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# **Sto Corp.** NFPA 285 Wall System Compliance Directory

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## Introduction

# NFPA 285 for Testing of Wall Assemblies with Combustible Components

The use of NFPA 285<sup>1</sup> as a means to gain acceptance of wall assemblies with combustible components in noncombustible Type construction (Types I - IV) has become more prevalent in recent years based on requirements for testing of WRB's (Water-Resistive Barriers) in Chapter 14 of the 2012 IBC (International Building Code). The flow chart on the following page (Figure 1) is intended to facilitate determination of when testing is necessary. It is current to the 2015 IBC and is also applicable where the 2009 or 2012 IBC are in effect.

Determining the necessity for NFPA 285 testing prior to 2012 was relatively straightforward. Testing was for the most part needed only for foam-plastic based wall assemblies, while certain single story structures and buildings of Combustible (Type V) construction were exempt (and still are). However, in 2012 the IBC added requirements for combustible WRB's in Section 1403.5:

**1403.5 Vertical and Lateral Flame Propagation.** *Exterior walls on buildings of Type I, II, III, or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible water-resistive barrier shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.*

This requirement carries over into the 2015 IBC, however, the 2015 code permits several exceptions, use of a "..... wall covering of brick, concrete, stone, terra cotta, stucco, or steel with minimum thickness in accordance with Table 1405.2," or, use of a WRB with a specified maximum combustibility (ASTM E 1354<sup>2</sup>), flame propagation and smoke development (ASTM E 84<sup>3</sup>).

Analysis of fire test results by a qualified fire protection engineer may be used to extend NFPA 285 test results to other assemblies where changes to the tested NFPA 285 assembly would be judged to perform equal to or better than the tested assembly. This allows a manufacturer to gain acceptance of several wall assemblies. Such analysis is reflected in ICC ESR 1233<sup>4</sup>, Tables 1 and 2, where the results from a single test were extended to other wall coverings and back-up wall construction.



Photo 1. NFPA 285 testing of brick veneer cavity wall with foam plastic and a combustible WRB over steel frame construction

1. National Fire Protection Association Standard 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of*

*Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

2. American Society of Testing and Materials Standard E 1354, *Standard Test Method for Heat and Visible Smoke Release Rates for*

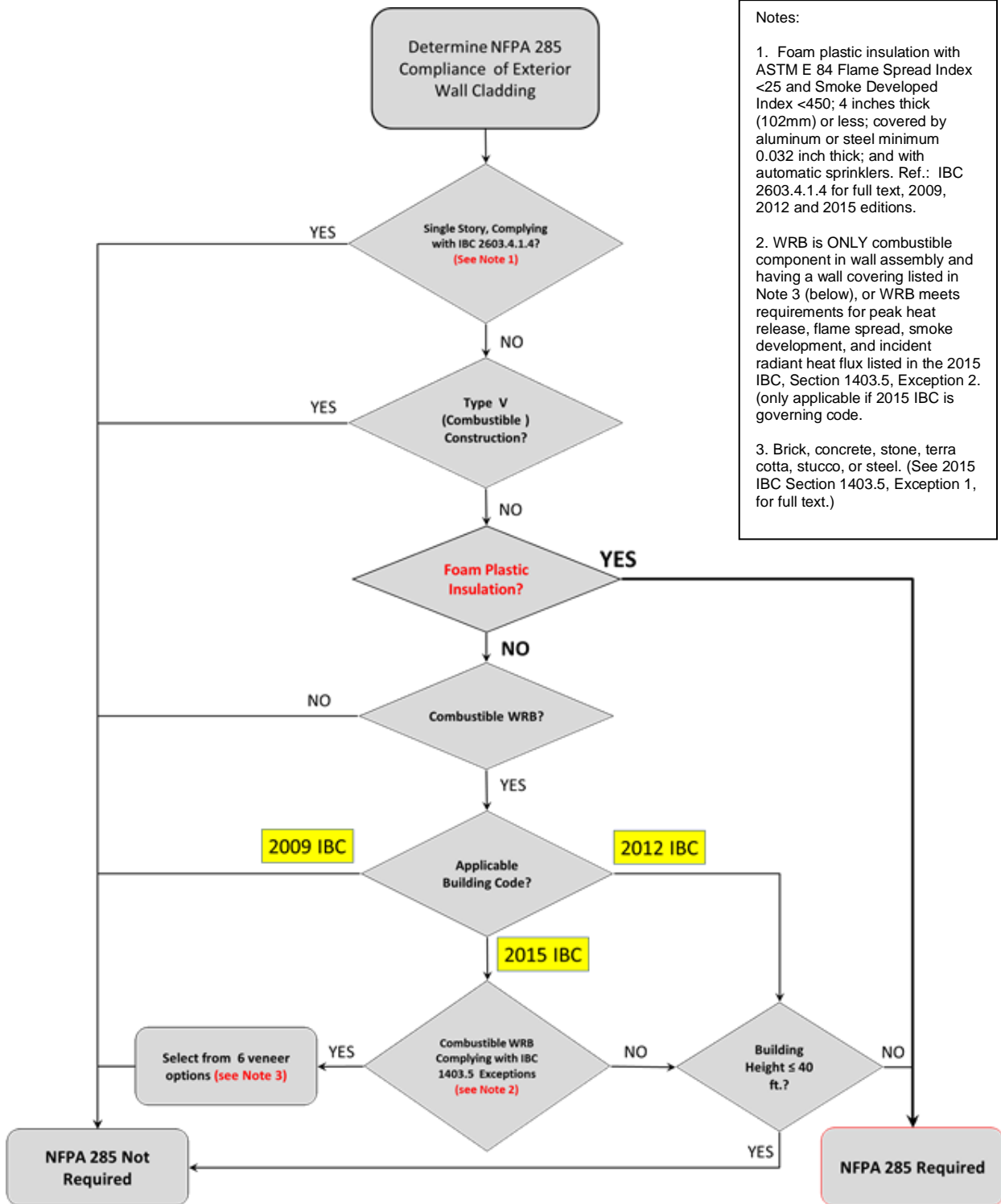
*Materials and Products Using an Oxygen Consumption Calorimeter*

