



Evaluation Report CCMC 13103-R

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Re-evaluation in Progress	

Durex Flexlite/Durex Insulite/Durex Quantum

- **Durex Flexlite includes: Durex Flexlite ADH, Durex Flexlite Select ADH, Durex Flexlite Select MF**
- **Durex Insulite includes: Durex Insulite EW-17, Durex Insulite EW 17 Select, Durex Insulite EXT Select ADH**
- **Durex Quantum includes: Durex Quantum, Durex Quantum Select, Durex Quantum Select MF**

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Durex Flexlite/Durex Insulite/Durex Quantum”, when used as an exterior insulation and finish system (EIFS) (wall cladding that is designed to provide thermal insulation and a weather barrier) in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2005:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Clause 3.1.5.12.(3)(d) Combustible Insulation and its Protection
 - Clause 3.2.3.8.(1)(b)¹ Protection of Exterior Building Face
 - Sentence 5.6.1.1.(1) Required Protection from Precipitation
 - Clause 9.25.2.2.(1)(c) Insulation Materials
 - Sentence 9.27.1.1.(5) General (cladding)
 - Article 9.27.2.1. Minimizing and Preventing Ingress and Damage
 - Sentence 9.27.2.2.(4) Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.3.(1) First and Second Plane of Protection
 - Article 9.27.3.7. Flashing Materials
 - Article 9.27.4.2. Materials (caulking)
- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Article 9.27.3.1. Elements of the Second Plane of Protection
 - Sentence 9.27.5.1.(1) Attachment (attachment of cladding)

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report Holder.

Ruling No. 04-04-108 (13103-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2004-03-30

pursuant to s.29 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

(1) : *The conformance to Clause 3.2.3.8.(1)(b) is based on systems having “Durex Green Guard” as a WPB, “Durex Flexcrete” as an adhesive, “Uniplast + Acrybond ‘S’” as a base coat, “Durex Architectural Coating” as a finish coat, “Durex Monobase” as an adhesive/base coat, and EPS Type 1 insulation from 25 mm to 150 mm thick. For a detailed description of the compliance of the related systems to the requirements of Clause 3.2.3.8.(1)(b) of Division B of the NBC 2005, please refer to ULC Listings, ULC FWFOC.EW21 and ULC FWFOC.EW22, “Exterior Wall Insulation and Finish Systems,” for further details on the combination of coatings/systems falling under the scope of the said listings.*

2. Description

“Durex Flexlite/Durex Insulite/Durex Quantum” are non-loadbearing exterior insulation and finish systems (EIFS) that can be assembled in panels under factory-controlled conditions, or field-applied. The systems are composed of the following key components:

- a water penetration barrier (WPB) coating
- an adhesive coating
- an insulation board
- a coating system (Lamina⁽²⁾)

(2)*The lamina refers to all the coats (base coats and finish coat) that are applied to the outer face of the insulation board together with the glass-fibre mesh reinforcement.*

“Durex Flexlite/Durex Insulite/Durex Quantum” are intended to be installed over a specific substrate that is specified below for applications falling within the scope of this Report.

The following is a detailed description of the different components of the systems:

Substrate

The substrate can be brick, masonry, monolithic concrete walls, and/or cementitious panels, glass-mat-surfaced gypsum boards, plywood or oriented stranded board (OSB) over wood or steel framing. Gaps between the sheathing boards of framed walls shall not exceed 3.2 mm.

Water Penetration Barrier (WPB) Coating⁽³⁾

(3) *The WPB is a coating that is installed to provide a continuous membrane over water-sensitive substrates and around penetrations and openings to provide, along with other built-in features, the second line of defence against water infiltration reaching the structure. In order to provide the intended level of protection against water infiltration, the WPB shall be installed in a two-coat application in which the first coat shall have sufficient time to cure before the second coat is applied. The water penetration barrier shall be applied in accordance with “Durex Flexlite/Durex Insulite/Durex Quantum” System Specification, dated August 2007.*

The continuity of the second plane of protection across joints and junctions at openings, penetrations and expansion joints shall be maintained through accessories such as self-adhering membranes, tapes, etc. as specified by the manufacturer, prior to the installation of these systems.

(4) *In the case of “Durex Quantum Select MF”, the water penetration barrier (WPB) consists of a single layer of a self-adhered modified bituminous membrane that is installed all over the substrate and around penetrations and openings. The insulation boards are attached via mechanical fasteners to the substrate.*

“Durex Flexcrete” is a ready-to-use, polymer-based wet mix coating that comes in 30-kg pails and is mixed on site with “Durex Flexcrete B” cement, which is supplied in 22.7-kg bags [1:1 by unit (one bag to one pail)].

“Durex Flexcrete” is applied in a continuous layer over the substrate to achieve a minimum wet thickness of 1.5 mm to 3.0 mm.

