Senergy®

NFPA 285 COMPLIANT

WALL SYSTEMS AND ASSEMBLIES

BUILDING TRUST

SOLUTIONS FOR NON-COMBUSTIBLE CONSTRUCTION

Creating non-combustible exterior wall assemblies has become increasingly challenging as building design has evolved toward greater levels of energy efficiency. To meet the requirements of the International Energy Conservation Code, buildings have incorporated air/water-resistive barriers on exterior sheathing and CMU walls, together with extensive use of exterior insulation. In addition to improving energy efficiency, these changes can provide effective moisture management by incorporating an airtight secondary drainage plane, and by moving the dew point of the wall assembly outside of the drainage plane.

However, both the air/water-resistive barrier and many types of exterior insulation are made from organic materials that are combustible. One challenge for design professionals is to incorporate combustible materials into noncombustible construction in a way that reliably provides the fire performance required by the International Building Code.

Senergy Channeled Adhesive CI Design, Channeled Adhesive CI Design with MaxGrip Veneer Adhesive, Platinum CI, Platinum CI Stucco Ultra, Platinum CI Stucco Plus and Senerflex Vulcan NC Wall Systems have been comprehensively qualified for use in non-combustible construction. When installed per Sika details and instructions, they provide code-compliant fire performance as listed on system brochures. This extensive set of performance data is steadily updated as local and national fire standards evolve.

Senergy specialty finishes are available in brick, stone, metal, and stucco motifs. Dynamic aesthetics combined with continuous exterior insulation and a monolithic air/water-resistive barrier create impressive lightweight, high-performance building enclosures.

WALL ASSEMBLIES

Wall assemblies are a collection of products from more than one manufacturer that collectively function as a wall cladding. Insulation, exterior skin, air barrier, water-resistive barrier, fasteners, lintels, furring and other components come together to form a wall assembly. Senershield air/water-resistive barriers are fluid-applied systems that are supported with ICC-ESR 2986, which confirms code compliance in Type I – V construction. Senershield systems can be used to create a continuous drainage plane and air barrier system as part of a wall assembly design.

SENERGY CI WALL SYSTEMS

Senergy CI Wall Systems presented in this guide incorporate a Senershield air/water-resistive barrier, continuous exterior insulation and an outer skin that can be finished to create a broad range of appearances. These systems meet the full range of International Building Code and International Energy Conservation Code requirements, and are supported with third-party test data, architectural details and system warranties. Utilizing Senergy CI Wall Systems provides a simplified approach to wall cladding design.

SOLUTIONS FOR BUILDINGS WITH MULTIPLE CLADDINGS

WHERE BUILDINGS EMPLOY MULTIPLE CLADDINGS, SENERSHIELD AIR/WATER-RESISTIVE BARRIERS CAN BE EXTENDED BEYOND SENERGY WALL SYSTEMS, and provide NFPA 285 compliant performance as part of wall assemblies that utilize materials from multiple manufacturers.

Although not related to fire performance, airtightness and secondary water drainage are key building considerations. Use of a continuous, monolithic air/water-resistive barrier, supplied by a single manufacturer, is a recognized way to improve air tightness and moisture management. It also helps integrate multiple cladding assemblies into an overall building enclosure.

Senershield-R, Senershield-RS, and Senershield-VB are supported with extensive NFPA 285 data covering a wide range of wall assembly options. This allows design professionals to specify Senershield products behind multiple claddings used alone or in conjunction with Senergy Wall Systems.

Claddings that are comprised of materials from more than one manufacturer require careful consideration. Some fire requirements, such as the ASTM E84 Steiner Tunnel test, apply to specific materials. Others, such as NFPA 285, are assembly tests where the assembly itself must be evaluated.

