PERM-A-BARRIER® Air Barriers NFPA 285 Compliant Wall Assemblies Data Sheet

Walls containing mineral wool insulation

Wall components	Materials
Base wall system – Use either 1, 2, 3, 4 or 5	1. Concrete wall 2. Concrete masonry wall 3. Standard clay brick wall 4. Adobe block wall 5. 1 layer – 5/8" thick, Type X, gypsum wallboard on interior, installed over steel studs: 3 5/8" minimum depth, minimum 20-gauge at a maximum of 24" OC with lateral bracing every 4' vertically
Floor Line Fire-Stopping – Use Item 1 or 2	1. None (for Base Walls 1 – 4, see note if the slab is separated from the wall) 2. 4" thick, 4 pcf mineral fiber safing insulation (for base wall 5) Note: For Base Walls 1 – 4, a fire-rated (min. 30 min) perimeter joint meeting ASTM E2307 must be used if the wall is separated from the floor slab.
Cavity insulation – Use either 1, 2 or 3	1. None 2. Fiberglass batt insulation (faced or unfaced) 3. Any noncombustible insulation
Exterior sheathing – Use either 1, 2 or 3	1. None 2. ½" thick, exterior type gypsum sheathing 3. 5/8" thick, Type X, exterior type gypsum sheathing
Air and water barrier applied to gypsum sheathing – Use either 1, 2, 3, 4, 5, 6, 7, 8, or 9	1. PERM-A-BARRIER® NPL 10 2. PERM_A_BARRIER® NPL 10LT 3. PERM-A-BARRIER® VPL 4. PERM-A-BARRIER® VPL LT 5. PERM-A-BARRIER® wall membrane 6. PERM-A-BARRIER® Aluminum wall membrane 7. PERM-A-BARRIER® NPS 8. PERM-A-BARRIER® VPL 50RS UV Stable 9. PERM-A-BARRIER® VPS 30

Exterior insulation – Mineral wool (2" min. thick, unfaced, mechanically attached and meets ASTM C612).	1. The mineral wool shall not have any type of facer on either side. 2. The mineral wool shall be noncombustible via ASTM E 136 testing. The density of the mineral wool shall range from 4.0 to 12.0 lbs/ft^3. The R-value/inch of the mineral wool shall range from 3.5 to 4.5. 3. The mineral wool insulation must be mechanically attached. 4. The mineral wool must completely cover the air barrier.
Exterior veneer – Use either 1 or 2	1. Any non-combustible exterior veneer with or without air gap between exterior insulation and exterior veneer 2. Any combustible exterior veneer, that has been successfully tested by the veneer manufacturer per NFPA 285 and installed using standard installation techniques. Evidence of testing in accordance with NFPA 285 and/or an ICC-ES report must be submitted to the code official. See air gap note. Note: For Cladding #2, the air gap cannot exceed the tested air gap size.

Walls containing XPS insulation

Please refer to XPS manufacturers recommendations for window and door header details.

Wall Component	Materials
Base wall system – Use either 1, 2, or 3	1. Concrete wall 2. Concrete masonry wall 3. 1 layer – 5/8" thick, Type X, gypsum wallboard on interior, installed over steel studs: minimum 3 5/8" depth, minimum 20-gauge at a maximum of 16" OC with lateral bracing every 4' vertically
Floor line firestopping	4 lb/ft^3 mineral wool in each stud cavity at each floor line – attached with Z-clips or equivalent
Cavity Insulation – Use either 1, 2 or 3	1. None 2. Fiberglass batt insulation (faced or unfaced) 3. Any noncombustible insulation
Exterior sheathing – Use either 1 or 2	1. 1/2" thick, exterior type gypsum sheathing 2. 5/8" thick, Type X, exterior type gypsum sheathing

Air and water barrier applied to gypsum sheathing – Use either 1, 2, 3, 4, 5, 6, or 7	1. PERM-A-BARRIER® NPL 10 2. PERM-A-BARRIER® VPL 3. PERM-A-BARRIER® VPL LT 4. PERM-A-BARRIER® VPL 50RS UV Stable 5. PERM-A-BARRIER® NPS 6. PERM-A-BARRIER® Aluminum wall membrane 7. PERM-A-BARRIER® VPS 30
Exterior insulation	1. Dow Extruded Polystyrene Foam Insulation (XPS) – Type IV per ASTM C578 – Total thickness to be a minimum of 1/2" to maximum of 3". 2. Any XPS shown to be equivalent to Dow XPS (same density/thickness) via documentation. Must use the same header detail as Dow XPS. 3. Any XPS that has passed NFPA 285, or is 3rd party approved for NFPA 285 compliance. Must use header detail approved or tested. Use must be limited to maximum density and thickness tested or approved.
Exterior veneer – Use either 1,2,3,4, 5 or 6	1. Brick - Standard nominal 4" thick, clay brick. Brick installed with standard type veneer anchors at maximum 24" OC vertically on each stud. Maximum 2" air gap between exterior insulation and brick. 2. Concrete – 2" thick or greater. Maximum 2" air gap between exterior insulation and concrete. 3. Concrete masonry units – 4" thick or greater. Maximum 2" air gap between exterior insulation and CMU. 4. Stone veneer – Minimum 2" thick, limestone or natural stone veneer or minimum 1-1/2" thick cast artificial stone veneer. Any standard nonopen-joint installation technique such as shiplap, etc. can be used. 5. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 1-1/4" thick. Any non- open-joint installation technique such as shiplap, etc. can be used. 6. Stucco-Min 3/4" thick exterior cement plaster lath.

