CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC EVALUATION

CCMC 12416-R

CCMC Canadian code compliance evaluation

CCMC number:	12416-R
Status:	Active
Issue date:	1992-08-12
Modified date:	2026-04-20
Evaluation holder:	**Sto Canada Ltd.** 1821 Albion Road, Unit 1–2 Etobicoke ON M9W 5W8 Canada Website: www.stocanada.com Telephone: 416-855-0460; 800-786-5234
System name:	StoTherm® ci
Product names:	• Sto BTS® Plus • Sto Element Finish Coat • Sto Flexyl • Sto Gold Coat® • Sto Gold Fill • Sto Primer/Adhesive-B • Stolit® Finish Coat • Stolit® Lotusan Finish Coat
Compliance:	NBC 2020
Criteria:	CAN/ULC-S716.1-12, "Exterior Insulation and Finish Systems (EIFS) – Materials and Systems" CCMC-TG-072413.01-20B, "CCMC Technical Guide for Exterior Insulation Finish Systems"

In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.
Learn more about CCMC recognition Look for the trusted CCMC mark on products to verify compliance.

Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the
evaluated products
, when used as exterior wall cladding designed to be a weather barrier and to provide thermal insulation in accordance with the
conditions and limitations
stated in this evaluation, comply with the following code:

National Building Code of Canada 2020

Code provision	Solution type
3.1.4.2.(1)(c) by any thermal barrier that meets the re ...	Acceptable
3.1.5.5.(1) Except as provided in Sentences 3.1.5.5. ...	Acceptable
3.1.5.12.(2) Combustible interior wall finishes, othe ...	Acceptable
3.2.3.8.(1)(b) noncombustible material that complies wi ...	Acceptable
5.6.1.1.(1) Except as provided in Sentence 5.6.1.1.(...	Acceptable
5.9.4. Exterior Insulation Finish Systems	Acceptable
5.9.4.1.(1) Exterior insulation finish systems and t ...	Acceptable
9.25.2.2.(1) Except as required in Sentence 9.25.2.2. ...	Acceptable
9.27.1.1.(5) Where an exterior insulation finish syst ...	Acceptable
9.27.2.1. Minimizing and Preventing Ingress and Damage	Acceptable
9.27.2.2.(1) Except as provided in Sentence 9.27.2.2. ...	Acceptable
9.27.2.3.(1) Where walls required to provide protecti ...	Acceptable
9.27.3.1. Elements of the Second Plane of Protection	Acceptable
9.27.14. Exterior Insulation Finish Systems	Acceptable
9.27.14.2.(1) The materials used in EIFS shall conform ...	Acceptable

The above opinion(s) is/are based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

Product information

System name

StoTherm® ci

Product names

- Sto BTS® Plus
- Sto Element Finish Coat
- Sto Flexyl
- Sto Gold Coat®
- Sto Gold Fill
- Sto Primer/Adhesive-B
- Stolit® Finish Coat
- Stolit® Lotusan Finish Coat

Product description

The exterior insulation and finish system (EIFS) is a non-loadbearing system that can be assembled in panels under factory-controlled conditions or be applied in the field. The system is composed of the following key components/products:

- a water-resistive barrier (WRB):
  - StoGuard® [Sto Gold Fill (80266) and Sto Gold Coat®(81636)], or
  - Sto Flexyl (80235);
- an adhesive:
  - Sto BTS® Plus (80727), or
  - Sto Primer/Adhesive-B (80101);
- an insulation board;
- a coating system (lamina), consisting of the following:
  - base coat:
    - Sto BTS® Plus (80727), or
    - Sto Primer/Adhesive-B (80101);
  - reinforcing mesh; and
  - finish coat:
    - Stolit® Finish Coat
    - Stolit® Lotusan Finish Coat, or
    - Sto Element Finish Coat.

Note: The lamina refers to all coats (base and finish) applied to the outer face of the insulation board with the glass-fibre mesh reinforcement.

The components of the systems are listed below.

Substrate

While the substrate is outside of the EIFS system, it is a necessary part of the installation. For applications falling under the scope of this evaluation, the substrate can be brick, masonry, monolithic concrete walls, insulated concrete forms (ICF) and/or cementitious panels, glass-mat-surfaced gypsum boards, plywood or oriented strandboard (OSB) over wood or steel framing. Gaps between the sheathing boards of framed walls must not exceed 3.0 mm.

Water-resistive barrier (WRB)

- StoGuard®[Sto Gold Fill (80266) and Sto Gold Coat® (81636)]
- Sto Flexyl (80235)

The water-resistive barrier (WRB) is a coating that is installed to provide, along with other built-in features, the second line of defence against water infiltration reaching the structure. The WRB must be applied in accordance with the product's installation manuals.

Continuity of the second plane of protection across joints and junctions at openings, penetrations and expansion joints must be maintained through the use of accessories such as self-adhering membranes, tapes, etc., as specified by the manufacturer, prior to the installation of these systems. Furthermore, in order to provide the intended level of protection against water infiltration, the WRB must be applied in two coats with sufficient time between applications to allow the first coat to cure before the second coat is applied.

StoGuard® coating system consists of two components: Sto Gold Coat® and Sto Gold Fill (with StoGuard® Mesh or Sto Detail Mesh), which are fluid-applied over approved substrates to provide a monolithic air and moisture barrier:

- Sto Gold Fill (80266) is a ready-mixed, flexible, joint treatment and air barrier material for vertical above-grade walls. It is applied to rough openings, corners, and sheathing joints in walls with StoGuard® Mesh.
- Sto Gold Coat® (81636) is a ready-mixed, flexible, waterproof air barrier membrane for use in StoTherm® ci Systems. It is applied directly to vertical above-grade wall sheathing and concrete masonry and functions as a waterproof air barrier when combined with StoGuard® joint and rough opening treatment (such as Sto Gold Fill®).

Sto Flexyl (80235) is an acrylic-based, fibre-reinforced, flexible waterproofing for use on prepared concrete, concrete masonry, plaster, gypsum/cement sheathing surfaces, and EPS type 2 and 3 (ICF applications). Supplied in 19L pails, it is mixed on site with 50% by weight Type GU Portland cement. Sto Flexyl is applied in a continuous layer over the substrate and wrapped around the framing and penetration to achieve a minimum wet thickness of 1.5 mm.

Note: For applications over ICF, the installation is to include Sto Mesh per the manufacturer's installation instructions.

Adhesive

- Sto BTS® Plus (80727)
- Sto Primer/Adhesive-B (80101)

Sto BTS® Plus (80727) is a one-component, polymer-modified, cement-based dry-powder material used as an adhesive and supplied in 21.3-kg bags. Each bag is mixed with 4.7 L to 6.2 L of clean water. Sto BTS® Plus is applied as an adhesive to the inward surface of the Sto insulation board using the appropriate notched trowel. For smooth substrates, such as sheathing, use a stainless steel trowel with U-shaped notches measuring 13 mm × 13 mm at 64 mm on centre (o.c.). For uneven substrates, such as some types of concrete masonry, use a trowel with square notches measuring 16

mm × 16 mm at 32 mm o.c. As a base coat, the product is applied in combination with Sto Mesh as a single continuous layer over the insulation board to achieve a uniform nominal dry-rendered thickness of 1.6 mm.