Senershield air/water-resistive barriers can provide a continuous air and water-resistive barrier behind multiple claddings for uninterrupted air and moisture protection

NFPA 285 COMPLIANT WALL SYSTEMS AND ASSEMBLIES

The components listed in the following sections – Base Wall System **(SECTION A)**, Air/Water-Resistive Barrier **(SECTION B)**, Exterior Insulation **(SECTION C)**, and Exterior Cladding **(SECTION D)** can be combined to create wall systems and assemblies that comply with NFPA 285 requirements.

SECTION A: BASE WALL SYSTEM

1. Concrete Wall	
2. Concrete Masonry Wall	
3. Steel Stud Framed Wall: Minimum 20-gauge 3-5/8 inch studs (maximum 24"O.C.)	**a.** Interior wallboard: minimum 1 layer of 1/2-inch or 5/8-inch Type X gypsum wallboard on interior face of studs **b.** Interior vapor barrier (optional) 1 layer of maximum 6-mil polyethylene plastic **c.** Cavity insulation: None or any noncombustible insulation (faced or unfaced) **d.** Floorline firestopping for balloon framed walls: 4 lb/cu foot mineral wool (e.g. Thermafiber®)in each stud cavity and at each floorline, attached with Z-clips or equivalent **e.** Exterior sheathing: 1/2-inch or 5/8-inch thick exterior grade gypsum sheathing
4. Podium Wall: 3-5/8 inch Fire Retardant Treated (FRT) lumber studs, spaced 16" or 24" O.C. Openings may be lined with 1.5" FRT lumber. **NOTE: Qualified for use with Senergy CI and CI Stucco systems only.**	**a.** Interior wallboard: minimum 1 layer of 1/2-inch or 5/8-inch Type X gypsum wallboard on interior face of studs **b.** Interior vapor barrier (optional) 1 layer of maximum 6-mil polyethylene plastic **c.** Cavity insulation: None or any noncombustible insulation (faced or unfaced) **d.** Floorline firestopping for balloon framed walls: 4 lb/cu foot mineral wool (e.g. Thermafiber®) in each stud cavity and at each floorline, attached with Z-clips or equivalent **e.** Exterior sheathing: 1/2-inch or 5/8-inch thick exterior grade gypsum sheathing; FRT Plywood or LP Flameblock (2-sided)

SECTION B: AIR/WATER-RESISTIVE BARRIER

1. Senershield-R or Senershield-RS Vapor permeable barriers	With 4" SikaWall-9000 Sheathing 4 Fabric reinforcement or 20-mils SikaWall-80 MaxFlash Liquid Flashing Membrane at sheathing joints
2. Senershield-VB Class 1 vapor retarder	With 4" SikaWall-9000 Sheathing 4 Fabric reinforcement or 20-mils SikaWall-80 MaxFlash Liquid Flashing Membrane at sheathing joints

SECTION C: EXTERIOR INSULATION SELECTIONS FOR WALL ASSEMBLIES WITH SENERSHIELD AIR/WATER-RESISTIVE BARRIERS

1. None	
2. Any unfaced noncombustible insulation (e.g. mineral wool)	
3. Expanded Polystyrene Foam (EPS)	**a.** Maximum 2.4-inch NEOPOR GPS Plus Type II Rigid Insulation Board **b.** Maximum 2.5-inch thickness ASTM C578 Type II EPS (must be ASTM E84 Class A) **c.** Maximum 1.8-inch thickness ASTM C578 Type IX EPS (must be ASTM E84 Class A)
4. Extruded Polystyrene Foam (XPS)	Maximum 3-inch thickness, ASTM C578 Type IV or Type X (must be ASTM E84 Class A)
5. Polyisocyanurate Foam	**a.** Maximum 4-inch thickness, Atlas EnergyShield Pro b. Maximum 4-inch thickness, Atlas EnergyShield Pro2 c. Maximum 3-1/2-inch thickness, Hunter Xci Class A **d.** Maximum 3-1/2-inch thickness, Hunter Xci CG **e.** Maximum 4-1/4-inch thickness, Hunter Xci Ply (maximum 3-1/2-inch thickness foam, maximum 3/4 inch plywood) **f.** Maximum 3-1/2-inch thickness, Carlisle R-2+ Sheathe, R2+ Mat or R2+ Silver