Walls containing one or more of the following Dow chemical products:

- Thermax™ Brand Rigid Insulation;
- STYROFOAM™ Brand Spray Polyurethane Foam CM 2030, STYROFOAM™ Brand Spray Polyurethane Foam CM 2045 or STYROFOAM™ Brand Spray Polyurethane Foam CM 2060. These products are closed cell, nominal 2.0 lb/ft^3 density, spray polyurethane foam plastic insulation.

For maximum 4.25" thick Thermax™ insulation board

Wall Component	Materials
Base wall system – Use either 1, 2, 3, 4 or 5	1. Concrete wall 2. Concrete masonry wall 3. Standard clay brick wall 4. Adobe block wall
Base wall system – Use either 1, 2, 3, 4 or 5 (cont.)	5. teel stud (minimum 3 5/8" deep, minimum 20-gauge, maximum 24" OC, lateral bracing every 4 ft. vertically) with one of the following installed on the interior face side of the stud wall: a. 1 layer – 5/8" thick Type X or 1/2" thick Type X gypsum wallboard on interior face of studs, or b. MONOKOTE® Z-3306, 3/8" thick minimum, installed over: I. Cavity insulation Item 2 or II. Thermax™ c. International Cellulose Corporation's Ure-K® Thermal Barrier System – 1.25" minimum installed over: i. Cavity Insulation Item 2 or; ii Dow Thermax™, any thickness d. Flame Seal Products, Inc. Flame Seal-TB™ coating applied at 25 mils wet thickness (18 mils dry, 65 ft^2/ gal) over cavity insulation Item 2 e. International Fireproof Technology, Inc. DC 315 applied at 18 wet mils thickness over 4 dry mils of primer over cavity insulation Item 2
Floorline firestopping	4 lb/ft^3 mineral wool in each stud cavity at each floorline – attached with Z-clips or equivalent
Cavity insulation – Use either 1, 2 or 3 or combination of 2 & 3	1. None 2. Full stud depth or less thickness of DOW STYROFOAM™ Spray Polyurethane CM 2030 or CM 2045 or CM 2060. Use exterior sheathing as substrate to apply onto and cover the width of the cavity including inside the stud flange 3. Fiberglass batt insulation (faced or unfaced)
Exterior sheathing – Use either 1, 2 or 3	1. None 2. 1/2" thick, exterior type gypsum sheathing complying with the applicable code 3. 5/8" thick, exterior type gypsum sheathing complying with the applicable code
Weather-resistive barrier applied to exterior sheathing – Use either 1, 2, 3, or 4	1. PERM-A-BARRIER® VPL 2. PERM-A-BARRIER® VPL LT 3. PERM-A-BARRIER® Aluminum wall membrane 4. PERM-A-BARRIER® NPS

Exterior insulation – Use either 1, 2, 3 or 4	1. None. Exterior sheathing must be Item 2 or 3 as specified under exterior sheathings above 2. Dow Thermax™ Insulation Board (Thickness: 5/8" minimum, 4.25" maximum) 3. DOW STYROFOAM™ Spray Polyurethane CM 2030, CM 2045 or CM 2060 (Thickness: 3.5" maximum) 4. Combination of 2 (Thermax™ Insulation Board) and 3 (STYROFOAM™ Spray Polyurethane CM 2030, CM 2045 or CM 2060). The combined thickness of 2 and 3 do not exceed 4.25" (item 3 not exceeding 3.5")
Exterior veneer – Use 1, 2, 3, 4, 5 or 6	1. Brick. Use standard nominal 4" thick, day brick. Use standard brick veneer anchors installed vertically on each stud at maximum of 24" o.c. creating a 2" maximum air gap between the exterior insulation and brick. 2. Stucco. Minimum 3/4" thick, exterior cement plaster and lath. An optional secondary water resistive barrier can be installed between the exterior insulation and the lath. The secondary water-resistive barrier must not be full-coverage asphalt or butyl-based self-adhered membranes. 3. Limestone. Minimum 2" thick installed using any standard non-open –joint-installation technique such as shiplap. 4. Natural stone veneer. Minimum 2" thick installed using any standard non-open-joint installation technique such as shiplap. 5. Concrete or precast concrete panel-Minimum 1.5" thick panel, with a 2" maximum air gap between exterior insulation and concrete panel. Any standard non-open joint installation technique such as shiplap, etc. can be used. 6. Terracotta cladding. Minimum 11/4" thick installed using any standard non-open-joint installation technique such as shiplap.