Sto Primer/Adhesive-B (80101) is a one-component, polymer-modified, cement-based, dry-powder material supplied in 23-kg bags. Each bag is mixed with 4.7 L to 6.2 L of clean water. Sto Primer/Adhesive-B is applied as an adhesive to the surface of the Sto Corp. insulation board using the appropriate notched trowel. For smooth substrates, such as sheathing, use a trowel with U-shaped notches measuring 13 mm × 13 mm at 64 mm o.c. For uneven substrates, such as some types of concrete masonry, use a trowel with square notches measuring 16 mm × 16 mm at 32 mm o.c. As a base coat, the product is applied in combination with Sto Mesh as a single continuous layer over the insulation board to achieve a uniform nominal dry-rendered thickness of 1.6 mm.

Note: Adhesives are used for bonding the insulation to the substrate coated with the WRB. In general, they are available in the following forms: a dry-powder mix that requires the addition of water on site, a wet paste that requires the addition of cement on site and a form that does not require any additives. Certain adhesives are also used as base coats.

Insulation

Sto EPS Insulation Board and Sto ProD EPS Insulation Board are manufactured and packaged by Sto Corp., qualified and licensed manufacturers/molders. The expanded polystyrene foam insulation boards are aged by air for a minimum of five weeks or kiln-dried.

Sto EPS Insulation Board is a typical flat EPS board.

Sto ProD EPS Insulation Board has drainage pathways cut into the insulation that conform to Clause 9.27.13.1.(1)(b) of Division B of the NBC 2015 and Clause 9.27.14.1(1)(b), Application (Exterior Insulation Finish Systems), of Division B of the NBC 2020.

The two insulation boards must conform to the following:

- CAN/ULC-S701.1-17 (NBC 2015) and/or CAN/ULC-S701.1-22 (NBC 2020), "Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering," Type 1 or Type 2;
- minimum board thickness: 50 mm;
- maximum board thickness:
  - as designed, when used in combustible construction,
  - 165 mm, when used in non-combustible construction meeting Article 3.1.5.5., Combustible Cladding on Exterior Walls, of Division B of the NBC 2015 and NBC 2020 for StoTherm Systems and when applied over minimum 2 in. × 6 in. wood framing covered with a minimum 12.7-mm gypsum sheathing,
  - 165 mm, when used in non-combustible construction meeting Clause 3.2.3.8.(1)(b), Protection of Exterior Building Face, of Division B of the NBC 2015 and NBC 2020 for StoTherm Systems; and
  - when used on ICF substrates and to comply with Article 3.1.5.5. and Clause 3.2.3.8.(1)(b) of Division B of the NBC 2015 and NBC 2020:
    - maximum density of the EPS insulation of the ICF substrate must not exceed 24 kg/m^3, and
    - thickness of the outer-layer EPS insulation of the ICF substrate must not exceed 70 mm and the thickness of the STO EPS insulation board must not exceed 50 mm, or
    - thickness of the outer-layer EPS insulation of the ICF substrate must not exceed 64 mm and the thickness of the STO EPS insulation board must not exceed 64 mm;
- maximum board size: 600 mm × 1 200 mm;
- nominal density: 16 kg/m^3; and

- flame-spread rating: 25–500, in accordance with CAN/ULC-S102.2-10 (NBC 2015) and/or CAN/ULC-S102.2-18 (NBC 2020) "Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies."

Note: The ICF substrate must conform with CAN/ULC-S717.1:2017 "Standard for Flat Wall Insulating Concrete Form (ICF) Units – Material Properties."

Coating system (lamina)

The coating system (lamina) consists of the reinforcing mesh, which is embedded with the base coat, a primer (optional) and a finish coat.

Base coats

- Sto BTS® Plus (80727)
- Sto Primer/Adhesive-B (80101)

When Sto BTS® Plus or Sto Primer/Adhesive-B (see Adhesive) is used as a base coat, it is applied with a stainless-steel trowel to the entire surface of the insulation to a uniform nominal dry-rendered thickness of 1.6 mm. The base coat is always used in combination with reinforcing mesh that is embedded within the base coat application.

Note: The required thickness of the base coat depends on the number of layers and the type of reinforcing mesh used. The base coat is thicker when more than one layer of reinforcing mesh is incorporated into the lamina. Ultimately, it must be thick enough to fully embed the reinforcing mesh into the base coat with no mesh colour visible.

Reinforcing mesh

The reinforcing mesh is an alkali-resistant, interwoven glass-fibre reinforcing fabric having a minimum 142 g/m^2 nominal weight that is used with the Sto Corp. base coats and the Sto Flexyl coating. The mesh is yellow or white (where noted) and available in 107-mm, 240-mm or 970-mm wide rolls. It is available in six grades of strength:

- Sto Detail Mesh (80919): 142 g/m^2, 240 mm wide
- Sto Mesh (80920): 153 g/m^2, 970 mm wide
- Sto 6oz Mesh (80985): 203 g/m^2, 970 mm wide
- Sto Intermediate (80918): 373 g/m^2, 970 mm wide
- Sto Armor Mat (80921): 508 g/m^2, 970 mm wide
- Sto Armor Mat XX (80922): 678 g/m^2, 970 mm wide
- StoGuard® Mesh (80268): 142 g/m^2, 107 mm and 240 mm wide

Primers

Sto Primer® Creativ|UV (80806) is a water-based acrylic primer supplied in 19-L pails. Sto Primer Creativ is applied by brush, roller or spray to the dry base coat and provides an approximately 0.1–0.15 mm wet thickness.

Sto Prime® Sand (80801) is a water-based acrylic sanded primer that provides uniform substrate absorption and finish colour and is supplied in 19-L pails. Sto Primer Sanded is applied by brush, roller or spray to the dry base coat and provides an approximately 0.1–0.15 mm wet thickness.

Sto Prime® (80804) is a water-based acrylic smooth primer that provides uniform substrate absorption and finish colour and is supplied in 19-L pails. Sto Primer Smooth is applied by brush, roller or spray to the dry base coat and provides an approximately 0.1–0.15 mm wet thickness.

Note: Primer is typically required for spray- or roller-applied finishes.

Finish coats

- Stolit® Lotusan Finish Coat
  - Stolit Lotusan 1.0 (80190)
  - Stolit Lotusan 1.5 (80191)
  - Stolit Lotusan Freeform (80193)
  - Stolit Lotusan 1.0 Dark Colors (82190)
  - Stolit Lotusan 1.5 Dark Colors (82191)
  - Stolit Lotusan Freeform Dark Colors (82193)
- Stolit® Finish Coat
  - Stolit 1.0 (80130)
  - Stolit R2.0 (80142)
  - Stolit 1.0 Dark Colors (82130)
  - Stolit 1.5 (80131)
  - Stolit R3.0 (80143)
  - Stolit 1.5 Dark Colors (82131)
  - Stolit 2.0 (80132)
  - Stolit Freeform (80156)
  - Stolit R1.5 Dark Colors (82141)
  - Stolit 3.0 (80135)
  - Stolit .75 (80175)
  - Stolit Freeform Dark Colors (82156)
  - Stolit R1.5 (80141)
- Sto Element Finish Coat
  - Sto Element Fine (81514)
  - Sto Element Medium (81560)
  - Sto Element Swirl (81645)

Stolit® Lotusan Finish Coat is an acrylic-based textured finish coat with graded marble aggregate supplied in 19-L pails. It is factory- or store-tinted to the desired colour. Finished thickness is 1.0 mm to 1.5 mm, depending on the texture selected.

Stolit® Finish Coat is a ready-mix, acrylic-based, textured emulsion finish coat supplied in 19-L pails. It is factory- or store-tinted to the desired colour. Stolit® is applied with a stainless-steel trowel or spray-applied to a 1.0 mm to 3.0 mm thickness, depending on the texture selected.

