and shown by analysis to be less flammable (improved Tign, Pk. HRR) than Bayer EcoBay CC or BASF Walltite.
Exterior Sheathing – Use either 1 or 2	1. None (only with R2+ SHEATHE exterior insulation without spray foam cavity insulation, or with R2+ BASE with cavity insulations 1–7) 2. ½" or thicker exterior gypsum sheathing
WRB Over Base Wall Surface – Use either 1, 2 or 3	1. None 2. Any of the WRB products listed (Fire Resist 705FR-A, Fire Resist Barritech NP/NP-LT, Fire Resist Barritech VP/VP-LT) may be substituted for eachother over ½" or thicker exterior sheathing. Fire Resist 705FR-A may be used with CCW-702, 702 LV, 702 WB, CAV-GRIP or Travel-Tack. 3. CCW-705 with 702 LV, 702 WB, CAV-GRIP, Low-VOC Travel-Tack, or 702 adhesive may be used with R2+ SHEATHE or unfaced noncombustible insulation and cladding options 1–8.
Exterior Insulation – Use either 1, 2, 3, 4, 5, 6 or 7 Note: A construction which utilizes no exterior sheathing and incorporates spray foam cavity insulation may not use a foil faced exterior insulation.	1. 3½" thick (max) R2+ MATTE and R2+ SHEATHE may be substituted for each-other in reports which utilize either of these insulations. a. Exception: A construction which utilizes no exterior sheathing can only use R2+ SHEATHE. b. R2+Matte can be used with exterior gypsum sheathing and SPF in stud cavities and any of the claddings and WRB's listed. 2. 3½" thick (max) R2+ SILVER may only be used with cladding options 1–8. 3. 3.6 in. (max) R2+ BASE may be used where a wood structural fastening surface is needed. 4. Any Noncombustible insulation which incorporates a WRB that has been tested per NFPA 285 or approved for exterior insulation when used behind MCM building panels. The insulation may then be used behind any cladding in options 1–14. 5. Any noncombustible insulation (faced or unfaced) when any of cladding options 1–8 are used. Any Unfaced noncombustible insulation may be used with claddings 1–14. 6. Any exterior insulation which has been tested per ASTM E1354 (at a minimum of 20 kW/m^2 heat flux) and shown by analysis to be less flammable (improved Tign, Pk. HRR) than those listed above. 7. None – Only when the base wall incorporates exterior sheathing and the WRB products listed in 1–4 below. The base wall may have cavity insulation and may be clad with any of the cladding options 1–14.
WRB Over Exterior Insulation – Use either 1, 2, 3, or 4	1. None 2. CCW Barritech VP/VP-LT and CCW Barritech NP/NP-LT are applied over exterior insulations which incorporate plywood facers facing the exterior (R2+ BASE). For these systems, the WRB systems referenced may be interchanged. 3. Any WRB which has been tested per ASTM E1354 (at a minimum of 20 kW/m2 heat flux) and shown by analysis to be less flammable (improved Tign, Pk. HRR) than those listed above. 4. Insulation board joints taped with 4" FG-1402.

Wall Component	
Exterior Cladding – Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, or 13	1. Brick – Nominal 4" clay or concrete brick or veneer with maximum 2" air gap behind the brick. Brick Ties/Anchors 24" o.c. (max). 2. Stucco – minimum ¾" thick exterior cement plaster and lath. For these systems which require a more durable WRB system, any building wrap or 15# felt that meets requirement #4 in "WRB over Exterior Insulation" can be used as a slip sheet between the WRB/exterior insulation and the lath. 3. Limestone – minimum 2" thick using any standard non-open joint installation technique such as shiplap. 4. Natural Stone Veneer – minimum 2" thick using any standard non-open joint installation technique such as grouted/mortared stone. 5. Cast Artificial Stone – minimum 1½" thick complying with ICC-ES AC 51 using any standard non-open joint installation technique such as shiplap. 6. Terra Cotta Cladding – minimum 1¼" thick (solid or equivalent by weight) using any standard non-open joint installation technique such as shiplap. 7. Thin brick/cultured stone set in thin set adhesive and metal lath that has been tested to ASTM E119 (brick exposed to furnace) and remains in place for a minimum of 30 minutes, or has passed an NFPA 285 test. Minimum ¾ inch (for use with R2+ BASE). For these systems which require a more durable WRB system, any building wrap or 15# felt that meets requirement #4 in "WRB over Exterior Insulation" can be used as a slip sheet between the WRB/AVP and the lath. 8. TABS II Panel System with ½ inch thick bricks using TABS Wall Adhesive. 9. Any MCM that has successfully passed NFPA 285. 10. Uninsulated sheet metal building panels including steel, copper, aluminum. 11. Uninsulated Fiber-cement siding. 12. Stone/Aluminum honeycomb composite building panels that have successfully passed NFPA 285 criteria. 13. Autoclaved-aerated-concrete (AAC) panels that have successfully passed NFPA 285 criteria. 14. Terra Cotta Cladding – Any Rain-screen Terra Cotta (min 1¼ in. thick) with ventilated shiplap.