SECTION D: SENERGY EXTERIOR CLADDING SYSTEMS

1. Channeled Adhesive CI Design	**a.** Maximum 12-inch thickness ASTM C578 Type I EPS (must be ASTM E84)* **b.** Maximum 4-inch thickness ASTM C578 Type I EPS (must be ASTM E84)* with SikaWall-1000 MaxGrip Veneer Adhesive and adhered veneer (eg. thin brick, stone, tile) *EPS insulation used in Channeled Adhesive CI Design must meet Senergy specifications
2. Platinum CI	**a.** Maximum 12-inch thickness NEOPOR GPS Type I Rigid Insulation Board **b.** Maximum 7.8-inch thickness NEOPOR GPS PLUS Type II Rigid Insulation Board* * Neopor insulation used in Platinum CI must meet Senergy specifications
3. Platinum CI Stucco Plus and Ultra	**a.** Maximum 2.5-inch thickness of ASTM C578 Type II EPS must be ASTM E84 Class A) **b.** Maximum 2.4-inch thickness NEOPOR GPS PLUS Type II Rigid Insulation Board **c.** Maximum 3-inch thickness of ASTM C578 Type XI EPS (must be ASTM E84 Class A) **d.** Maximum 1.7-inch thickness of ASTM C578 Type IX EPS must be ASTM E84 Class A) **e.** Maximum 3-inch thickness XPS, ASTM C578 Type IV or Type X (must be ASTM E84 Class A) **f.** Maximum 3-inch thickness, Atlas EnergyShield Pro **g.** Maximum 3-inch thickness, Atlas EnergyShield Pro2 **h.** Maximum 3-inch thickness, Hunter Xci Class A **i.** Maximum 3-inch thickness, Hunter Xci CG **j.** Maximum 4-1/4-inch thickness, Hunter Xci Ply (maximum 3-1/2-inch foam, maximum 3/4-inch plywood) **k.** Maximum 3-inch thickness, Carlisle R-2+ Sheathe, R2+ Mat or R2+ Silver **l.** Maximum 3-inch thickness, unfaced noncombustible insulation (e.g. mineral wool) **m.**Maxinmum 3-inch thickness Sika Rmax*: 1. Durasheath 2. Thermasheath 3. ECOMAXci Ply 4. ECOMAXci FR 5. ECOMAXci FR Air Barrier *Senershield R/VB **NOTE: Interior sheathing must be 5/8" type X gypsumwallboard for all CI Stucco systems**
4. Senerflex Vulcan NC	**a.** Maximum 4-inch thickness ASTM C612 Type IV mineral wool *Mineral wool insulation used in Senerflex Vulcan NC must meet requirement outlined in the system specification.