For maximum 3" thick Thermax™ insulation board

Wall Component	Materials
Base wall system – Use either 1, 2, 3, 4 or 5	1. Concrete wall 2. Concrete masonry wall 3. Standard clay brick wall 4. Adobe block wall

Base wall system – Use either 1, 2, 3, 4 or 5 (cont.)	5. Steel studs: minimum 3" depth, minimum 20-gauge at a maximum of 24" OC with lateral bracing every 4 ft. vertically with: a. 1 layer – 5/8" thick Type X or 1/2" thick Type X gypsum wallboard on interior face of studs, or b. MONOKOTE® Z-3306 installed at a minimum of 5/8" thickness over cavity insulation (Item 2) or Thermax™, or c. International Cellulose Corporation's Ure-K® Thermal Barrier System installed at a minimum of 1.25" thickness over cavity insulation (Item 2) or Thermax™. d. lame Seal Products, Inc. Flame Seal-TB™ coating applied at a wet mil thickness of 25 mils (18 mils dry, 65 ft^2/gal) over cavity insulation (Item 2) e. International Fireproof Technology, Inc. DC 315 applied at an application rate of 18 wet mils applied over 4 mils of primer which is applied over cavity insulation (Item 2)
Floorline firestopping	4 lb/ft^3 mineral wool in each stud cavity at each floorline – attached with Z-clips or equivalent (see Figure 1)
Cavity insulation – Use either 1, 2 or 3 or combination of 2 & 3	1. None 2. Full stud depth or less thickness of DOW STYROFOAM™ Brand Spray Polyurethane CM 2030 or CM 2045 or CM 2060. Use exterior sheathing as substrate to apply onto and cover the width of the cavity including inside the stud flange 3. Fiberglass batt insulation (faced or unfaced)
Exterior sheathing – Use either 1, 2 or 3	1. None 2. 1/2" thick, exterior type gypsum sheathing complying with the applicable code 3. 5/8" thick, exterior type gypsum sheathing complying with the applicable code
Weather-resistive barrier applied to exterior sheathing – Use either 1, 2, 3 or 4	1. PERM-A-BARRIER® VPL 2. PERM-A-BARRIER® VPL LT 3. PERM-A-BARRIER® Aluminum wall membrane 4. PERM-A-BARRIER® NPS
Exterior insulation – Use either 1 or 2	1. None. Exterior sheathing must be Item 2 or 3 as specified under exterior sheathings above 2. Dow Thermax™ Insulation Board (Thickness: 5/8" minimum, 3" maximum)

Exterior veneer – Use 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13	1. Metal Composite Material System. Use any Metal Composite Material System that has been successfully tested by the panel manufacturer via NFPA 285 test method. Installed using standard installation techniques. Evidence of testing in accordance with NFPA 285 and/or an ICC-ES report must be submitted to the code official. 2. Terracotta cladding. Minimum 11/4" thick installed using any standard installation techniques. 3. Metal exterior wall coverings. Including but not limited to steel, aluminum and copper installed using standard installation techniques. 4.Cement board Siding. Any standard installation technique can be used. 5. StoneLite® wall panels by Stone Panels. 6. Brick - Standard nominal 4" thick, clay brick with brick veneer anchors – standard types – installed maximum 24" OC vertically on each stud. Maximum 2" air gap between exterior insulation and brick. 7. Stucco – Minimum 3/4" thick, exterior cement plaster and lath. A secondary water-resistive barrier can be installed between the Exterior insulation and the lath. The secondary water-resistive barrier shall not be full-coverage asphalt or butyl-based self-adhered membranes. 8. Corium™ Thin brick system. 9. Minimum 11/4" thick, Limestone or natural stone veneer or minimum 11/4" thick cast artificial stone veneer. Any standard installation technique such as shiplap, etc. can be used. 10. Glen-Gery Thin Tech Elite Series – Masonry veneer. 11. Concrete or precast concrete panels – Minimum 1.5" thick panel, with a 2" maximum air gap between exterior insulation and concrete panel. Any standard installation technique can be used. 12. Ceramic tile (min. 3/8" thick) bonded using noncombustible mortar adhesive to minimum 1/2" thick cement board or gypsum sheathing. 13. Knight Wall Systems to include Metal Panel (Aluminum or steel), Thin Brick Panels, NuTech FC Stucco applied to Permabase cement board, Terracotta – Single skin or double skin – 15 mm or thicker, Concrete panels, Corium™ Thin Brick system.