3. American Society of Testing and Materials Standard E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*

4. International Code Council Evaluation Service Report 1233, *StoGuard with Gold Coat, StoGuard with EmeraldCoat, and StoGuard*

*VaporSeal Water-Resistive Barriers and StoEnergy Guard (StoGuard with Continuous Insulation)*

**Figure 1:** Flow chart for to determine if NFPA 285 is required:

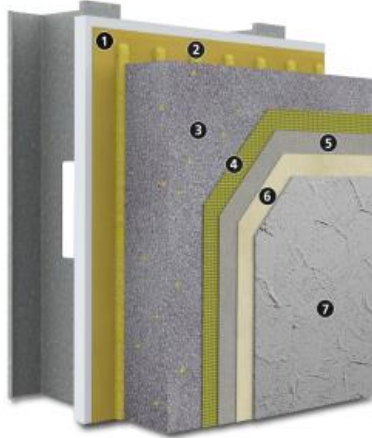


Notes:

1. Foam plastic insulation with ASTM E 84 Flame Spread Index <25 and Smoke Developed Index <450; 4 inches thick (102mm) or less; covered by aluminum or steel minimum 0.032 inch thick; and with automatic sprinklers. Ref.: IBC 2603.4.1.4 for full text, 2009, 2012 and 2015 editions.
2. WRB is ONLY combustible component in wall assembly and having a wall covering listed in Note 3 (below), or WRB meets requirements for peak heat release, flame spread, smoke development, and incident radiant heat flux listed in the 2015 IBC, Section 1403.5, Exception 2. (only applicable if 2015 IBC is governing code.)
3. Brick, concrete, stone, terra cotta, stucco, or steel. (See 2015 IBC Section 1403.5, Exception 1, for full text.)

## StoTherm® ci GPS

Decorative cladding with continuous insulation and StoGuard® Air and Water-resistive Barrier combined with Sto high-performance finishes



Substrate: Glass Mat Gypsum sheathing in compliance with ASTM C1177, Exterior or Exposure I wood-based sheathing (plywood or OSB), cement board in compliance with ASTM C1325, code compliant concrete, concrete masonry, portland cement plaster, or existing structurally sound, uncoated brick.

1)	Air Barrier and Water-resistive Barrier: StoGuard
2)	Adhesive: Sto TurboStick
3)	Insulation: Sto GPS Board
4)	Reinforcement: Sto Mesh (embedded in Sto base coat)
5)	Base Coat options: Sto BTS Plus, Sto BTS Xtra, Sto Primer/Adhesive-B, or Sto Primer/Adhesive, Sto RFP, StoArmat Classic Plus
6)	Primer: StoPrime Sand (optional)
7)	Finish, choose among: <ul style="list-style-type: none"> <li>• Sto Textured Finishes</li> <li>• StoCast Finishes</li> <li>• Sto Signature and Sto Specialty Finishes</li> </ul>

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoTherm ci GPS is a decorative and protective exterior wall cladding that combines superior air and weather tightness with excellent thermal performance and durability. It incorporates continuous exterior insulation and StoGuard Air and Water-resistive Barrier (AWRB) with Sto's high-performance finishes in a fully tested wall cladding assembly.