“Durex Green Guard” is a ready-to-use, polymer-based (100% synthetic) coating that comes in 25-kg pails. It is applied in a continuous layer over the substrate to achieve a minimum wet thickness of 2.3 mm.

“Durex Blue Shield” is a ready-to-use, polymer-based (100% synthetic) coating that comes in 25-kg pails. It is applied in a continuous layer over the substrate to achieve a minimum wet thickness of 2.3 mm.

“Durex Mastic 100” is a polymer-based (100% synthetic), ready-to-use coating that comes in 25-kg pails. It is applied in a continuous layer over the substrate.

Adhesive⁽⁵⁾⁽⁶⁾

(5) Adhesives are used for bonding the insulation to the substrate coated with the WPB. They are generally available in the following forms: a dry powder mix requiring the addition of water and/or cement on site, or a wet paste that does not require any additives. Certain adhesives are also used as base coats, as in the case of “Durex Flexcrete” and “Durex Monobase.”

“Durex Flexcrete” See description in WPB section.

“Durex Monobase” is a polymer-modified adhesive and base coat that comes in 22.7-kg dry bags and is mixed on-site with clean potable water (4:1 by weight, dry mix to water).

“Durex VCA 3.0” is a ready-to-use, polymer-based wet mix adhesive that comes in 30-kg pails is mixed on site with “Durex VCA 3.0 B” cement, which is supplied in 22.7-kg bags. [1:1 by unit (one bag to one pail)].

(6) “Durex Flexcrete, Durex Monobase, and Durex VCA, 3.0” adhesives are applied in a continuous layer over EPS/XPS insulation boards using a stainless steel U-shaped notched trowel and rendered in such a way as to align the adhesive in vertical ribbons. The spacing between the ribbons shall range from 38 to 50 mm, while the size of the notches shall be 10 to 13 mm in width and 10 to 13 mm in depth.

“Durex Ectoflex” is a two-component, flexible, polymer-based cementitious coating that consists of a ready-to-use, polymer-based wet mix coating that comes in 10-liter pails and is mixed on site with “Durex Ectoflex ‘B’” cement, which is supplied in 22.7-kg bags [1:1 by unit, (one bag to one pail)]. “Durex Ectoflex” is light grey when fully cured. “Durex Ectoflex” is applied in a continuous layer over the substrate to achieve a minimum wet thickness of 1.5 to 3.0 mm.

“Durex Flexcrete, Durex Green Guard, Durex Blue Shield, Durex Mastic 100 and Durex Ectoflex” WPB are applied in combination with “Durex Flexseal,” a 150-mm self-adhering rubberized flashing tape that wraps around rough openings and penetrations. In addition, the WPBs are applied in conjunction with “Durex Barrier Seam Tape,” a 100-mm wide alkali-resistant glass-fibre mesh that is applied over all joints in the sheathing. Where the sheathing joints occur in locations that are designed to accommodate deflections and/or movements, the “Durex Barrier Seam Tape” is replaced by “Durex EIFS Tape / Durex Flexseal,” lapping each side of the joint by not less than 50 mm.

Mechanical Fasteners⁽⁷⁾

(7) Mechanical fasteners are intended to be used in conjunction with “Durex Flexlite/Durex Insulite/Durex Quantum” systems that use a self-adhered modified bituminous membrane as the WPB. The fastening of the insulation boards to the substrate should precede the application of the reinforcing mesh.

Durex mechanical fasteners consist of a corrosion resistant anchoring screw and a low-profile, high density polyethylene washer that is used to secure the insulation. The spacing and frequency of the fasteners will vary depending on the type of substrate and the thickness of the insulation board. The outside face of the low-profile plastic washer should always be flush with the outside face of the EPS insulation board.

Insulation

“Durex EPS” and “Durex XPS” are typical flat EPS/XPS boards.

“Durex Quantum EPS⁽⁸⁾” is a geometrically defined drainage EPS board, featuring vertical dove-tail grooves at the back of the insulation board to allow for pressure equalization and for drainage of incidental water that may reach the substrate-insulation interface.

“Durex Quantum Select EPS” is a geometrically defined drainage EPS board featuring vertically defined drainage cavities that are 10 mm deep, 13 mm wide and 150 mm apart.

“Durex EPS, Durex Quantum EPS and Durex Quantum Select EPS” are made from 100% virgin materials and manufactured and packaged by Durabond Products Ltd.-approved and licensed manufacturer/molder. The insulation boards are aged in ambient air for a minimum of five weeks or kiln-dried.