For Firestone Enverge™ CI foil exterior wall insulation or Enverge™ CI glass exterior wall insulation wall component

Wall Component	Materials
Base wall system – Use either 1, 2 or 3	1. Concrete wall 2. Concrete masonry wall 3. 1 layer – 3 5/8" thick Type X gypsum wallboard on interior, installed over steel studs: minimum 3" depth, minimum 20-gauge at a maximum of 24" OC with lateral bracing every 4 ft. vertically

Floorline firestopping	4 lb/ cu ft^3 mineral wool (e.g. Thermafiber) in each stud cavity at each floorline – attached with Z-clips or equivalent
Cavity insulation – Use either 1, 2, or 3	1. None 2. Any noncombustible insulation 3. Fiberglass batt insulation (faced or unfaced)
Exterior sheathing – Use either 1, 2 or 3	1. None 2. 1/2" thick, exterior Type gypsum sheathing 3. 5/8" thick, exterior Type gypsum sheathing
Water-resistive barrier applied to exterior sheathing - Use 1, 2, 3 or 4	1. PERM-A-BARRIER® aluminum wall membrane 2. PERM-A-BARRIER® VPL 3. PERM-A-BARRIER® VPL LT 4. PERM-A-BARRIER® NPS
Exterior insulation – Use either 1 or 2	1. Firestone Enverge™ CI Foil Exterior Wall Insulation – 21/2" maximum thickness with Exterior Veneer – Part 1 or 4" maximum thickness with Exterior Veneer – Part 2 2. Firestone Enverge™ CI Glass Exterior Wall Insulation – 21/2" maximum thickness with Exterior Veneer – Part 1 or 4" maximum thickness with Exterior Veneer – Part 2
Weather-resistive barrier applied to exterior insulation	none
Exterior veneer – Part 1 - Use either 1, 2, 3, 4, 5, 6, 7 or 8	1. Brick a. Brick veneer anchors – standard types – installed maximum 24" OC vertically on each stud. b. Maximum 2" air gap between exterior insulation and brick – Standard nominal 4" thick, clay brick. 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath. A secondary water-resistive barrier can be installed between the exterior insulation and the lath. The secondary waterresistive barrier shall not be full-coverage asphalt or butyl-based self-adhered membranes. 3. Minimum 2" thick, Limestone or natural stone veneer or minimum 11/2" thick cast artificial stone veneer. Any standard installation technique can be used. 4. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick. Any standard installation technique can be used.

Exterior veneer – Part 1 - Use either 1, 2, 3, 4, 5, 6, 7 or 8 (cont.)	5. Metal veneer such as steel, aluminum, copper, etc. Any standard installation technique can be used. 6. Cement board siding – Any standard installation technique can be used. 7. MCM System – Use any Metal Composite Panel that has been successfully tested by the panel manufacturer via NFPA 285 test method. Installation shall be such that the free air cavity behind the MCM shall not exceed 2". 8. Aluminum faced, aluminum honeycomb core panels. Any standard installation technique can be used.
Exterior veneer – Part 2 - Use either 1, 2, 3 or 4	1. Brick c. Brick veneer anchors – standard types – installed maximum 24" OC vertically on each stud. d. Maximum 2" air gap between exterior insulation and brick – Standard nominal 4" thick, clay brick. 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath. A secondary water-resistive barrier can be installed between the exterior insulation and the lath. The secondary water-resistive barrier shall not be full-coverage asphalt or butyl-based selfadhered membranes. 3. Minimum 2" thick, Limestone or natural stone veneer or minimum 11/2" thick cast artificial stone veneer. Any standard non-open-joint installation technique such as shiplap, etc. can be used. 4. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick. Any standard non-open-joint installation technique such as shiplap, etc. can be used.