### Uses

StoTherm ci GPS can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climate extremes of the Americas.

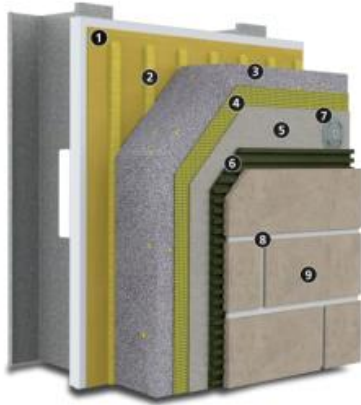
### NFPA 285 Compliance Documents

**Engineering Analysis:**  
Jensen-Hughes Project No. 1JJB05184.001  
dated June 16, 2023

<p><b>Sto Corp.</b> 3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331 Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119</p> <p><a href="http://www.stocorp.com">www.stocorp.com</a></p>	<p>TB-NFPA-ciL Revision: 000 Date: 6/2015</p>	<p style="text-align: center;"><b>Attention</b></p> <p>Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. <b>STO CORP. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.</b> For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, <a href="http://www.stocorp.com">www.stocorp.com</a>.</p>
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## StoTherm® ci MVES

Masonry Veneer Engineered System with continuous insulation, and continuous air and water-resistive barrier



Substrate: Glass Mat Gypsum sheathing in compliance with ASTM C1177, Exterior or Exposure I wood-based sheathing (plywood or OSB), code compliant concrete, concrete masonry, or existing structurally sound, uncoated brick wall construction

1)	Air & Water-Resistive Barrier, choose among: <ul style="list-style-type: none"> <li>• Sto Gold Coat®</li> <li>• Sto AirSeal®</li> <li>• StoGuard® VaporSeal®</li> </ul>
2)	Insulation Adhesive: Sto TurboStick®
3)	Insulation, choose among: <ul style="list-style-type: none"> <li>• GPS: Sto GPS Board</li> <li>• EPS: Sto EPS Insulation Board</li> </ul>
4)	Reinforcement: Sto Mesh 6 oz
5)	Base Coat: Sto Primer/Adhesive
6)	Masonry Veneer Adhesive: StoColl Adhesive Mortar
7)	Fastener (by others): corrosion resistant fastener and washer (not required at ground floors up to 10ft [3m] in height)
8)	Masonry Veneer Grout (by others): ANSI 118.7 compliant portland cement-based grout
9)	Masonry Veneer (by others): thin brick, thin natural stone, ceramic tile, or manufactured stone in conformance with applicable building code requirements

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoTherm ci MVES is an engineered wall system with Adhered Masonry Veneer (AMV) – thin brick, natural stone, ceramic tile, or manufactured stone. It combines superior air and weather tightness with excellent thermal performance and durability. It incorporates continuous exterior insulation and a continuous air and water-resistive barrier (AWRB) with Sto high strength masonry veneer adhesive. The system integrates seamlessly with StoTherm ci GPS (or StoTherm ci) and is ideal for use as an impact and abrasion resistant exterior wainscoting.

### Uses

StoTherm ci MVES can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climate extremes of the Americas.

### NFPA 285 Compliance Documents

**Test Report:**  
Intertek Report No. K7762.01-121-24-R0

**Engineering Analysis:**  
Jensen-Hughes Project No. 1JJB05184.001 dated June 16, 2023

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TB-NFPA-ciL  
Revision:000  
Date: 6/2015

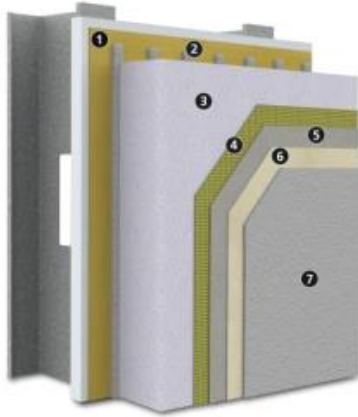


#### Attention

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## StoTherm® ci

Decorative cladding with continuous insulation and StoGuard® Air and Water-resistive Barrier combined with Sto high performance finishes



Substrate: Glass Mat Gypsum sheathing in compliance with ASTM C 1177, Exterior or Exposure I wood-based sheathing (plywood or OSB), cement board in compliance with ASTM C1325, or code compliant concrete, concrete masonry or portland cement plaster, existing structurally sound, uncoated brick or other masonry wall construction.