“Durex EPS, Durex XPS, Durex Quantum EPS and Durex Quantum Select EPS” insulation boards shall conform to the following:

- CAN/ULC-S701-05, “Thermal Insulation, Polystyrene, Boards and Pipe Covering,” Type 1 for “Durex EPS, Durex Quantum EPS and Durex Quantum Select EPS”
- CAN/ULC-S701-05, Type 4 for “Durex XPS”
- Minimum board thickness of 38 mm, when using “Durex Quantum EPS” or “Durex Quantum Select EPS”
- Minimum board thickness of 25 mm when using “Durex EPS” or “Durex XPS”
- Maximum board thickness should be as designed when used in combustible construction or 110 mm when used in noncombustible construction
- Maximum board size is 600 mm x 1219 mm for “Durex EPS, Durex Quantum EPS and Durex Quantum Select EPS”
- Maximum board size is 600 mm x 2440 mm for “Durex XPS”
- Average density of 16 kg/m³ for “Durex EPS, Durex Quantum EPS and Durex Quantum Select EPS”
- Average density of 25 kg/m³ for “Durex XPS”
- Flame-spread rating: 25 - 500, per CAN/ULC-S102.2-03, Test for Surface Burning Characteristics of Building Materials and Assemblies”

(8) The aspect of pressure equalization when using “Durex Quantum EPS” and “Durex Quantum Select EPS” are beyond the scope of the present evaluation.

Synthetic Coating System (Lamina)

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

Base Coat⁽⁹⁾

“Durex Flexcrete”

See description in WPB section. When used as a base coat, “Durex Flexcrete” is applied in a continuous layer over the entire surface of the EPS insulation boards to a uniform dry thickness not less than 1.6 mm, using a stainless steel trowel.

“Durex Monobase”

See description in Adhesives section. When used as a base coat, “Durex Monobase is applied in a continuous layer over the entire surface of the EPS insulation boards to a uniform dry thickness not less than 1.6 mm, using a stainless steel trowel.

“Durex Uniplast” is a polymer-modified basecoat, supplied in 22.7 kg dry bags. It is mixed with “Durex Acrybond “S”” a water-based 100% acrylic polymer cement additive (4:1 by weight, dry mix to “Durex Acrybond“S””).

“Durex Uniplast” is noncombustible, conforming to the requirements of CAN4-S114-M80. It is applied with a stainless steel trowel to the entire surface of the EPS /XPS insulation to a uniform dry thickness not less than 1.6 mm per coat.

(9) The thickness of the base coat required depends on the number of layers and the type of reinforcing mesh used. The base coat thickness needs to be thicker when more than 1 layer of reinforcing mesh is incorporated into the lamina. The final thickness of the base coat shall be sufficient enough so that the “Durex Mesh” reinforcement is fully embedded in the base coat and not visible.

Reinforcing Mesh⁽¹⁰⁾

“Durex Mesh” is an alkali-resistant, glass-fibre reinforcing fabric that has a minimum nominal weight of 142g/m² and is manufactured by Saint-Gobain. The mesh is white and is available in rolls that are either 965, 241 or 318 mm wide and 45.7 m long. A 100 mm wide “Durex Mesh” tape is used for the treatment of sheathing joints during the application of the WPB.

The reinforcing mesh is available in five different grades, represented in descending order of strength:

- “Durex Mesh” (High impact), minimum 694 g/m²;
- “Durex Mesh” (Medium impact), minimum 508 g/m²;
- “Durex Mesh (323 Intermediate)”, minimum 349 g/m²;
- “Durex Mesh (045 Standard plus)”, minimum 190 g/m² and
- “Durex Mesh” (040 Standard), minimum 142 g/m².

(10) Higher grade meshes are intended to be used in areas requiring high impact resistance. All 5 grades of “Durex Mesh” may be used in conjunction with “Durex Insulite, Durex Flexlite, Durex Quantum and Durex Equalite” systems.

Primer

“Durex Brush Coat” is a ready-mix, water-based pigmented acrylic primer that provides a uniformly absorbent surface for “Durex Architectural Coatings” and “Durex Architectural Coatings FX.” “Durex Brush Coat” is supplied in 25-kg pails and is mixed prior to use with a paddle mixer and electric drill. The brush coat is applied using a roller/brush or sprayed uniformly over the “Durex Flexcrete, Durex Monobase or Durex Uniplast” base coats.

Finish Coat

“Durex Architectural Coating” is a ready-mix, polymer-based finish coats that comes in 30-kg pails. It is factory-tinted to the desired colour. The finish coats provide a texture that is governed by the aggregate size as well as the trowel motion used to render the wall surface. The following represents the different textures offered and their respective coating thickness: “Graffiato” (2.0 mm), “Marble Coat” (1.5 mm), “Sandex” (1.25 mm), “Stucco Spray” (1.25 mm), “Super Stipple” (1.0 mm), “Marble Coat” (1.0 mm), “Marble Coat (1.8 mm), “Venecian” (2.0 mm) and “Trim Spray” (2.0 mm).