For exterior walls where the air barrier is the only combustible component

Per 2015 IBC section 1403.5, exemption 2

Wall Component	Materials
Base wall system – Use either 1, 2, 3, 4, or 5	1. Concrete wall 2. Concrete masonry wall 3. Standard clay brick wall 4. Adobe block wall 5. 1 layer – 5/8" thick, Type X, gypsum wallboard on interior, installed over steel studs: minimum 3 5/8" depth, minimum 20-guage at a maximum of 16" OC with lateral bracing every 4 ft. vertically.
Cavity insulation – Use either 1, 2, or 3	1. None 2. Fiberglass batt insulation (faced or unfaced) 3. Any noncombustible insulation
Exterior sheathing – Use either 1, 2 or 3	1. None 2. 1/2" thick, exterior type gypsum sheathing 3. 5/8" thick, Type X, exterior type gypsum sheathing
Air and water barrier applied to gypsum sheathing – Use either 1, 2, 3	1. PERM-A-BARRIER® Aluminum wall membrane 2. PERM-A-BARRIER® VPL 3. PERM-A-BARRIER® VPL LT
Exterior veneer	Brick, concrete, stone, terracotta, stucco or steel with minimum thickness listed in Table 1404.2 in chapter 14 of IBC.

For walls containing Atlas Energy Shield Pro, Pro2 , CGF Pro, Ply Pro or RBoard Pro exterior insulation

Wall Component	Materials
Base wall system – Use either 1, 2 or 3	1. Cast concrete wall 2. CMU concrete wall 3. 20-gauge (min.) 3 ” (min.) steel studs spaced at a maximum of 24” o.c. a. 1 layer –5/8" thick Type X gypsum wallboard on interior
Floorline firestopping – Use 1 or 2	1. None 2. 4", 4 pcf. Mineral fiber safing insulation

Cavity insulation – Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,or 15 NOTE: SPF Cavity insulations 5-15 must use floor line firestopping item 2 and exterior gypsum sheathing.	1. None 2. Any noncombustible insulation per ASTM E136 3. Any mineral fiber (Board type Class A ASTM E84 faced or unfaced) 4. Fiberglass (Batt type Class A ASTM E84 faced or unfaced) 5. 51/2" (max.) Icynene LD-C-50 spray foam in 6" deep studs (max.) full fill without an air gap 6. 51/2" (max.) Icynene MD-C-200, 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap 7. 51/2" (max.) Icynene MD-R-201, 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap 8. 6" (max.) SWD Urethane QS 112, 2 pcf spray foam in 6" deep studs (max.) or partial fill with a maximum 21/2" air gap 9. 31/2" (max.) Gaco Western 183M spray foam in 3 " deep studs (max.) 10. Gaco Western F 1850 (31/2" max.) Use with 5/8" deep studs (max.) 11. Demilec SEALEDTiON 500 (3 5/8"max.) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 12. Demilec HeatLok Soy 200 Plus (3.4" max) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 13. Bayer Bayseal (3" max). Use with 5/8" exterior sheathing 14. Lapolla FoamLok FL 2000 (3" max.) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 15. BASF SprayTite 81206 or WallTite (US & US-N) (3 5/8" max) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.)
Exterior sheathing – Use either 1, 2 or 3	1. 1/2" or thicker exterior type gypsum sheathing 2. 2" precast concrete panels attached to structural elements of building NOTE: When SPF is used in cavity, exterior sheathing must be used. See specific sheathing thicknesses above.
Air barrier or weather-resistive barrier applied to exterior sheathing – Use 1, 2, 3, 4, 5 or 6	1. PERM-A-BARRIER® VPL / VPL LT 2. PERM-A-BARRIER® NPL 10 3. PERM-A-BARRIER® NPS 4. PERM-A-BARRIER® Aluminum wall membrane 5. PERM-A-BARRIER® VPL 50RS UV Stable 6. PERM-A-BARRIER® VPS 30
Exterior Insulation – Use either 1,2,3 or 4 Items 1, 2 or 3 may be multiple layers of thinner product with facers on each side.	1. 4" (max) EnergyShield Pro or Pro 2 2. 4" (max.) RBoard Pro or EnergyShield CGF Pro. 3. 4 3/4" (max.) EnergyShield Ply Pro(4" EnergyShield CGF Pro with 5/8" or ¾" FRT plywood) 4. 2" (min.) Mineral wool-4 pcf (min.)

Exterior cladding – Use any of these options **NOTE**: Cladding 8 (Zinc)may only be used with EnergyShield Pro or Pro2	1. Brick a. Brick veneer anchors – standard types – installed maximum 24" o.c. (max.) vertically on each stud b. Maximum 2" air gap between exterior insulation and brick c. Standard nominal 4" thick clay brick or veneer 2. Stucco – Minimum 7/8" thick, exterior cement plaster and lath 3. Limestone – minimum 2" thick 4. Natural stone veneer – minimum 2" thick 5. Cast artificial stone – minimum 1.5" thick complying with ICC-ES AC 51 6. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick 7. Any ACM that has passed NFPA 285 8. Uninsulated sheet metal building panels including aluminum, steel copper or zinc (see note) 9. Uninsulated cement or fiber-cement cladding panels 10. Stone/Altuminum honeycomb composite building panels that have successfully passed NFPA 285 criteria 11. Autoclaved-aerated-concrete (AAC) panels (minimum 11/2" thick) 12. Reynobond ZCM Zinc metal composite panel 13. CMU-minimum 2" thick

For walls with Rmax TSX-8500, ECOMAXci or TSX-8510

Window header for all construction shall incorporate 0.08" minimum aluminum flashing to cover air gaps between exterior insulation and exterior facade.