1)	Air Barrier and Water-resistive Barrier: StoGuard
2)	Adhesive options: Sto TurboStick®, Sto BTS® Plus, Sto BTS Xtra, Sto Primer/Adhesive-B, or Sto Primer/Adhesive
3)	Insulation: Sto EPS Insulation Board
4)	Reinforcement: Sto Mesh (embedded in Sto base coat)
5)	Base Coat options: Sto BTS Plus, Sto BTS Xtra, Sto RFP, Sto Primer/Adhesive-B, or Sto Primer/Adhesive
6)	Primer: StoPrime Sand (optional)
7)	Finish: choose among, <ul style="list-style-type: none"> <li>• Sto Textured Finishes</li> <li>• StoCast Finishes</li> <li>• Sto Signature and Sto Specialty Finishes</li> </ul>

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoTherm ci is a decorative and protective exterior wall cladding that combines superior air and weather tightness with excellent thermal performance and durability. It incorporates continuous exterior insulation and StoGuard Air and Water-resistive Barrier with Sto’s high performance finishes in a fully tested wall cladding assembly.

### Uses

StoTherm ci can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climate extremes of North America.


### NFPA 285 Compliance Documents

**Test Report:**  
Southwest Research Institute SwRI Project No. 01.11811.01.106 Report Dated August 3, 2006.

**ICC-ES Recognition for Types I-IV Construction:**  
ESR 1748

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TB-NFPA-ciL  
Revision: 000  
Date: 6/2015

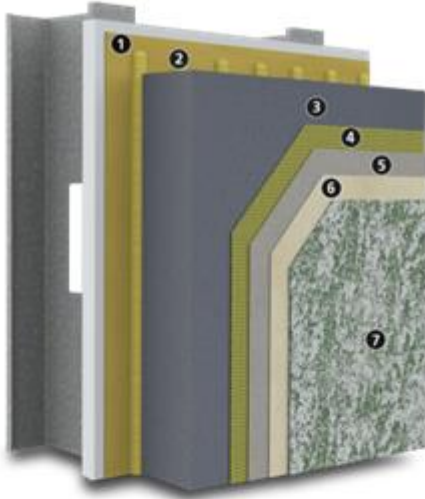


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## StoTherm® ci XPS

Decorative cladding with R-5 continuous insulation and StoGuard® Air and Water-resistive Barrier combined with Sto high performance finishes



Substrate: Glass Mat Gypsum sheathing in compliance with ASTM C 1177, Exterior or Exposure I wood-based sheathing (plywood or OSB), code compliant concrete, concrete masonry or portland cement plaster, existing structurally sound, uncoated brick or other masonry wall construction.

1)	Air Barrier and Water-resistive Barrier: StoGuard
2)	Adhesive: Sto TurboStick®
3)	Insulation: XPS Type X Insulation listed by Sto Corp.: • Dupont™ Styrofoam™ Brand Panel Core ST-100
4)	Reinforcement: Sto Mesh (embedded in Sto base coat)
5)	Base Coat options: Sto BTS Plus, Sto BTS Xtra, Sto Primer/Adhesive, Sto Primer/Adhesive-B
6)	Primer: StoPrime Sand (optional)
7)	Finish: choose among: • Sto Textured Finishes • StoCast Finishes • Sto Signature and Sto Specialty Finishes

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoTherm ci XPS is a decorative and protective exterior wall cladding that combines superior air and weather tightness with excellent thermal performance and durability. It incorporates continuous exterior insulation and StoGuard Air and Water resistive Barrier with Sto's high performance finishes in a fully tested wall cladding assembly.

### Uses

StoTherm ci XPS can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climate extremes of North America.

### NFPA 285 Compliance Documents

#### Test Report:

Southwest Research Institute SwRI Project No. 01.19275.01.001 Dated September 30, 2013.

#### Engineering Analysis:

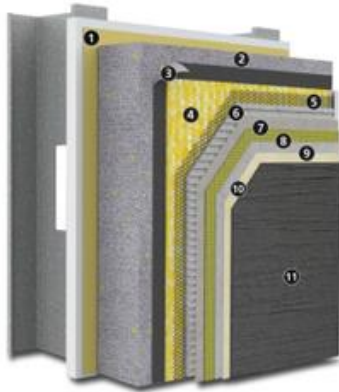
Hughes Associates Dated July 11, 2014  
HAI Project # IJJB05184.001

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## StoPowerwall® ci

Portland cement stucco with continuous air and water-resistive barrier, continuous insulation, advanced cavity wall design, and high-performance finishes