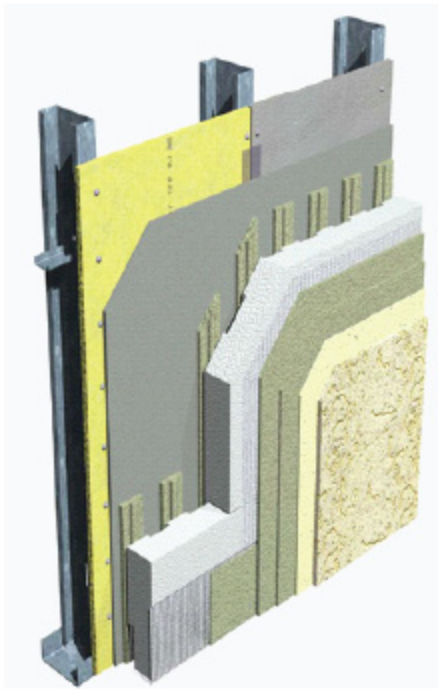
“Durex Architectural Coatings FX” is a ready-mix, factory-tinted polymer-based finish coats supplied in 30 kg pails. The finish coats provide a texture that is determined by the aggregate size as well as the trowel motion used to render the wall surface. The following represents the different textures offered and their respective coating thickness: “Graffiato FX” (2.0 mm), “Marble Coat FX” (1.5 mm), “Sandex FX” (1.25 mm), “Stucco Spray FX” (1.25 mm), “Super Stipple FX” (1.0 mm), “Marble Coat” (1.0 mm), “Marble Coat FX (1.8 mm), “Venecian FX” (2.0 mm), and “Trim Spray FX” (2.0 mm).

Table 2.1 Product details for “Durex Flexlite/Durex Insulite/Durex Quantum”

System Family	System	Distinctive System Components					
		Insulation	Intended Substrate	Water Penetration Barrier	Adhesive	Base coat	Finish coat
Durex Flexlite	Flexlite ADH	EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase	Durex Flexcrete Durex Monobase	Durex Architectural Coatings Durex Architectural Coatings FX
	Flexlite Select ADH	EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Flexcrete Durex Monobase	Durex Architectural Coatings Durex Architectural Coatings FX
			Plywood/OSB	Durex Green Guard/Durex Blue Shield			
Flexlite Select MF	EPS Type 1	Plywood/OSB	Durex Flexseal Membrane	Mechanical Fasteners	Durex Flexcrete Durex Monobase	Durex Architectural Coatings	
Durex Insulite	Insulite EW-17	EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Uniplast + Durex Acrybond 'S'	Durex Architectural Coatings Durex Architectural Coatings FX
	Insulite EW-17 Select	EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Uniplast + Durex Acrybond 'S'	Durex Architectural Coatings Durex Architectural Coatings FX
			Plywood/OSB	Durex Green Guard/Durex Blue Shield			
Insulite EXT Select ADH	XPS Type 4	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Uniplast + Durex Acrybond 'S'	Durex Architectural Coatings Durex Architectural Coatings FX	

Table 2.1 Product details for “Durex Flexlite/Durex Insulite/Durex Quantum” (cont.)

System Family	System	Distinctive System Components					
		Insulation	Intended Substrate	Water Penetration Barrier	Adhesive	Base coat	Finish coat
				Durex Ectoflex			
Durex Quantum	Quantum	Durex Quantum EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Uniplast + Durex Acrybond ‘S’ Durex Monobase	Durex Architectural Coatings Durex Architectural Coatings FX
	Quantum Select	Durex Quantum Select EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board	Durex Flexcrete Durex Green Guard Durex Blue Shield Durex Mastic 100 Durex Ectoflex	Durex Flexcrete Durex Monobase Durex VCA 3.0	Durex Uniplast + Durex Acrybond ‘S’ Durex Monobase	Durex Architectural Coatings Durex Architectural Coatings FX
			Plywood/OSB	Durex Green Guard/Durex Blue Shield			
	Quantum Select MF	Durex Quantum Select EPS Type 1	Concrete Masonry Glass Mat Gypsum Cement Board Plywood/OSB	Durex Flexseal Membrane	Mechanical Fasteners	Durex Uniplast + Durex Acrybond ‘S’ Durex Monobase	Durex Architectural Coatings FX

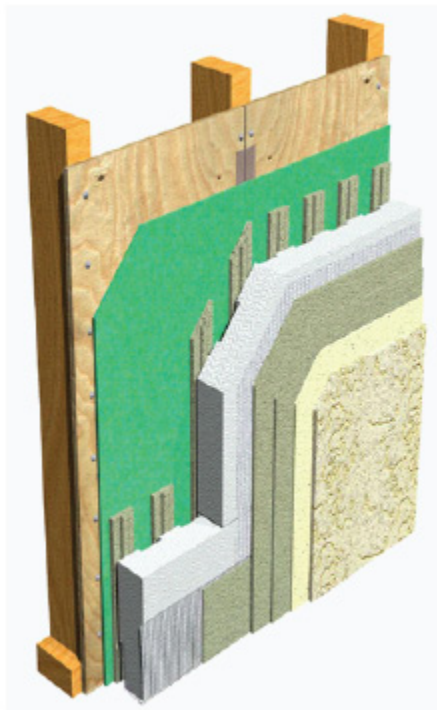


(a)