Sto Element Finish Coat is an acrylic-based textured finish coat with graded marble aggregate and dirt pickup resistance (DPR) technology supplied in 19-L pails. It is factory- or store-tinted to the desired colour. Finished thickness is 1.0 mm to 1.5 mm, depending on the texture selected.

Table 1. Sto exterior insulation and finish system (EIFS) elements

System	Distinctive system components					
	Intended substrate	**Water-resistive barrier**	**Adhesive**	**Insulation**	**Base coat**	**Finish coat**
StoTherm® ci	Glass mat gypsum; cement board; concrete; masonry	StoGuard® (Sto Gold Coat® and Sto Gold Fill) or Sto Flexyl	Sto BTS® Plus or Sto Primer/ Adhesive-B	Sto EPS Insulation Board, or Sto ProD EPS Insulation Board	Sto BTS® Plus	Stolit® Finish Coat or Stolit® Lotusan Finish Coat (1)
	Plywood/ OSB	StoGuard® (Sto Gold Coat® and Sto Gold Fill)			Sto Primer/ Adhesive-B	Sto Element Finish Coat (2)
	ICF	Sto Flexyl				

Notes:

1 Stolit® Finish Coat and Stolit® Lotusan Finish Coat were only evaluated with Sto BTS® Plus base coat.

2 Sto Element Finish Coat was only evaluated with Sto Primer/Adhesive-B base coat.

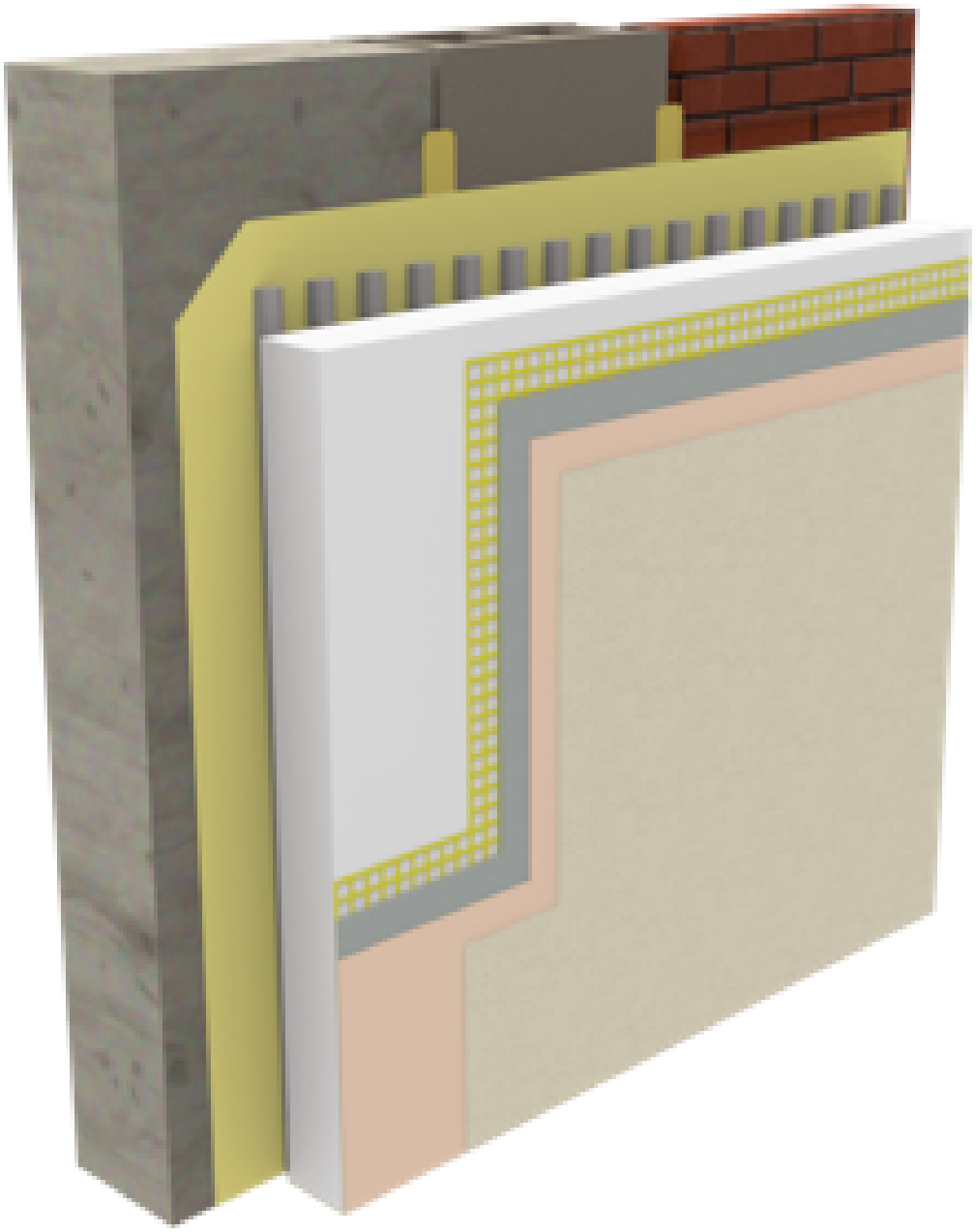

Figure 1. StoTherm® ci over concrete, concrete masonry unit and masonry

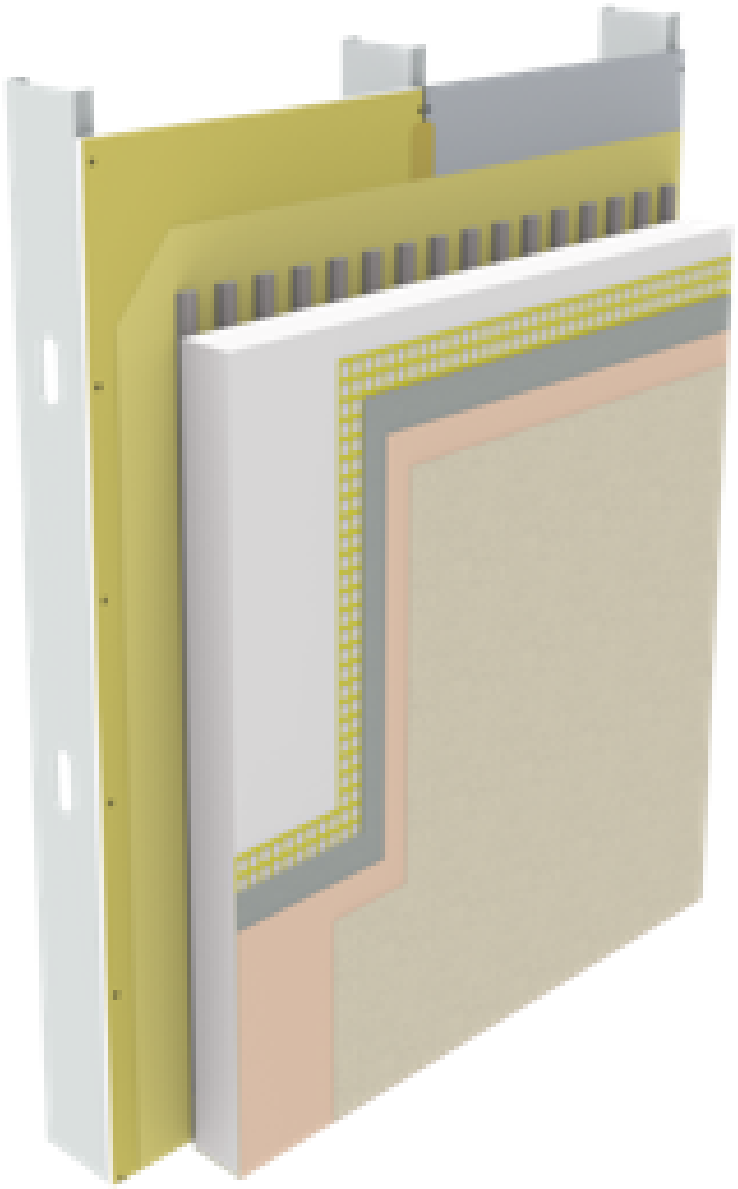

Figure 2. StoTherm® ci over glass mat gypsum or cement board over steel framing

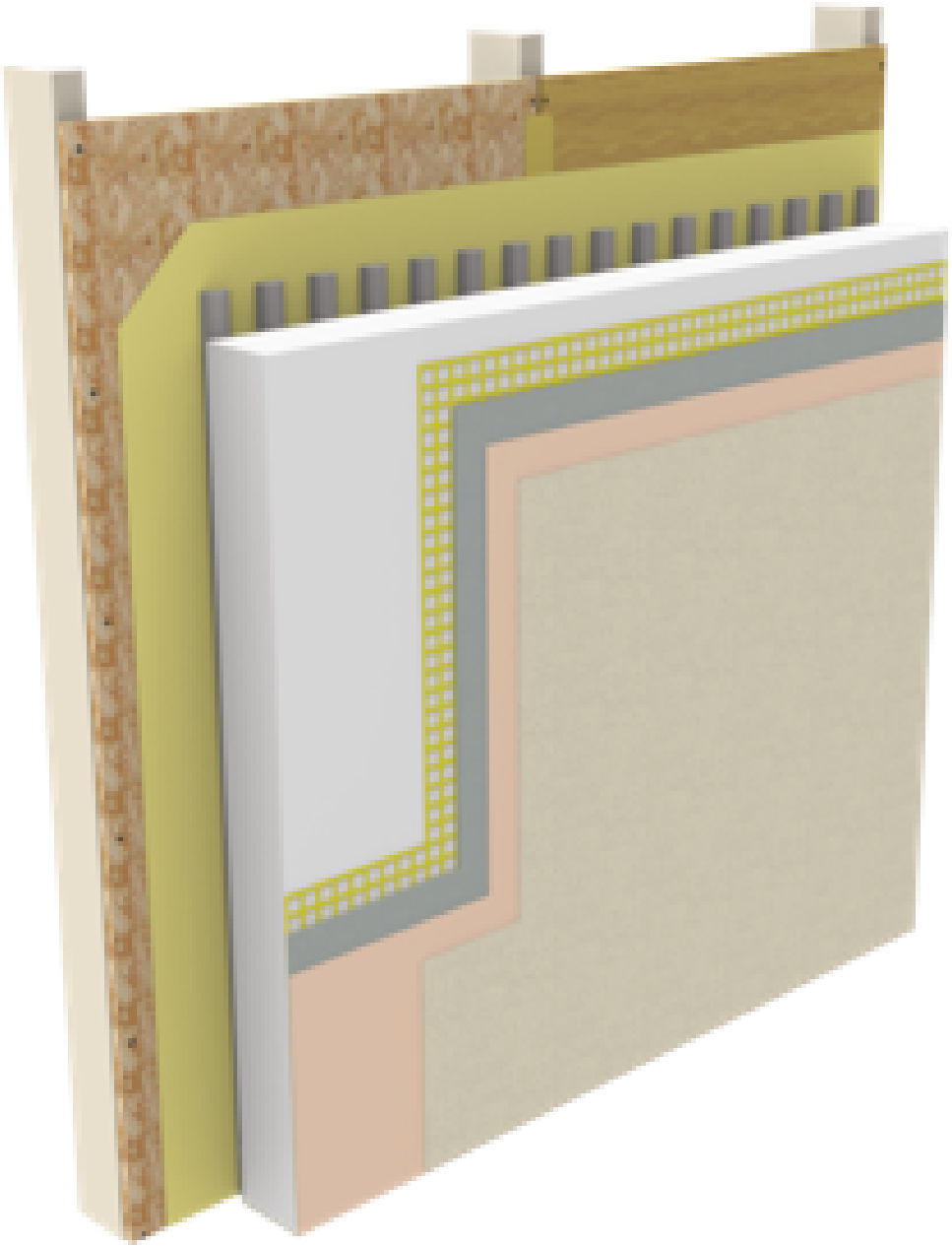

Figure 3. StoTherm® ci over wood-based sheathing-over-wood framing

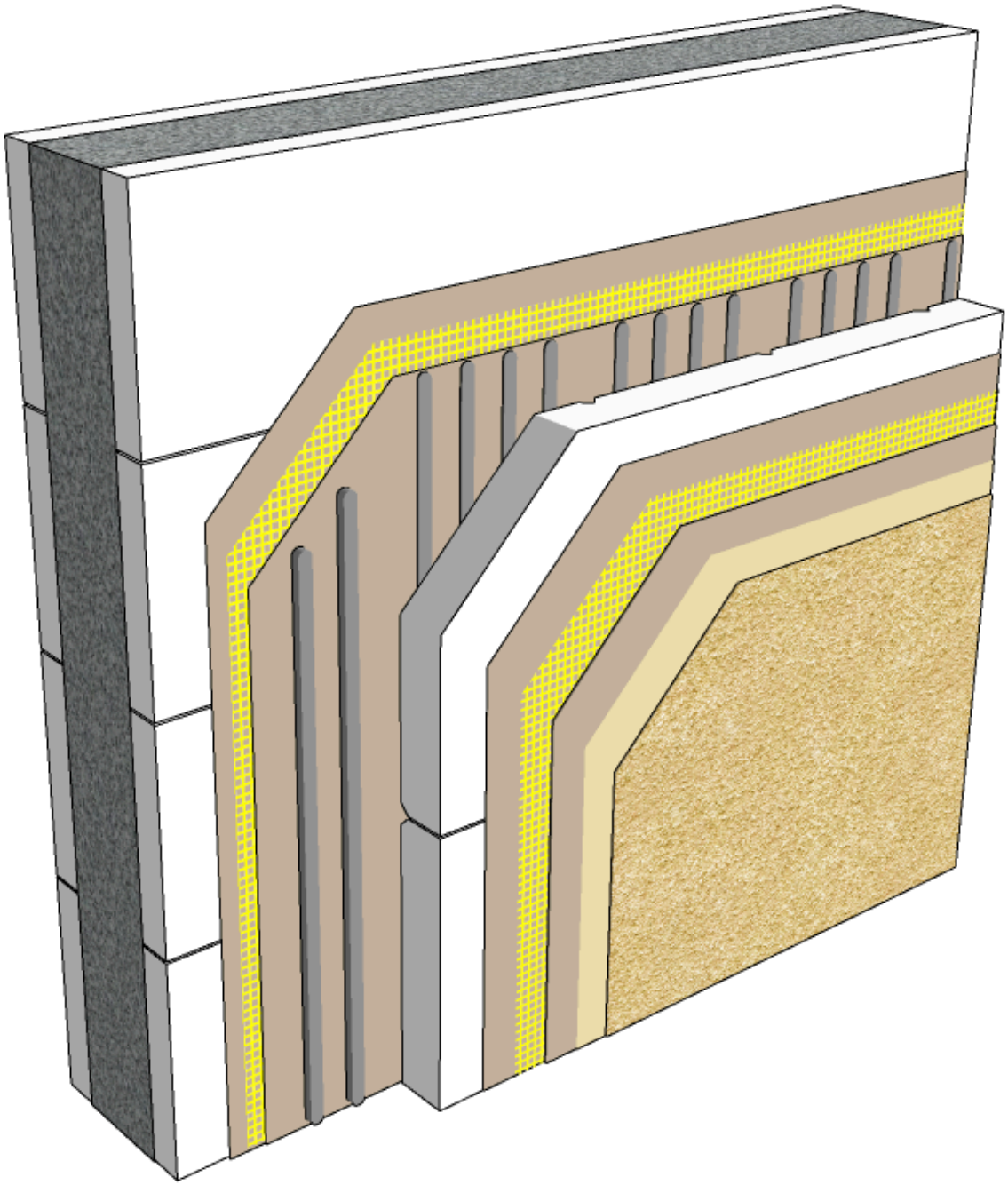

Figure 4. StoTherm® ci over ICF

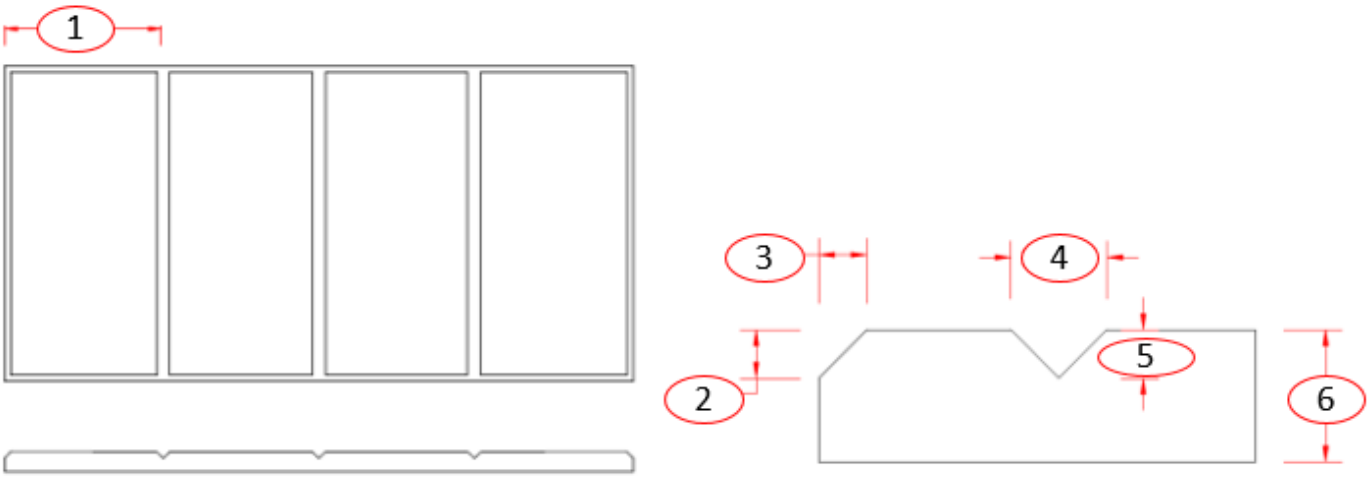

Figure 5. Geometrically-defined drainage 610 mm × 1 220 mm (2 ft. × 4 ft.) insulation board, Sto ProD EPS Insulation Board

1. 305 mm
2. 14 mm
3. 14 mm
4. 28 mm
5. 14 mm
6. 38 mm

Manufacturing plants

This evaluation is limited to products produced at the following plants:

Product names	Manufacturing plants		
	Atlanta, GA, US	Glendale, AZ, US	Rutland, VT, US
Sto BTS® Plus	✓	✓	-
Sto Element Finish Coat	-	✓	✓