Substrate: Glass mat gypsum sheathing in compliance with ASTM C1177, Exterior or Exposure 1 wood-based sheathing (plywood or OSB), code compliant concrete or concrete masonry wall construction.	
1)	Air and Water-Resistive Barrier (AWRB), choose among: <ul style="list-style-type: none"> <li>• Sto Gold Coat®</li> <li>• Sto AirSeal®</li> <li>• StoGuard® VaporSeal®</li> </ul>
2)	Continuous Insulation, choose among: <ul style="list-style-type: none"> <li>• GPS: Sto GPS Board - Graphite Enhanced Polystyrene (GPS) Type I rigid insulation board in compliance with ASTM C578, Type 1</li> <li>• XPS: DuPont™ Styrofoam™ Brand ST-100 - Extruded Polystyrene (XPS) rigid insulation board in compliance with ASTM C578, Type IV</li> </ul>
3)	WRB: Code compliant paper or felt Water-Resistive Barrier
4)	Drainage Mat: Sto DrainScreen®
5)	Metal Plaster Base: Code compliant minimum 2.5 lb/yd <sup>2</sup> (1.4 kg/m <sup>2</sup> ) self-furred galvanized steel diamond mesh metal lath or Structuralath SFCR Twin Track 2.5 self-furring welded wire lath
6)	Stucco: portland cement stucco scratch and brown coat in compliance with ASTM C926 (as furnished or listed by Sto Corp.)
7), 8)	Sto Crack Defense (optional): Sto Mesh embedded in Sto Base Coat
10)	Sto primer (optional)
11)	Finish, choose among: <ul style="list-style-type: none"> <li>• Sto Textured Finishes</li> <li>• StoCast Finishes</li> <li>• Sto Signature Series or Sto Specialty Finishes</li> </ul>
System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity	

### System Description

StoPowerwall ci is an energy efficient stucco wall assembly with a continuous air and water-resistive barrier (AWRB) and continuous insulation. It combines the strength and durability of traditional stucco with an advanced cavity wall design and Sto high-performance finishes in a fully tested wall cladding assembly.

### Uses

StoPowerwall ci can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climate extremes of the Americas

### NFPA 285 Compliance Documents

**Test Report:**  
Southwest Research Institute SwRI Project No. 01.16941.01.001b dated January 26, 2012.

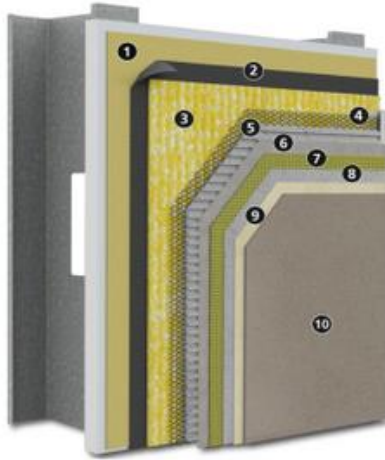
**IBC Recognition for Types I-IV Construction:**  
ESR 2323, ESR 1233

**Engineering Analysis:**  
Hughes Associates Dated May 6, 2014 HAI Project # IJJB05184.001

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## StoPowerwall® DrainScreen®

Portland cement stucco with StoGuard® air and water-resistive barrier system, Sto DrainScreen advanced cavity wall design, and Sto high performance finishes



Substrate: Glass mat gypsum sheathing in compliance with ASTM C 1177, building code compliant wood-based sheathing (plywood or OSB), concrete, or concrete masonry (CMU)

1)	StoGuard® Air and Water-resistive Barrier
2)	Code compliant paper or felt Water-Resistive Barrier
3)	Sto DrainScreen drainage mat
4)	Code compliant minimum 2.5 lb/yd <sup>2</sup> (1.4 kg/m <sup>2</sup> ) self-furred galvanized steel diamond mesh metal lath or Structalath SFCR Twin Track 2.5 self-furring welded wire lath
5)	ASTM C926 compliant stucco scratch coat (as manufactured or listed by Sto Corp.)
6)	ASTM C926 compliant stucco brown coat (as manufactured or listed by Sto Corp.)
7), 8)	Sto Crack Defense (optional): Sto Mesh Reinforcement (7) embedded in Sto Base Coat (8)
9)	Sto Primer (optional)
10)	Choose among: <ul style="list-style-type: none"> <li>• Sto Textured Finishes</li> <li>• Sto Custom Cast Finish: Wood or Brick</li> <li>• Sto Signature Series or Sto Specialty Finishes</li> </ul>

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoPowerwall DrainScreen is a drainable stucco wall assembly with code compliant StoGuard air and water-resistive barrier system and Sto DrainScreen advanced cavity wall design. It combines the strength and durability of traditional stucco with StoGuard and Sto DrainScreen water protection and Sto high performance finishes.