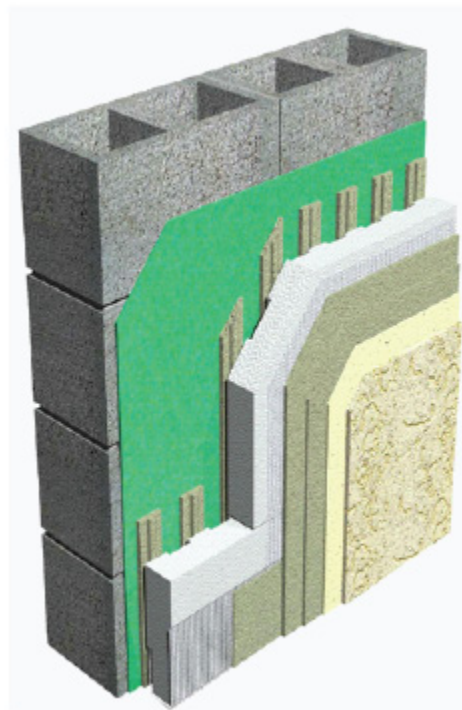


(b)

Figure 1-a “Durex Quantum Select” EIFS with glass mat gypsum/cement board over steel framing
 Figure 1-b “Durex Quantum Select MF” EIFS with wood sheathing over wood framing

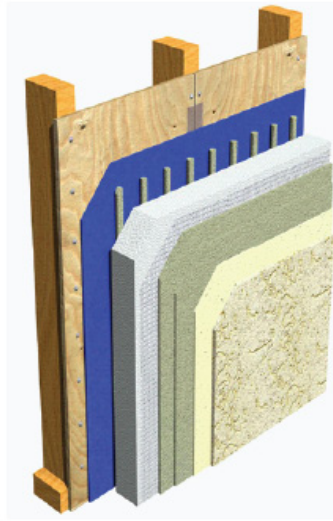
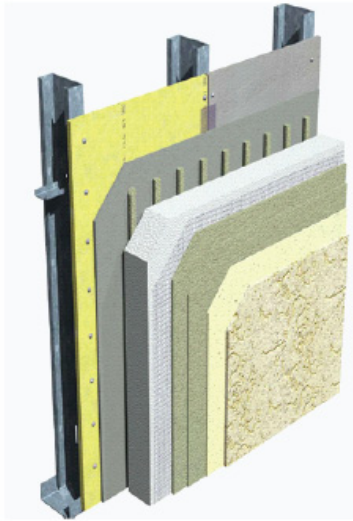


(a)



(b)

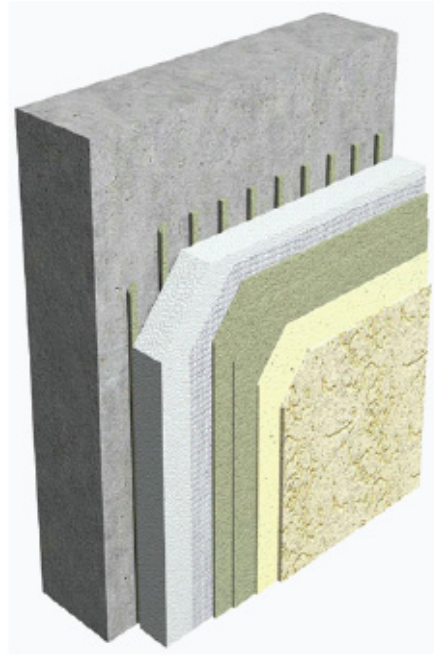
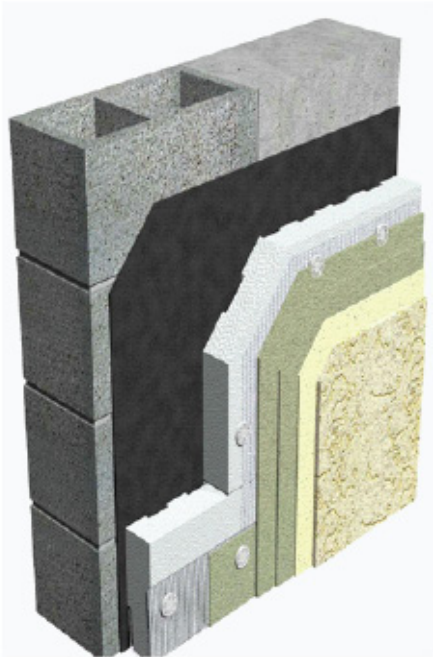
Figure 2-a. “Durex Quantum Select” EIFS with wood sheathing over wood framing
 Figure 2-b. “Durex Quantum Select” EIFS with concrete/masonry