Wall components	Materials
Base wall system – Use either 1, 2, 3	1. Cast concrete wall 2. CMU concrete wall 3. 20-gauge (min.) 3 ” (min.) steel studs spaced at a maximum of 24” o.c.. 1 layer – ½ " thick Type X gypsum wallboard on interior 4. Where allowed in Types I, II, III, IV construction, FRTW studs complying with IBC section 2303.2, min. nominal 2 X 4 dimension, spaced 24”OC (max) a. 5/8 " Type X gypsum wallboard interior b. Bracing as required by code
Floor line firestopping – Use 1 or 2 As an option, use 2 with FRTW framing	1. 4 pcf mineral fiber insulation installed with Z-clips. 2. FRTW fire blocking at floor line in accordance with applicable code requirements.
Cavity insulation – Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 NOTE: SPF Cavity insulations 5-15 must use floor line firestopping item 2 and exterior gypsum sheathing.	1. None 2. Any noncombustible insulation per ASTM E136 3. Any mineral fiber (Board type Class A ASTM E84 faced or unfaced) 4. Fiberglass (Batt type Class A ASTM E84 faced or unfaced) 5. 51/2” (max.) Icynene LD-C-50 spray foam in 6” deep studs (max.) full fill without an air gap 6. 51/2” (max.) Icynene MD-C-200, 2 pcf spray foam in 6” deep studs (max.) full fill without an air gap 7. 51/2” (max.) Icynene MD-R-201, 2 pcf spray foam in 6” deep studs (max.) full fill without an air gap 8. 6” (max.) SWD Urethane QS 112, 2 pcf spray foam in 6” deep studs (max.) or partial fill with a maximum 21/2” air gap 9. 3 1/2” (max.) Gaco Western 183M spray foam in 3” deep studs (max.) 10. Gaco Western F 1850 (3 1/2" max.) Use with 5/8" deep studs (max.) 11. Demilec SEALEDTiON 500 (3 5/8" max.) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 12. Demilec HeatLok Soy 200 Plus (3.4" max) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 13. Bayer Bayseal (3" max). Use with 5/8" exterior sheathing 14. Lapolla FoamLok FL 2000 (3" max.) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.) 15. BASF SprayTite 81206 or WallTite (US & US-N) (3 5/8" max) Use with 5/8" exterior sheathing in 3 5/8" deep studs (max.)

Exterior Sheathing – Use either 1 or 2 **NOTE**: Exterior FRTW sheathing or gypsum board is optional for base Walls 1 or 2. When SPF is used, 5/8 " exterior gypsum sheathing must be used.	1. ½ " or thicker exterior gypsum sheathing 2. ½ " (min) FRW structural panels complying with IBC Section 2303.2 and installed in accordance with code allowances for Types I, II, III, IV construction
Air barrier over sheathing- Use 1, 2, 3, 4, 5 or 6	1. PERM-A-BARRIER ®VPL/VPL LT 2. PERM-A-BARRIER ®NPL 10 3. PERM-A-BARRIER ®NPS 4. PERM-A-BARRIER ®Aluminum wall membrane 5. PERM-A-BARRIER ®VPL 50RS UV Stable 6. PERM-A-BARRIER ®VPS 30
Exterior Insulation-Use either 1, 2, 3, or 4 **Note**: See exterior sheathing options for thickness limitations when no exterior sheathing is used.	1. 4 ½ " (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8500(for claddings 1-12) 2. 4 ½ " (max. consisting of a single panel or multiple thinner panels) Rmax ECOMAXci (for claddings 1-12) 3. 4 ½ " (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8510 (for claddings 1-12) 4. 2 " (min.) mineral wool-4 pcf (min.) (for claddings 1-12)
Exterior cladding – Use 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12	1. Brick a. Brick veneer anchors – standard types – installed maximum 24" o.c. (max.) vertically on each stud b. Maximum 2" air gap between exterior insulation and brick c. Standard nominal 4" thick clay brick or veneer 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath with an optional secondary WRB between the exterior insulation and lath. The secondary WRB shall not be full coverage asphalt or self-adhered butyl membrane. 3. Limestone – minimum 2" thick using any standard installation technique 4. Natural stone veneer – minimum 2" thick using any standard installation technique 5. Cast artificial stone – minimum 1.5" thick complying with ICC-ES AC 51 6. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick 7. Any ACM or MCM that has passed NFPA 285 8. Uninsulated sheet metal building panels including aluminum, steel copper 9. Uninsulated cement or fiber-cement cladding panels 10. Stone/Aluminum honeycomb composite building panels that have successfully passed NFPA 285 criteria 11. Autoclaved-aerated-concrete (AAC) panels (minimum 11/2" thick) 12. Thin set brick. Glen Gery Thin Tech Elite has been analyzed using mfr's standard installation technique.