### Uses


StoPowerwall DrainScreen can be used in residential or commercial wall construction where superior aesthetics, and air and moisture control are essential in the climate extremes of North America

### NFPA 285 Compliance Documents

**Test Reports:**  
 Southwest Research Institute  
 01.16941.01.001a and 01.16941.01.001b

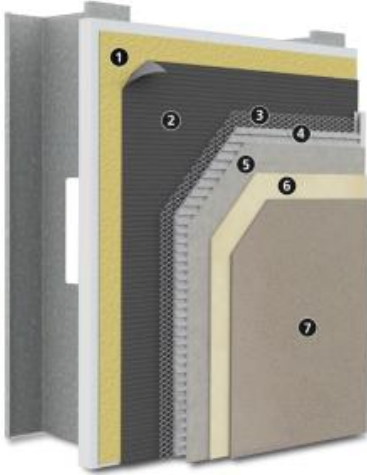
**Engineering Analysis:**  
 Hughes Associates Dated July, 11 2014 HAI  
 Project IJJB05184.001

**ICC-ES Recognition for Types I-IV Construction:**  
 ESR 2323 and ESR 1233

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## StoPowerwall®

Portland cement stucco with StoGuard® air and water-resistive barrier system, drainage, and Sto high performance finishes



Substrate: Glass mat gypsum sheathing in compliance with ASTM C 1177, building code compliant wood-based sheathing (plywood or OSB), concrete, or concrete masonry (CMU)

1)	StoGuard® Air and Water-Resistive Barrier
2)	Code compliant paper or felt Water-Resistive Barrier
3)	Code compliant minimum 2.5 lb/yd <sup>2</sup> (1.4 kg/m <sup>2</sup> ) self-furred galvanized steel diamond mesh metal lath or Structalath SFCR Twin Track 2.5 self-furring welded wire lath
4)	ASTM C926 compliant stucco scratch coat (as manufactured or listed by Sto Corp.)
5)	ASTM C926 compliant stucco brown coat (as manufactured or listed by Sto Corp.)
6)	Sto Primer (optional)
7)	Choose among: <ul style="list-style-type: none"> <li>• Sto Textured Finishes</li> <li>• StoCast Finish: Wood or Brick</li> <li>• Sto Signature Series or Sto Specialty Finishes</li> </ul>

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoPowerwall is a drainable stucco wall assembly that features a code compliant StoGuard air and water-resistive barrier system. It combines the strength and durability of traditional stucco with StoGuard air and water protection and Sto high performance finishes.

### Uses

StoPowerwall can be used in residential or commercial wall construction for superior aesthetics, durability, and air and moisture control.

### NFPA 285 Compliance Documents

#### Test Report:

Southwest Research Institute SwRI Project No. 01.16941.01.001b dated January 26, 2012.

#### IBC Recognition for Types I-IV Construction:

ESR 2323, ESR 1233

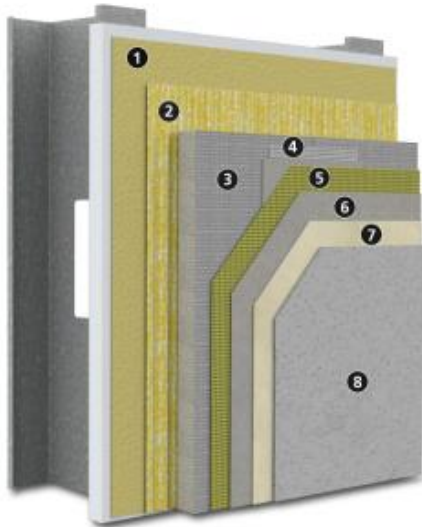
#### Engineering Analysis:

Hughes Associates Dated May 6, 2014, HAI Project # IJJB05184.001

<p><b>Sto Corp.</b> 3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331 Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119 <a href="http://www.stocorp.com">www.stocorp.com</a></p>	<p>TB-NFPA-ciL Revision: 000 Date: 6/2015</p>	<p style="text-align: center;"><b>Attention</b></p> <p>Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. <b>STO CORP. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.</b> For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, <a href="http://www.stocorp.com">www.stocorp.com</a>.</p>
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## StoQuik® Silver DrainScreen™

Impact resistant decorative and protective cladding with advanced cavity wall design, and fluid applied air and water-resistive barrier



Substrate: Glass mat gypsum sheathing in compliance with ASTM C 1177, Exterior or Exposure 1 wood-based sheathing (plywood or OSB).