Note 1: CCW LM 800 XL adhesive applied discontinuously at a rate of 3/8" x 3" dabs, 16" o.c. may be used to adhere exterior insulation to WRB over sheathing, concrete or CMU for those applications requiring this adhesive to be used.
Note 2: The following may be used as gap filler between insulation panels, FOMO HandiFoam FireBlock, and TVM FireBlock.
Note 3: Note 3: CAV-GRIP™ or Low VOC Travel-Tack may be used as an adhesive (application rate as per mfg. instructions) to attach exterior insulation panels to the WRB.
Note 4: The following can be used with Barritech NP/VP/NP-LT/VP/VP-LT. We have a VP-LT product also for detailing window openings, inside/outside corners, transitions, terminations and penetrations:

1. Fire Resist 705FR-A or Alumagrip 701 with any of these contact adhesives as surface prep: CCW-702, CCW-702 LV, CCW-702 WB, CAV-GRIP, Low VOC Travel TACK
2. CCW LiquiFiber-W imbedded in Barritech /NP-LT/VP/VP-LT

Note 5: The following may be used for detailing maximum ¼" width exterior gypsum sheathing joints on the base wall assembly with the Barritech NP/VP/NP-LT/VP/VP-LT membrane:

1. CCW LM 800 XL or other approved (less flammable than LM 800 XL) polyurethane or latex sealant. Sealant fills sheathing joint, and has a maximum 1" width x 3/16" thickness profile over sheathing joint. Caulking shall be covered with 40 mil dry thickness of Barritech NP/NP-LT; VP/VP-LT.
2. 4" width maximum CCW DCH Reinforcing Fabric centered over joint and imbedded in Barritech NP/VP/NP-LT/VP/VP-LT
3. Maximum 4" width self-adhered flashing tape centered over joint. Gypsum sheathing surface may be prepped with any of these contact adhesives to improve bond of the flashing tape: CCW- 702, CCW-702 LV, CCW-702 WB, CAV-GRIP, Low VOC Travel TACK. Flashing tape shall be covered with 40 mil dry thickness of Barritech NP/NP-LT; VP/VP-LT. The following flashing tapes are allowed:
   a. Fire Resist 705FR-A
   b. AlumaGRIP-701
   c. Foil-GRIP 1402
   d. Barritape

Limited Warranty

Carlisle Coatings & Waterproofing, Incorporated (Carlisle) warrants this product to be free of defects in workmanship and materials only at the time of shipment from our factory. If any Carlisle materials prove to contain manufacturing defects that substantially affect their performance, Carlisle will, at its option, replace the materials or refund its purchase price.

This limited warranty is the only warranty extended by Carlisle with respect to its materials. There are no other warranties including the implied warranties of merchantability and fitness for a particular purpose.

Carlisle specifically disclaims liability for any incidental, consequential or other damages including, but not limited to, loss of profits or damages to a structure or its contents arising under any theory of law whatsoever.

The dollar value of Carlisle's liability and buyer's remedy under this limited warranty shall not exceed the purchase price of the Carlisle material in question.

Test Method References:
A. American Association of Textile Chemists and Colorists (AATCC) Test Method 127. "Water Resistance – Hydrostatic Pressure Test" B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2010 "Energy Standard for Buildings Except Low-Rise Residential Buildings" C. ASTM D 1970 Standard Specification for Self-Adhering Polymer Modifed Bituminous Sheet Materials Used as Steep slope roofing Underlayment for Ice Dam Protection D. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials E. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials. F. ASTM E 2178 Standard Test Method for Air Permeance of Building Materials G. International Code Council 1. International Building Code (IBC) 2012 2. International Building Code (IBC) 2009 3. AC-38 Acceptance Criteria for Water Resistive Barriers, June 2011 H. National Fire Protection Association (NFPA) 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

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