(a)

(b)

Figure 3-a. “Durex Insulite EW-17 Select” EIFS with glass mat gypsum / cement board over steel framing
 Figure 3-b. “Durex Insulite EW-17 Select” EIFS with wood sheathing over wood framing



(a)

(b)

Figure 4-a. “Durex Quantum Select MF” EIFS with concrete/masonry
 Figure 4-b. “Durex Insulite EW-17 Select” EIFS with concrete/masonry

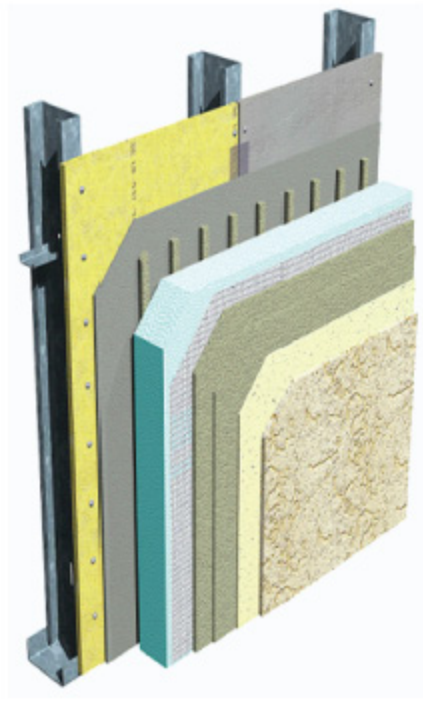


Figure 5. "Durex Insulite EXT Select ADH" EIFS with glass mat gypsum/cement board over steel framing