1)	StoGuard® Air & Water-Resistive Barrier
2)	Sto DrainScreen Drainage Mat
3)	PermaBase® Brand Cement Board
4)	StoGuard Mesh Joint Reinforcement (skim coated with Sto base coat)
5)	Sto Mesh (embedded in Sto Base Coat)
6)	Base coat: Sto Primer/Adhesive-B or Sto BTS® Xtra
7)	StoPrime® Sand (optional)
8)	Choose among: <ul style="list-style-type: none"> <li>• Sto Standard Textured Finishes</li> <li>• Sto Specialty Finishes</li> <li>• StoCast Finishes: Wood or Brick</li> </ul>

System Accessory: StoSeal STPE Sealant for use as an exterior weather seal around wall penetrations, at dynamic joints in wall construction, and as an interior air seal for air barrier continuity

### System Description

StoQuik Silver DrainScreen is a decorative and protective wall cladding assembly with advanced cavity wall design and fluid applied air and water-resistive barrier for superior moisture protection. Sto's high performance finishes applied over cement board provide handsome aesthetics and a durable exterior skin.

### Uses

StoQuik Silver DrainScreen can be used in residential or commercial wall construction where energy efficiency, superior aesthetics, and air and moisture control are essential in the climatic extremes of North America.

### NFPA 285 Compliance Documents

**Test Report:**  
Southwest Research Institute SwRI Project No. 01.12694.01.113 Report Date June 14, 2007.

**ICC-ES Recognition for use in Types I-IV Construction:**  
ESR 2536

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**Attention**

Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. **STO CORP. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.** For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, [www.stocorp.com](http://www.stocorp.com).

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## Frequently Asked Questions

### What is NFPA 285?

NFPA 285 is titled, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*.

NFPA 285 is a 2-story fire test to determine if an exterior wall assembly which contains **combustible** materials can be used in construction where the code requires exterior walls to be of **noncombustible** construction. The pass/fail criteria are based on the extent of fire spread (determined visually and by embedded sensors).

Details of the actual test method are available from the National Fire Protection Association (NFPA), [www.nfpa.org](http://www.nfpa.org).

### Why is NFPA 285 important?

NFPA 285 is important for the safety of the building occupants during a fire and the safety of emergency personnel responding to a fire. It provides an indication that the spreading of a fire will not be made significantly worse by the presence of the tested combustible materials.

NFPA 285 is important because it has become one of the standard tests required to demonstrate that a product or system complies with the fire safety requirements of the International Building Code (IBC) for “noncombustible construction”.

### What is “non-combustible construction”?

Noncombustible construction is, in its purest form, construction that uses only materials that do not burn, such as steel and concrete. Certain buildings are required to be noncombustible construction based on their usage and/or size (large commercial buildings, government buildings, hospitals, schools, etc.). The use of combustible materials in the construction of exterior walls of these buildings is often necessary to achieve required levels of moisture protection or continuous insulation, or both. NFPA 285 was developed to assess whether or not a particular type, amount or configuration of combustible material could be used and still maintain an acceptable level of safety in the event of a fire.

### Is testing for use in noncombustible construction a new requirement?

No. Wall assemblies with combustible components such as foam plastic insulation have been required to perform some version of large-scale fire test for the same purpose as NFPA 285 since the 1980's. Originally the test run for EIFS was not “NFPA 285”, but previous versions of the same or similar tests with Uniform Building Code numbers UBC 17-6, UBC 26-4 and UBC 26-9. (A detailed history of the development of the test is presented in an appendix to the test method which can be purchased from NFPA).

A requirement for testing combustible water-resistive barriers in noncombustible construction wall assemblies was added to the IBC in 2012 (Section 1403.5). This addition brought attention to NFPA 285 because of its application to non-foam-plastic materials and manufacturers. Design professionals became more aware of NFPA 285 and began to ask for information to verify that the materials being specified had been included in a tested assembly.

If the air/moisture barrier is the ONLY combustible component in the wall assembly, and the 2015 IBC is the applicable code, then wall assemblies may be qualified for use based on small scale tests of the air/moisture barrier. The results of the fire tests must all comply with the exceptions listed under Section 1403.5 in the 2015 IBC.

### **What is a “tested assembly”?**

The tested assembly is exactly what was tested. The description of the test specimen in an NFPA 285 report states the product names, generic product types, and material thicknesses. The construction details at the head of a window opening and other pertinent details of the base wall panel are also reported.

### **Why is the detail of the assembly important?**

The nature of fire is that one cannot necessarily predict the performance of one combination of materials based on another. If one material is exchanged for another, it may change the fire test performance in a way that is cannot be predicted. Similarly, if the order of application of materials is changed, the fire performance of the overall assembly can change – even if the materials are the same.