Sto Flexyl	✓	✓	✓
Sto Gold Coat®	✓	✓	✓
Sto Gold Fill	✓	✓	✓
Sto Primer/Adhesive-B	✓	✓	-
Stolit® Finish Coat	✓	✓	✓
Stolit® Lotusan Finish Coat	-	✓	✓

✓ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

Conditions and limitations

The CCMC's compliance opinion is bound by this product being used in accordance with the conditions and limitations set out below.

- The product is intended for use as an exterior wall cladding on buildings falling under the scope of Part 5, Environmental Separation, and Part 9, Housing and Small Buildings, of the NBC 2015 and 2020.
- When used in existing buildings, the applicable elements of the existing buildings must comply with the requirements of the NBC 2015 and 2020.
- The products are intended to be used as exterior insulation and finish wall systems (EIFS) applied directly to vertical brick, masonry or monolithic concrete walls, and/or cementitious, glass-mat-surfaced gypsum, plywood or OSB-sheathing boards installed over wood or steel framing.
- Gaps between the sheathing boards of framed walls must not exceed 3.0 mm.
- The products are acceptable for use on vertical walls. The systems are not acceptable for use on horizontal surfaces. (Note: The present limitation does not include protected soffit applications.)
- When the products are part of a prefabricated panel system that incorporates structural components, the prefabricated panel system must be designed by a professional engineer or architect in accordance with the manufacturer's criteria and the requirements of the NBC 2015 and 2020.
- The products are not suitable for use as a structural sheathing for bracing purposes.
- The products are not intended for use as a below-grade insulation and should terminate at least 200 mm above grade level.
- For buildings within the scope of Part 5 of Division B of the NBC 2015, the system shall be designed in accordance with the requirements of Article 5.9.4.1., Structural Loads, Heat Transfer, Air Leakage, Vapour Diffusion and Water Penetration, of the NBC 2015.