For walls containing Hunter Xci Foil Exterior Insulation

For all constructions, the window header shall consist of minimum 25GA. sheet steel flashing.

Wall components	Materials
Base wall system – Use either 1, 2, 3 or 4	1. Cast concrete wall 2. CMU concrete wall 3. 25 GA min. 3 5/8" (min) steel studs spaced 24" OC (max.) a. 5/8" type X gypsum wallboard interior b. Lateral bracing every 4 ft. 4. FRTW studs :min. nominal 2 X 4 dimension, spaced 24" OC (max.) a. 5/8" type X gypsum wallboard interior b. Bracing as required by code
Floor line firestopping – Use 1 or 2	1. Any approved mineral fiber based safing insulation in each stud cavity at floor line. Safing thickness must match stud cavity depth. 2. Solid FRTW fire blocking at floor line per building code requirements for Type III construction
Cavity insulation – Use either 1 - 9 Items 8 & 9 may only be used with Exterior Sheathing 1	1. None 2. 1 ½" (min.) of Bayer EcoBay CC SPF (up to full cavity thickness) 3. 1 ½" (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 E 1354 (at a minimum of 20kW/m^2 heat flux) and shown byanalysis to be less flammable (improved Tign, Pk, HERR) than Bayer EoBay CC or BASF Walltite. 8. NCFI InsulBloc SPF (up to full cavity thickness) 9. Icynene MD-C_200v3 (Proseal) up to 5 ½" (only with ½" (min.) exterior gypsum sheathing.
Exterior Sheathing- Use item 1 or 2	1. ½" or thicker exterior gypsum sheathing 2. ½" (min.) FRTW structural panels in Type III construction are allowed in place of gypsum sheathing when combustible cavity insulation is not used.
Air barrier over sheathing- Use 1, 2, 3, 4, 5 or 6	1. PERM-A-BARRIER ®VPL/VPL LT 2. PERM-A-BARRIER ®NPL 10 (only for claddings 1-6) 3. PERM-A-BARRIER ®NPS 4. PERM-A-BARRIER ®Aluminum wall membrane 5. PERM-A-BARRIER ®VPL 50RS UV Stable (only for claddings 1-6) 6. PERM-A-BARRIER ®VPS 30 (only for claddings 1-6)
Exterior Insulation – Use 1 or 2	1. 3 ½" (max.) Xci Foil 2. 2" (min.) Mineral wool-4pcf (min.)

Exterior cladding – Use 1, 2, 3, 4, 5 or 6	1. Brick a. Brick veneer anchors – standard types – installed maximum 24" o.c. (max.) vertically on each stud b. Maximum 2" air gap between exterior insulation and brick c. Standard nominal 4" thick clay brick or veneer 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath with an optional secondary WRB between the exterior insulation and lath. The secondary WRB shall not be full coverage asphalt or self-adhered butyl membrane. 3. Limestone – minimum 2" thick using any standard installation technique 4. Natural stone veneer – minimum 2" thick using any standard installation technique 5. Cast artificial stone – minimum 1.5" thick complying with ICC-ES AC 51 6. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick using any standard non-open joint installation technique such as shiplap

For walls containing Hunter Xci Class A , Xci 286, Xci CG or Xci Ply Exterior Insulation

For all constructions, the window header shall consist of a minimum of 25GA. Sheet steel flashing.