### **What if my back-up wall is not the same as the back-up wall used in the NFPA 285 test?**

The back-up wall construction for all tests is the same. The test evaluates whether or not the presence of combustible components in the tested wall assembly applied over the noncombustible back-up wall construction causes excess flame spread over the face or within the core of the assembly, or within the interior space from one story to the next. Project specific framing details or the use of masonry components in the field constructed assembly does not negate the NFPA 285 test, provided the base construction is noncombustible.

### **How does Sto comply with NFPA 285?**

Sto has performed the testing through nationally recognized and accredited independent testing labs. We have tested StoTherm ci (as StoTherm and StoTherm NEXt), Sto EnergyGuard, Sto Powerwall, and Sto QuikSilver systems. (Some of the older systems were tested to the older versions of the test method, but they are accepted by fire consultants and building code evaluation services as being acceptable substitutes for NFPA 285.) Specific, tested wall assemblies are listed in the code evaluation reports under the section titled, “Noncombustible Construction”. This section will not appear in an evaluation report if NFPA 285 requirements have not been satisfied.

### Can you provide me with a copy of the NFPA 285 test report?

The ESRs are, in themselves, third-party reviews of independent test data that verify building code compliance. The ESRs account for fire tests that were run before NFPA 285 and additional fire tests that are required for certain systems or engineering analysis. The ESRs help avoid unnecessary confusion about tests run as UBC standards instead of NFPA 285, by stating recognition to be used in noncombustible construction. ICC ESRs are typically furnished in lieu of test reports since they establish compliance with building codes. If *required* a copy of the actual test report can be provided.

### Where does the Evaluation Report demonstrate compliance with NFPA 285?

The ESR will indicate compliance in several places. Primarily, though, section **2.0 Uses** will clearly state to which construction types the subject product or system may be applied. Construction Types I, II, III, and IV are classified as noncombustible construction. For example from ESR-1748 for StoTherm NEXt:

#### **2.0 USES**

StoTherm® NEXt® systems are exterior insulation and finish systems (EIFS) complying with IBC Section 1408 and IRC Section R703.9. The systems comply with the requirements of IBC Section 1408.4.1 and IRC Section R703.9 as EIFS with drainage.

StoTherm® NEXt® systems may be used in fire-resistance-rated construction when installed in accordance with Section 4.6 of this report; and in any construction type (IBC Types I through V) when installed in accordance with Section 4.5.

The second paragraph states “any construction type”, which includes noncombustible construction. Reference is made to Section **4.5 Use in Types I through IV (Noncombustible) Construction**, which restates the recognition and directs the reader to a table of recognized systems.

Some reports, especially those for systems that are not EIFS, will specifically call out NFPA 285 in section **6.0 Evidence Submitted**. StoTherm reports do not currently call this out, partially because recognition is based on older versions of fire tests.

### Does every different combination of materials need to be tested per NFPA 285?

Under the 2012 Edition of the IBC, every wall assembly that includes a combustible water-resistive barrier must be tested. In some cases qualified fire engineering consultants can perform rational analysis to “extend” the test results to some other wall assemblies that are judged to be more conservatively designed from a fire protection standpoint.

Under the 2015 Edition of the IBC, walls in which the only combustible element is the air/moisture barrier exceptions are provided based on successful completion of several specified small-scale tests.

**What if I need a copy of an analysis?**

Where a rational analysis has been performed, Sto Corp. has incorporated the results of the analysis into its ICC evaluation reports. In a few cases we have provided rational analysis on a job-by-job basis, based on level of importance of the project, fee structure associated with the analysis, likelihood of the analysis being favorable, and time frame, usually 30-60 days needed for the analysis.

**What about combinations of materials that have not been tested or analyzed?**

They should not be used on noncombustible construction without testing or an analysis. An analysis requires existing data and a rational means of applying that data to the proposed assembly. The fire engineering consultant must determine if analysis is an option based on his experience, his judgment and the availability of relevant data.

**What about NFPA 285 and “combustible construction”?**

Combustible construction is identified as Type V. It is construction where “the structural elements are any material permitted” by the code. This is typically wood-framed construction. Because the structural elements are permitted to be combustible there is no requirement to perform NFPA 285.

**How does NFPA 285 relate to hourly fire ratings?**

The two are not directly related. Both NFPA 285 and an hourly rating may be required for some buildings, but not necessarily. An hourly fire rating is determined by ASTM E 119, which is a fire endurance test. The wall assembly is subjected to a fire for a predetermined period of time. If the wall meets certain criteria after the duration of the fire exposure, then an hourly rating is assigned to that assembly. A wall that is exposed to a fire for one hour and passes the test is a “one-hour rated wall”. (Certain Type V (combustible) wall assemblies have hourly ratings.)