- For buildings within the scope of Part 5 of Division B of the NBC 2020, the system shall be designed in accordance with the requirements of Article 5.9.4.1., Structural Loads, Heat Transfer, Air Leakage, Vapour Diffusion and Water Penetration, of the NBC 2020.
- When used in coastal areas on residential occupancies that fall under the scope of Part 9 of Division B of the NBC 2015, the products must be installed in conjunction with a capillary break conforming to Clause 9.27.2.2.(1)(e), Minimum Protection from Precipitation Ingress, of Division B of the NBC 2015. Coastal areas are defined in Sentence 9.27.2.2.(5) of Division B of the NBC 2015.
- When used in coastal areas on residential occupancies that fall under the scope of Part 9 of Division B of the NBC 2020, the products must be installed in conjunction with a capillary break conforming to Clause 9.27.2.2.(1)(e) of Division B of the NBC 2020. Coastal areas are defined in Sentence 9.27.2.2.(5) of Division B of the NBC 2020.
- The WRB coating must be applied in two coats.
- The continuity of the second plane of protection across joints and junctions at openings, penetrations and expansion joints must be maintained through the use of accessories such as self-adhering membranes, tapes, etc., as specified by the manufacturer, prior to the installation of these systems.
- The use of the products with the adhesives indicated in Table 1 is limited to geographical areas where the wind-design value is $Q_{50} < 1.0$. The wind load resistance test data and hourly wind pressure (Q_{50}) in this report are limited to the geographic areas where the site specific topographic factor, $Ct \leq 1.0$. Further calculations are required for buildings that are constructed on hills or escarpments with a slope as defined in Article 4.1.7.4., Topographic Factor, of the NBC 2015 and NBC 2020. For buildings constructed on hills and escarpments, the anticipated wind pressures may be greater than the values covered under this evaluation.