SECTION D: EXTERIOR CLADDING

Wall Assemblies using Senershield Air/Water-Resistive Barriers

5. Heavy and Noncombustible Cladding Assemblies	These systems are characterized by their high mass, inorganic composition and noncombustible nature. **All of the insulation systems listed in Section C can be used with the heavy cladding systems listed below.** Interior gypsum sheathing must be 5/8" thick. Atlas polyisocyanurate insulation also requires 5/8" thick exterior gypsum sheathing. **BRICK** - Standard nominal 4" thick clay brick with standard brick veneer anchors installed maximum 24" on center vertically on each stud with a maximum 2" air gap between the brick and exterior insulation. **STUCCO** – ASTM C926 three coat stucco, minimum 3/4" thick, Permalath 1000 or Metal Plaster Base per ASTM C1063, with paint or textured acrylic finish. **STONE VENEER** - Minimum 2" thick limestone, natural stone or minimum 1-1/2" thick cast artificial stone. **TERRA COTTA** - Minimum 1-1/4" thick non-open jointed. Any standard non-open jointed installation technique can be used. **LIMESTONE OR NATURAL STONE VENEER** - Minimum 2" thick (or minimum 1-1/2" thick) cast artificial stone installed using a standard installation technique. **CONCRETE** - Minimum 1-1/2" thick concrete masonry unit (CMU), precast concrete or artificial cast stone. Any standard non-open jointed installation technique can be used.
6. Metal Skin Noncombustible Exterior Wall Covering using Steel or Copper	Any standard installation technique can be used. Options listed in **Section C1, C2 or C5 are acceptable** (no insulation, noncombustible insulation or certain polyisocyanurate insulation). Interior and gypsum sheathing must be 5/8" thick.
7. Cement Board Siding	Any standard installation technique can be used (maximum 2" air gap). Options listed in **Section C1, C2 or C5 are acceptable** (no insulation, noncombustible insulation or certain polyisocyanurate insulation).
8. Metal Composite (MCM or ACM) **Panels**	Use any MCM or ACM panel that has passed NFPA 285 (maximum 2" air gap). Options listed in **Section C1, C2 or C5 are acceptable** (no insulation, noncombustible insulation or certain polyisocyanurate insulation). Interior and gypsum sheathing must be 5/8" thick.
9. Reynobond ZCM Zinc Alloy Composite Panel System	Any standard installation technique can be used. Options listed in **Section C1, C2 or C5 are acceptable** (no insulation, noncombustible insulation or certain polyisocyanurate insulation). Interior and gypsum sheathing must be 5/8" thick.
10. Autoclaved Aerated Concrete Panels that have passed NFPA 285 criteria	Options listed in **Section C1, C2 or C5 are acceptable** bare acceptable (no insulation, noncombustible insulation or certain polyisocyanurate insulation). Interior and gypsum sheathing must be 5/8" thick.
11. Stone/Aluminum honeycomb composite building panels that have passed NFPA 285 criteria.	Any standard installation technique can be used. Options listed in **Section C1, C2 or C5 are acceptable** (no insulation, noncombustible insulation or certain polyisocyanurate insulation). Interior and gypsum sheathing must be 5/8" thick.

Senergy Wall Systems can create a multiple cladding appearance with continuous exterior insulation and a seamless air/water-resistive barrier

Senershield air/water-resistive barriers can provide seamless monolithic protection on buildings with multiple claddings

Brick, granite, and cut stone are some of the popular appearances created by Senergy Wall Systems.

Senergy Channeled Adhesive CI Design, incorporating Sika's Wood Grain Effects, can produce anenergy efficient building with endless design possibilities.

THERMAL, MECHANICAL, WATER DRAINAGE, AND FIRE PERFORMANCE OF SENERGY CI WALL SYSTEMS

Senergy wall systems listed in this guide comply with NFPA 285 and NFPA 268 requirements, and use materials that provide ASTM E84 Class A performance. Please see the respective system brochures for more information, or contact Sika's Technical Support at 800-589-1336.

Senergy CI system details and guide specifications that are consistent with the NFPA 285 performance listed in this guide. These details and specifications are also consistent with other relevant standards. Design professionals who specify Senergy CI Wall Systems installed per Sika's instructions are specifying code compliant systems.

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MIND THE DETAILS WHEN SPECIFYING NFPA 285 COMPLIANT WALL ASSEMBLIES

The NFPA 285 compliant wall assemblies outlined in this brochure may be subject to additional fire performance and building code requirements. Design professionals should ensure that all relevant requirements are met.

The wall assemblies listed in this section have been tested using specific termination detailing at the window rough opening. These details vary by assembly. Design professionals should consult with the manufacturer of the specific insulation and/or cladding materials listed in this guide to obtain and specify relevant rough opening details.

Failure to correctly detail system determinations at rough openings will result in wall assemblies that do not comply with NFPA 285 requirements.

Senergy Wall Systems are detailed in accordance with prevailing code requirements

since 1986

since 1997

Our most current General Sales Conditions shall apply.
Please consult the Data Sheet prior to any use and processing

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