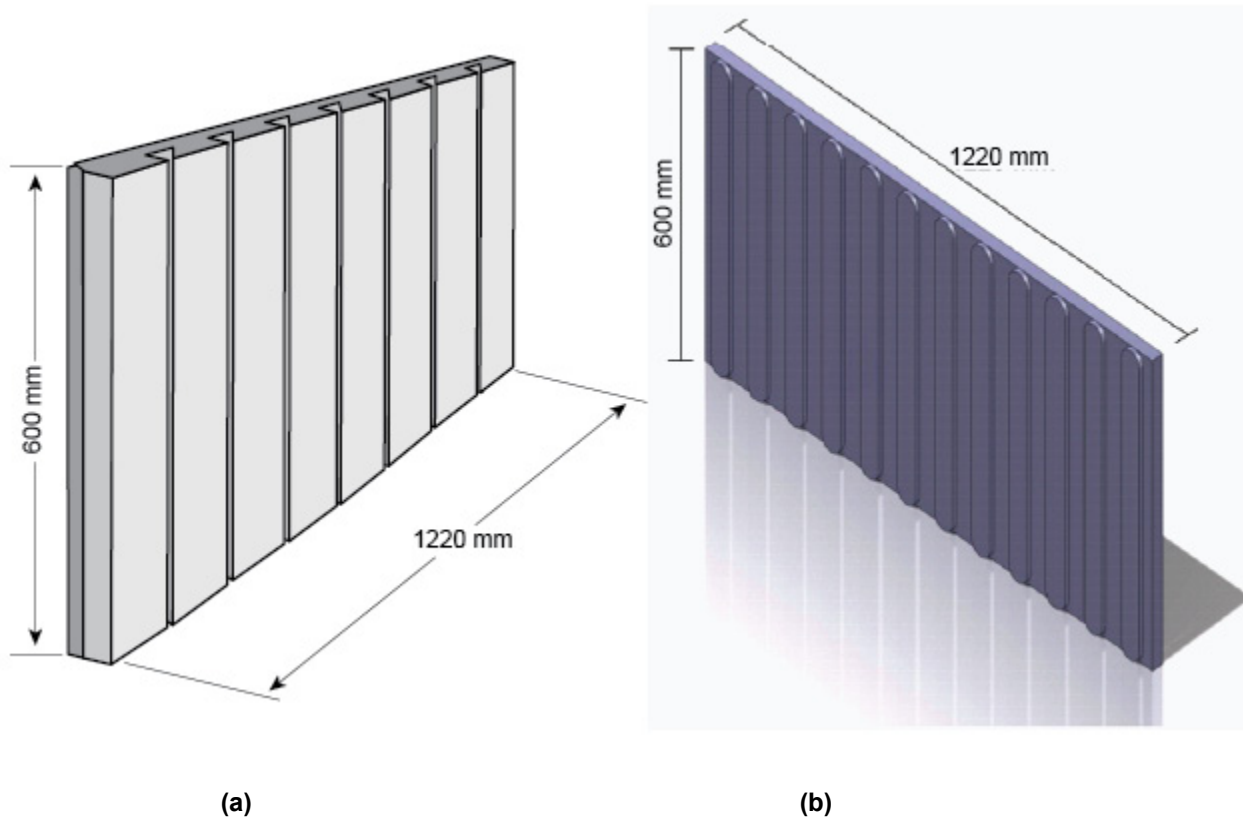


Figure 6-a. "Durex Quantum" EPS insulation drainage board

Figure 6-b. "Durex Quantum Select" EPS insulation drainage board

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “Durex Flexlite/Durex Insulite/Durex Quantum” being used in accordance with the conditions and limitations set out below.

- “Durex Flexlite/Durex Insulite/Durex Quantum” are intended for use as exterior insulation and finish wall systems applied directly to vertical walls of brick, masonry, 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 3.2 mm.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” are acceptable for use on new and existing exterior, vertical walls. The systems are not acceptable for use on horizontal surfaces.
- When “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” 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 2005.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” are not suitable for use as a structural sheathing for bracing purposes.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” are not intended for use as a below-grade insulation and should terminate at least 200 mm above grade level.
- When used in coastal areas, “Durex Flexlite/Durex Insulite/Durex Quantum” must be installed in conjunction with a capillary break conforming to Sentence 9.27.2.2.(1), Minimum Protection from Precipitation Ingress, of Division B of the NBC 2005. Coastal areas are defined in the NBC 2005 as areas where:
 - the number of degree-days is less than 3400 and the moisture index is greater than 0.90, or
 - the number of degree-days is 3400 or more, and the moisture index is greater than 1.0.
- When used in non-coastal areas the WPB coating must be installed in a two-coat application.
- The use of “Durex Flexlite/Durex Insulite/Durex Quantum” is limited to geographical areas where the wind design value is $Q_{50} < 0.75$ kPa
- The possibility of moisture accumulation within the wall construction is mainly a function of the ability of the wall assembly to deflect bulk water entry; the physical properties of the cladding being installed and its impact on the thermal, air leakage and vapour diffusion characteristics of the existing wall must be in accordance with Appendix Note A-5.1.2.1.(1), Application (environmental separation), of Division B of the NBC 2005.
- When used in new construction, the design of the inboard/outboard insulation of “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” must be in accordance with the requirements of Section 9.25., Heat Transfert, Air Leakage and Condensation Control, of Division B of the NBC 2005.
- In retrofit construction, the addition of thermal insulation onto existing exterior walls will increase the thermal efficiency and air tightness 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 Appendix Note A-9.25.2.4.(3), Loose-Fill Insulation in Existing Wood-Frame Walls, of Division B of the NBC 2005. As a result, existing exterior walls that are intended to be retrofitted with EIFS must meet the requirements of the NBC 2005 for heat transfer, air leakage and condensation control.

- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” can provide additional thermal insulation to the wall assembly in retrofit construction with no detrimental effects if properly installed with knowledge of the existing wall configuration and performance.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” alone may not provide the full amount of the required wall insulation. The thermal resistance of the wall system shall conform to the energy requirements of the applicable building code. The wall system may have to conform to the Model National Energy Code of Canada for Buildings 1997 as a minimum to meet CMHC technical requirements.
- The polystyrene thermal insulation must be aged for a minimum of five weeks or kiln-dried before installation.
- Where allowed by the Code through conformance to Clause 3.2.3.8.(1)(b), Protection of Exterior Building Face, of Division B of the NBC 2005, “Durex Quantum, Durex Quantum Select, Durex Insulite EW-17, Durex Insulite EW-17 Select, Durex Flexlite Select ADH and Durex Flexlite ADH” are acceptable for use in the exposed face of buildings required to be of non-combustible construction, provided the interior surfaces of the wall assembly are protected by a thermal barrier conforming to Sentence 3.1.5.12.(3), Combustible Insulation and its Protection, of Division B of the NBC 2005. For a detailed description of the compliance of these products to the requirements of Clause 3.2.3.8.(1)(b) of Division B of the NBC 2005, please refer to ULC Listings, ULC FWFOC.EW17, ULC FWFOC.EW21 and ULC FWFOC.EW22 for further details on the combination of coatings/systems falling under the scope of the said listings.
- When used in noncombustible construction, the polystyrene insulation must be protected from the inside of the building in accordance with Sentence 3.1.5.12.(2). of Division B of the NBC 2005.
- 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 2005.
- The systems should be kept at least 50 mm, or as required in building regulations and safety codes, from heat-emitting devices, such as recessed light fixtures and chimneys.
- The requirements of the NBC 2005 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-M88, “Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.”
- Expansion joints must be carried through the cladding. Movement joints are required to accommodate expansion and contraction of building materials due to thermal changes, moisture, wind, gravity, vibration and seismic activity. Expansion joints must be used in the following situations:
 - at joints that occur in the substrate,
 - at any abutment of the system with other materials,
 - where the substrate changes,
 - where significant structural movement occurs,
 - where deflections in excess of L/240 are expected, and
 - at the floor line in wood-frame construction (may not be required when using engineered wood beams).
- Closed-cell backer rods should be used at expansion joints so that the low-modulus sealant may be installed as per the sealant manufacturer’s instructions.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” must be installed according to Durabond Products Ltd. Standard Specification manual, dated August 2007, by applicators authorized by the manufacturer, and/or holding an EIFS QAP certificate.