- When used on existing walls of sprinklered buildings or existing walls of buildings with not more than three storeys, the possibility of moisture accumulation within the wall construction is mainly a function of 1) the ability of the wall assembly to deflect bulk water entry, and 2) the physical properties of the cladding being installed and its impact on the thermal, air-leakage and vapour diffusion characteristics of the existing wall. The potential for moisture accumulation as a result of the addition of materials is very specific to the existing wall construction. Therefore, the installation must be in accordance with Note A-5.1.2.1.(1), Application (Environmental Separation), of Division B of the NBC 2015 and 2020.
- For buildings within the scope of Part 9 of the NBC 2015 and 2020, the design of the inboard/outboard insulation of the systems must be in accordance with the requirements of Section 9.25., Heat Transfer, Air Leakage and Condensation Control, of Division B of the NBC 2015 and 2020.
- When the systems are used on existing walls, the addition of thermal insulation to existing exterior walls will increase the thermal efficiency and airtightness of the wall. Deficiencies in flashing and other elements in the building assembly, including mechanical systems, may result in detrimental effects of moisture accumulation as highlighted in Note A-9.25.2.4.(3), Loose-Fill Insulation in Existing Wood-Frame Walls, of Division B of the NBC 2015 and 2020. As a result, once the EIFS is installed, the existing exterior walls must meet the requirements of the NBC 2015 and 2020 for heat transfer, air leakage and condensation control.
- The products can provide additional thermal insulation to the wall assembly with no detrimental effects if properly designed and installed with knowledge of the existing wall configuration and performance.
- The products alone may not provide the full amount of the required wall insulation. The thermal resistance of the wall system must conform to the energy requirements of the applicable building code. The wall system may have to conform to the National Energy Code of Canada for Buildings.
- Before cutting into insulation boards, the polystyrene thermal insulation blocks must be aged for a minimum of five weeks or kiln-dried in accordance with the requirements of Section B2.1, "Aging," of Annex B of CAN/ULC-S701, "Thermal Insulation, Polystyrene, Boards and Pipe Covering."
- The polystyrene thermal insulation must be in conformance with the requirements of CAN/ULC-S701.
- The polystyrene thermal insulation boards must be cut from moulded blocks manufactured using 100% virgin raw materials.
- When used in combustible construction, the polystyrene insulation must be protected from the inside of the building in accordance with Clauses 3.1.4.2.(1)(c) and 9.10.17.10.(1)(c), Protection of Foamed Plastics, of Division B of the NBC 2015 and 2020.
- When used in noncombustible constructions, the polystyrene insulation must be protected from the inside of the building in accordance with Sentences 3.1.5.15.(2) and (3), Foamed Plastic Insulation, of Division B of the NBC 2015 and 2020.
- Where allowed by the Code through conformance to Sentence 3.1.5.5.(1), Combustible Cladding on Exterior Walls, of Division B of the NBC 2015 and 2020, StoTherm® ci is acceptable for use on buildings required to be of noncombustible construction, where not more than three storeys in height if unsprinklered, and to an unlimited number of storeys if sprinklered, provided the interior surfaces of the wall assembly are protected by a thermal barrier conforming to Article 3.1.5.15., Foamed Plastic Insulation, of Division B of the NBC 2015 and 2020. For a detailed description of the compliance of StoTherm® ci to the requirements of Sentence 3.1.5.5.(1) of Division B of the NBC 2015 and 2020, please refer to Intertek Spec ID: 18188, Design No. STO/WDEIFS 25-01 Sto Category 1 Design Listing (please note that the wall assembly may include the use of wood-framing or Insulated Concrete Forms (ICF) under some certain conditions; please refer to the Intertek fire listing for those conditions).
- Where allowed by the Code through conformance to Clause 3.2.3.8.(1)(b) of Division B of the NBC 2015 and the NBC 2020, StoTherm® ci is acceptable for use in the exposed face of buildings in combustible or noncombustible construction, provided the interior surfaces of the wall assembly are protected by a thermal

barrier conforming to Article 3.1.5.15. of Division B of the NBC 2015 and 2020. For a detailed description of the compliance of StoTherm® ci to the requirements of Clause 3.2.3.8.(1)(b) of Division B of the NBC 2015 and 2020, please refer to Intertek Spec ID: 18188, Design No. STO/WDEIFS 15-01 Category 2 Design Listing (please note that backup wall assemblies covered by design listing do not include wood framing and wood sheathings and extend to noncombustible substrates only (steel stud over sheathings such as gypsum board, concrete, masonry and ICF)).

- The systems should be kept at least 50 mm, or the distance required in applicable building regulations and safety codes, from heat-emitting devices such as recessed light fixtures and chimneys.
- NBC 2015 and 2020 requirements regarding fire stops must be implemented.
- The polystyrene thermal insulation must have a flame-spread rating of not more than 500 when tested in accordance with the requirements of CAN/ULC-S102.2-11, "Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies."
- Movement joints are required to accommodate expansion and contraction of building materials due to thermal changes, moisture, wind, gravity, vibration and seismic activity. Movement joints in the cladding must be used in the following situations:
    - at joints that occur in the substrate;
    - at any abutment of the system with other materials;
    - where changes in substrate might create deflection or movement;
    - where significant structural movement occurs;
    - where deflections in excess of L/240 are expected; and
    - at the floor line in wood-frame construction (this may not be required where fully engineered framing and floor systems are used).
- Closed-cell backer rods should be used at expansion joints so that the low-modulus sealant can be installed in accordance with the sealant manufacturer's instructions.

Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CAN/ULC-S716.1-12	Exterior Insulation and Finish Systems (EIFS) – Materials and Systems
CCMC-TG-072413.01-20B	CCMC Technical Guide for Exterior Insulation Finish Systems

The evaluation holder has submitted technical documentation for the CCMC's evaluation. Testing was conducted at laboratories recognized by the CCMC. The corresponding technical evidence for this product is summarized below.

Material characterization

Table 2. Results of testing of ash content of the products

Property	Unit	Requirement	Result
WRB (StoGuard®) - Sto Gold Fill®	%	Report value	75.4
WRB (StoGuard®) - Sto Gold Coat® (81636)			62.8
WRB (Sto Flexyl)			97.2
Adhesive/base coat (Sto BTS® Plus)			95.1
Adhesive/base coat (Sto Primer/Adhesive-B)			95.6
Finish coat (Stolit® Lotusan)			62.8
Finish coat (Stolit®)			64.2
Finish coat (Sto Essence Finish or Sto Element Finish)			61.8

Table 3. Results of infrared analysis for documenting chemical formulation of the products

Property	Requirement	Result
WRB (StoGuard®) - Sto Gold Fill®	Report value	Report on file
WRB (StoGuard®) - Sto Gold Coat® (81636)		
WRB (Sto Flexyl)		
Adhesive/base coat (Sto BTS® Plus)		
Adhesive/base coat (Sto Primer/Adhesive-B)		
Finish coat (Stolit® Lotusan)		
Finish coat (Stolit®)		
Finish coat (Sto Essence Finish or Sto Element Finish)		

Adhesion/cohesion bond

Table 4. Results of testing of adhesion bond of WRB to plywood/OSB

Property		Unit	Requirement: no detachment at bonding plane	Result [(1)]
StoGuard® to plywood	**dry state**	MPa	0.25	0.730
	2-h drying		0.08	0.447
	7-d drying		0.25	0.697
StoGuard® to OSB	**dry state**		0.25	0.840
	2-h drying		0.08	0.309
	7-d drying		0.25	0.713

Note:

1 Failure within the substrate.

Table 5. Results of testing of adhesion of WRB to substrates other than plywood/OSB

Property		Unit	Requirement: no detachment at bonding plane	Result
StoGuard® to cement board	**dry state**	MPa	0.25	0.960
	2-h drying		0.08	0.498
	7-d drying		0.25	0.691
StoGuard® to glass mat gypsum	**dry state**		0.25	0.76
	2-h drying		0.08	0.21
	7-d drying		0.25	0.34
Sto Flexyl to cement board	**dry state**		0.25	0.613
	2-h drying		0.08	0.419
	7-d drying		0.25	0.708
Sto Flexyl to glass mat gypsum	**dry state**		0.25	0.397
	2-h drying		0.08	0.125
	7-d drying		0.25	0.215
Sto Flexyl to EPS Type 2	**dry state**		0.25	0.30
	2-h drying		0.08	0.22
	7-d drying		0.25	0.29

Property		Unit	Requirement: no detachment at bonding plane	Result
Sto Flexyl to EPS Type 3	**dry state**		0.25	0.29
	2-h drying		0.08	0.21
	7-d drying		0.25	0.30

Table 6. Results of testing of adhesion/cohesion bond of WRB to substrates other than plywood/OSB

Property		Unit	Requirement: no detachment at bonding plane at	Result
StoGuard® to concrete	**dry state**	MPa	0.25	0.455
	2-h drying		0.08	0.551
	7-d drying		0.25	0.475

Table 7. Results of testing of adhesion bond of adhesive to WRB

Property		Unit	Requirement: no detachment at bonding plane at	Result
Sto BTS® Plus to StoGuard®	**dry state**	MPa	0.25	0.251
	2-h drying		0.08	0.225
	7-d drying		0.25	0.428
Sto Primer/Adhesive-B to StoGuard®	**dry state**		0.25	0.401
	2-h drying		0.08	0.370
	7-d drying		0.25	0.447
Sto BTS® Plus to Sto Flexyl	**dry state**		0.25	0.3
	2-h drying		0.08	0.1
	7-d drying		0.25	0.3
Sto Primer/Adhesive-B to Sto Flexyl	**dry state**		0.25	0.3
	2-h drying		0.08	0.1
	7-d drying		0.25	0.3

Table 8. Results of testing of adhesion bond of adhesive to insulation

Property		Unit	Requirement: no detachment at bonding plane at	Result
Sto BTS® Plus to EPS	**dry state**	MPa	0.08	0.1
	2-h drying		0.08	0.1

Property		Unit	Requirement: no detachment at bonding plane at	Result
	7-d drying		0.08	0.1
Sto Primer/Adhesive-B to EPS	dry state		0.08	0.1
	2-h drying		0.08	0.1
	7-d drying		0.08	0.1

Table 9. Results of testing of lamina bond strength (insulation / base coat / finish coat)

Property		Unit	Requirement: no detachment at bonding plane at	Result
Sto BTS® Plus/Stolit® to EPS	dry state	MPa	0.1	0.221
	2-h drying		0.1	0.143
	7-d drying		0.1	0.214

Water vapour transmission

Table 10. Results of testing of water vapour transmission (WVT) of WRB

Property	Unit	Requirement	Result
StoGuard® over OSB	ng/(Pa·s·m^2)	Report value	156 (1)
			78 (2)
StoGuard® over glass-mat gypsum			321 (1)
			224 (2)
Sto Flexyl over OSB			56 (1)
			56 (2)
Sto Flexyl over glass-mat gypsum			187 (1)
			94 (2)

Notes:

1 WVT rate measured with one-coat application.

2 WVT rate measured with two-coat application.

Table 11. Results of testing of water vapour transmission (WVT) of lamina

Property	Unit	Requirement	Result
Sto BTS® Plus	ng/(Pa·s·m^2)	Report value	524
Sto Primer/Adhesive-B			211.8

Table 12. Results of testing of water vapour transmission (WVT) of WRB and substrate

Property		Unit	Requirement	Sample no.	Result (1)	
					Uncoated	Coated with StoGuard®
WVT	**OSB**	ng/(Pa·s·m^2)	Report WVT rate of plywood and OSB coated with a WRB and of uncoated plywood and OSB	1	84.44	49.44
				2	111.25	44.84
				3	86.74	44.30
				Average	94.14	47.86
	plywood			1	235.21	137.73
				2	214.22	128.73
				3	226.96	122.48
				Average	225.47	129.65

Note:

1 The WVT rate of the OSB and plywood is specific to the type and thickness of the product used in the test. For typical WVT rates of OSB and plywood, see Table A-9.25.5.1.(1), Air and Vapour Permeance Values, of Division B of the NBC 2015.

Water absorption

Table 13. Results of testing of water absorption of base coat

Property	Unit	Requirement	Result
Sto BTS® Plus	%	≤ 20% of the dry weight	12.28
Sto Primer/Adhesive-B			17.05

Table 14. Results of testing of water absorption coefficient of WRB at 72 hours

Property	Unit	Requirement	Result
StoGuard	$kg/(m^2 \cdot s^{1/2})$	≤ 0.004	0.0005
Sto Flexyl			0.0013

Impermeability to water

Table 15. Results of testing of impermeability to water of the base coat

Property	Unit	Requirement	Result
Sto BTS® Plus	h	No water penetration in less than 2 h	Pass
Sto Primer/Adhesive-B			Pass

Water transmission resistance

Table 16. Results of testing of water transmission resistance (WTR) over OSB

Property	Unit	Requirement	Sample no.	Result
WTR	$kg/m^2 \cdot s$	Five WRB-coated OSB specimens subjected to a 25-mm head of water must have a maximum average WTR rate of 2×10^{-7} $kg/m^2 \cdot s$ measured at 10 days	1	(1)
			2	1.87×10^{-7}
			3	9.97×10^{-8}
			4	3.25×10^{-8}
			5	1.64×10^{-7}
			Average	1.21×10^{-7}

Note:

1 Specimen was disregarded.

Table 17. Results of testing of water transmission resistance (WTR) over plywood

Property	Unit	Requirement	Sample No.	Result
WTR	$kg/m^2 \cdot s$	Five WRB-coated plywood specimens subjected to a 25-mm head of water must have a maximum average WTR rate of 2×10^{-7} $kg/m^2 \cdot s$ measured at 10 days	1	(1)

Property	Unit	Requirement	Sample No.	Result
			2	5.64×10^{-7}
			3	2.27×10^{-8}
			4	1.80×10^{-8}
			5	1.11×10^{-7}
			Average	1.79×10^{-7}

Note:

1 Specimen was disregarded.

Durability

Table 18. Results of testing of mildew and fungus resistance

Property	Requirement	Result
Mildew and fungus resistance of finish coat (Stolit®)	No growth	Pass

Table 19. Results of testing of accelerated weathering resistance

Property	Adhesive material	Applied finish	Requirement	Result
Accelerated weathering resistance of lamina @ 2 000 hrs	Sto BTS® Plus	Stolit® Finish	No cracking, flaking or deleterious effects	Pass

Table 20. Results of testing of salt spray resistance at 300 hours

Property	Requirement	Result
Sto BTS® Plus/Stolit	No cracking, flaking or deleterious effects	Pass
Sto (Primer/Adhesive)/(Stolit®)		Pass

Table 21. Results of testing of durability under environmental cycling conditions

Property	Unit	Requirement		Result
Pre-conditioning (drainage evaluation)	L	Report water quantity	introduced	13.5