Wall components	Materials
Base wall system – Use either 1, 2, 3 or 4	1. Cast concrete wall 2. CMU concrete wall 3. 25 GA min. 3 5/8" (min) steel studs spaced 24" OC (max.) a. 5/8" type X gypsum wallboard interior b. Lateral bracing every 4 ft. 4. FRTW studs :min. nominal 2 X 4 dimension, spaced 24" OC (max.) a. 5/8" type X gypsum wallboard interior b. Bracing as required by code
Floor line firestopping – Use 1 or 2	1. Any approved mineral fiber based safing insulation in each stud cavity at floor line. Safing thickness must match stud cavity depth. 2. Solid FRTW fire blocking at floor line per building code requirements for Type III construction
Cavity Insulation – Use any item 1-9 Items 8 & 9 may only be used with Exterior Sheathing 1	1. None 2. 1 ½" (min.) of Bayer EcoBay CC SPF (up to full cavity thickness) 3. 1 ½" (min.) of BASF Walltite SPF (up to full cavity thickness) 4. Any noncombustible insulation per ASTM E136

Cavity Insulation – Use any item 1-9 Items 8 & 9 may only be used with Exterior Sheathing 1 (cont.)	5. Any mineral fiber (Board type class A ASTM E84 faced or unfaced) 6. Any Fiberglass (Batt Type Class A ATM E84 faced or unfaced) 7. Any foam plastic insulation (SPF or board Type) which has been tested per ASTM E 1354 (at a minimum of 20kW/m2 heat flux) and shown byanalysis to be less flammable (improved Tign, Pk, HERR) than Bayer EoBay CC or BASF Walltite. 8. NCFI InsulBloc SPF (up to full cavity thickness) 9. Icynene MD-C_200v3 (Proseal) up to 5 ½" (only with ½" (min.) exterior gypsum sheathing)
Exterior Sheathing- Use item 1 or 2	1. ½" or thicker exterior gypsum sheathing 2. ½" (min.) FRTW structural panels in Type III construction
Air barrier over sheathing- Use 1, 2, 3, 4 or 5	1. PERM-A-BARRIER ®VPL/VPL LT 2. PERM-A-BARRIER ®NPL 10 (only for claddings 1-6) 3. PERM-A-BARRIER ®NPS 4. PERM-A-BARRIER ®VPL 50RS UV Stable (only for claddings 1-6) 5. PERM-A-BARRIER ®Aluminum wall membrane
Exterior Insulation – Use 1, 2, 3 or 4	1. 3 ½" thick (max.) Xci Class A (or Xci 286) 2. 2 inch (min.) mineral wool-4 pcf (min.) 3. 3 ½" thick (max.) Xci CG 4. 4 1/4" (max.) Xci Ply (3 ½" foam max., 3/4" FR Plywood max.)
Exterior cladding – Use any item 1-15 Item 7 may use any tested/approved installation technique. Items 8, 9 or 12 may use any standard installation technique.	1. Brick a. Brick veneer anchors – standard types – installed maximum 24" o.c. (max.) vertically on each stud b. Maximum 2" air gap between exterior insulation and brick c. Standard nominal 4"-thick clay brick or veneer 2. Stucco – Minimum 3/4"-thick, exterior cement plaster and lath with an optional secondary WRB between the exterior insulation and lath. The secondary WRB shall not be full coverage asphalt or self-adhered butyl membrane. 3. Limestone – minimum 2" thick using any standard installation technique 4. Natural stone veneer – minimum 2" thick using any standard installation technique 5. Cast artificial stone – minimum 1.5" thick complying with ICC-ES AC 51 6. Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 11/4" thick

Exterior cladding – Use any item 1-15 Item 7 may use any tested/approved installation technique. Items 8, 9 or 12 may use any standard installation technique. (cont.)	7.. Any ACM or MCM that has passed NFPA 285 8.. Uninsulated sheet metal building panels including aluminum, steel copper. Zinc is allowed for Xci Class A or Xci 286 only. 9.. Uninsulated cement or fiber-cement cladding panels 10.. Stone/Aluminum honeycomb composite building panels that have successfully passed NFPA 285 criteria 11.. Autoclaved-aerated-concrete (AAC) panels (minimum 11/2" thick) 12.. Terra Cotta Cladding- any rain screen Terra Cotta (min. ½" thick) with ventilated ship lap 13.. ½" Stucco- any one coat stucco (½"min.) which meets AC 11 acceptance criteria or is approved for use in Type I-IV construction or has been tested per NFPA 285 or stays in place when tested per ASTM E119 (brick exposed to fire) for at least 30 minutes. 14.. Thin brick/cultured stone set in thin-set adhesive and metal lath that has been tested to ASTM E119 (brick exposed to fire) for at least 30 minutes or has passed NFPA 285 test. Minimum ¾". For these systems, which require a more durable WRB system, any building wrap or 15# felt that is less combustible then "WRB over exterior insulation" can be used as a slip sheet between the WRB/AVP and the lath. 15.. TABS II panel system with ½" thick bricks using TABS Wall Adhesive

GCP Applied Technologies Inc., 2325 Lakeview Parkway, Suite 400, Alpharetta, GA 30009, USA

GCP Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6

Last Updated: 2025-05-13
gcpat.com/solutions/products/perm-a-barrier-air-barrier-system/perm-a-barrier-air-barriers-nfpa-285-compliant