Property	Unit	Requirement		Result
			drained	12.59
			retained	0.91
Environmental cycling (60 cycles)	-	No cracking, blistering or sagging of base coat and no detachment or crazing of finish coat		Pass
Adhesion bond strength after environmental cycling	MPa	0.1		0.31

Table 22. Results of testing of accelerated weathering of WRB

Property	Requirement	Sample no.	Result
Sto Gold Coat®	The WRB applied over OSB must show no cracking, delamination or flaking, or any deleterious effects following 250 hours exposure to Xenon arc	1	Pass
		2	Pass
		3	Pass
		4	Pass
		5	Pass
		6	Pass

Reinforcing mesh

Table 23. Results of testing of breaking strength resistance of reinforcing mesh (142.0 g/m^2 (4.3 oz) – St. Gobain)

Property		Unit	Requirement	Result	
Ash content		%	Report value	14.7	
Mass per unit area		g/m^2	Report value	14	
Breaking strength resistance				**Weft**	**Warp**
Initial tensile strength		N/mm	≥ 35	37.2	40.3
Loss of tensile strength after	**28-day, 3-ion soak**	%	≤ 60% for adhered EIFS, ≤ 50% for mechanically fastened EIFS	17.7	7.3
Residual tensile strength after	**28-day, 3-ion soak**	N/mm	≥ 15 N/mm for adhered EIFS, ≥ 25 N/mm for mechanically fastened EIFS	30.6	37.3
Elongation at break	**initial**	%	Report value	3.3	4.1
	28-day, 3-ion soak			2.8	3.8

Impact resistance

Table 24. Results of impact resistance testing

Property		Requirement	Result
Sto BTS® Plus	**10 joules**	6/10 free-fall drops must show no perforation (broken mesh)	Pass
	3 joules	6/10 free-fall drops must show no cracks	Pass
Sto Primer/Adhesive-B	**10 joules**	6/10 free-fall drops must show no perforation (broken mesh)	Pass
	3 joules	6/10 free-fall drops must show no cracks	Pass

Wind load resistance

Table 25. Results of testing of wind load resistance [(1)]

	Sustained		**Cycling**		**Gust**		**Deflection test**		
								Measured maximum net mid-span deflections (mm)	
Reference wind pressure (kPa)	**P_1, P_1' (Pa)**		**P_2, P_2' (Pa)**		**P_3, P_3' (Pa)**		**Test pressure (Pa) 3.3 P_1, P_1'**	**Stud span 3 050 mm**	**Sheathing span 406 mm**
$Q_{50} \leq 0.45$	±450	Pass	±660	Pass	±980	Pass	+980	5.49	1.76
							−980	−5.59	−2.35
$Q_{50} \leq 0.55$	±550	Pass	±800	Pass	±1 200	Pass	+1 200	6.72	2.16
							−1 200	−6.84	−2.88
$Q_{50} \leq 0.65$	±650	Pass	±950	Pass	±1 410	Pass	+1 410	7.90	2.54
							−1 410	−8.04	−3.38
$Q_{50} \leq 0.75$	±750	Pass	±1 090	Pass	±1 630	Pass	+1 630	9.13	2.93
							−1 630	−9.29	−3.91
$Q_{50} \leq 0.85$	±850	Pass	±1 240	Pass	±1 850	Pass	+1 850	10.36	3.33
							−1 850	−10.55	−4.44
$Q_{50} \leq 1.00$	±1 000	Pass	±1 460	Pass	±2 180	Pass	+2 180	12.21	3.92
							−2 180	−12.43	−5.23
Maximum test pressure @ L/180 deflection							+3 073	16.90	-
							−2 990	−16.90	-
Ultimate structural test pressure							+3 640	Passed	

Reference wind pressure (kPa)	Sustained	Cycling	Gust	Deflection test		
					Measured maximum net mid-span deflections (mm)	
	P_1, P_1' (Pa)	P_2, P_2' (Pa)	P_3, P_3' (Pa)	Test pressure (Pa) 3.3 P_1, P_1'	Stud span 3 050 mm	Sheathing span 406 mm
				−3 390	Sheathing separation from steel studs occurred	

Note:

1 The use of the products with the adhesives indicated in Table 1 is limited to geographical areas where the wind-design value is Q_{50} < 1.0. The wind load resistance test data and hourly wind pressure (Q_{50}) in this evaluation limited to the geographic areas where the site specific topographic factor, Ct ≤ 1.0. Further calculations are required for buildings that are constructed on hills or escarpments with a slope as defined in Article 4.1.7.4., Topographic Factor, of the NBC 2015 and NBC 2020. For buildings constructed on hills and escarpments, the anticipated wind pressures may be greater than the values covered under this evaluation.

Joint disruption and relaxation resistance

Table 26. Results of testing of joint disruption resistance

Property	Unit	Requirement	Result	
			Joint width	
			2 mm	4 mm
Joint disruption resistance	-	The WRB at joints on two assemblies must show no cracking, delaminating or any other deleterious effects at a transverse bending of L/180	Pass	
Joint extension @ L/180	mm	Report value	0.72	0.71

Table 27. Results of testing of joint relaxation resistance

Property	Unit	Requirement	Sample no.	Result
Joint relaxation resistance	$kg/m^2 \cdot s$	Five WRB-coated OSB specimens subjected to 1.3-mm extension following exposure to 15 24-h environmental cycles must have a maximum average water transmission rate of 2×10^{-7} $kg/m^2 \cdot s$	1	3.12×10^{-7}
			2	1.76×10^{-7}
			3	1.87×10^{-7}
			4	1.30×10^{-7}
			5	1.87×10^{-7}
			Average	1.96×10^{-7}

Drainage capacity

Table 28. Results of testing of drainage capacity of the products

Property	Requirement	Result		
		Retained water per unit area (g/m^2)		Drainage capacity (%) after 1 h
		After 1 h	After 48 h	
Panel 1 (1)	The water retained in the unit following 48 hours of drying must not be greater than 15 g/m^2 for any single test specimen	38.2	0.00	99.5
		29.4	0.00	
Panel 2 (1)	The water retained in the unit following 48 hours of drying must not be greater than 15 g/m^2 for any single test specimen	35.4	0.00	99.6
		27.2	0.00	
Panel 3 (1)	The drainage capacity must not be less than 98% of the water mass delivered into the EIFS wall specimen	31.8	0.00	99.6
		24.5	0.00	

Note:

1 Panel 1, 2 and 3 consisted of the system applied over StoGuard® WRB and Sto BTS® Plus adhesive.

Nail popping resistance

Table 29. Results of testing of nail popping resistance

Property	Requirement	Sample no.	Result
Nail popping resistance	There must be no cracking or delamination of the WRB following 1-mm nail protrusion from the nail's original preset of 1 mm below the surface of the OSB substrate	1	Pass
		2	Pass
		3	Pass
		4	Pass
		5	Pass
		6	Pass

Fire testing

For a detailed description of the compliance of the related systems to the requirements of Article 3.1.5.5., Combustible Cladding on Exterior Walls, of Division B of the NBC 2015 and 2020, please refer to Intertek Listing Information of StoTherm® ci SPEC ID: 18818 Design No. STO/WEIFS 25-01. Refer to Design No. STO/WEIFS 15-01 (SPEC ID: 18818) for compliance to the requirements of Clause 3.2.3.8.(1)(b), Protection of Exterior Building Face, of Division B of the NBC 2015 and 2020.

Administrative information

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Code compliance as an acceptable solution

Code Compliance via Acceptable Solutions

> If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

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Code compliance as an alternative solution