- Wet materials must be applied at temperatures above 4°C and maintained above 4°C for a period not less than 24 hours. The substrate must be maintained above 4°C for a period not less than 24 hours. Cool and humid climatic conditions may extend drying time beyond 24 hours. Temporary protection and heat must be provided during colder conditions. Materials must be stored at temperatures between 5°C and 32°C. Previously frozen materials must not be used.
- Wet, finished surfaces must be protected from rain and wind-driven moisture until the materials have set and hardened.
- “Durex Flexlite/Durex Insulite/Durex Quantum” and “Durex Equalite” must be installed with suitable flashing to drain any incidental water from the drainage cavity to the exterior and to protect the exposed top edge of the cladding. Cap flashing must be installed immediately after completion of the finish coat or temporary protection must be provided.
- Glass-mat gypsum sheathing must be in compliance with the requirements of ASTM C 1177/C 1177M-04e1, “Glass Mat Gypsum Substrate for Use as Sheathing,” or have been evaluated by CCMC.
- Specification of surface sealers must be provided by the manufacturer.
- The drainage cavity created by the use of the notched-trowel adhesive ribbons and/or the channels or profiles in the EPS (in the case of “Durex Quantum” and “Durex Quantum Select”) shall remain unobstructed by any other obstructions so as to form a clear drainage cavity behind the insulation boards. When using notched trowel adhesive ribbons as the drainage mechanism, the application of the ribbons shall be conducted in a way as to form clear and parallel drainage paths behind the insulation boards and to avoid the creation of any 'V' grooves.
- When using flat EPS insulation over OSB/plywood sheathing boards, the notched trowel adhesive ribbons shall be 64 mm wide and spaced at a minimum of 114 mm. The first 50 mm from the vertical edges of the EPS boards shall remain free from any adhesive ribbons to avoid the creation of V grooves.
- OSB and/or plywood sheathing boards used in conjunction with “Durex Quantum Select, Durex Quantum Select MF and Durex Insulite EW-17 Select” must comply with the requirements of CSA O437.0-93, “OSB and Waferboard” (in the case of OSB) and CSA O121-M1978, “Douglas Fir Plywood,” CSA O151-M1978, “Canadian Softwood Plywood,” CSA O153-M1980, “Poplar Plywood” or CSA O325.0-92, “Construction Sheathing” (in the case of plywood). The OSB and/or plywood sheathing boards must have a minimum thickness of 11.1 mm and 12.7 mm, respectively. The boards must have their principal strength-direction across the studs, must be continuously supported by framing, and must be gapped at least 2.0 mm and not more than 3.0 mm.
- OSB and/or plywood sheathing boards used in conjunction with “Durex Quantum Select, Durex Quantum Select MF and Durex Insulite EW-17 Select” must be fastened to the framing in conformance with Article 9.23.3.5., Fasteners for Sheathing or Subflooring, of Division B of the NBC 2005.
- The moisture content of lumber and/or wood sheathing must not be more than 19% at the time of the application of the WPB.

4. Technical Evidence

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

4.1 Performance Requirements

Table 4.1.1 Ash content

Property	Unit	Requirement	Result
Ash content of:			
• WPB (Durex Flexcrete)	%	Report value	63.2
• WPB (Durex Ectoflex)			0.41
• Adhesive (Durex VCA 3.0)			63.2

Table 4.1.2 Infrared Analysis

Property	Unit	Requirement	Result
Infrared analysis of:			
• WPB (Durex Flexcrete)	%	Report value	Report on file
• WPB (Durex Ectoflex) Dry			
• WPB (Durex Ectoflex) Liquid			
• Adhesive (Durex Monobase)			
• Adhesive (Durex VCA 3.0)			
• Finish coat ⁽¹⁾			

Note to Table 4.1.2:

(1) Finish coat refers to “Durex Architectural Coatings” and “Durex Architectural Coatings FX”.

Table 4.1.3 Adhesion of WPB to substrates other than plywood/OSB

Property	Unit	Requirement	Result	
Adhesion bond of:		No detachment at bonding plane @:		
Durex Flexcrete to Cement Board	MPa			
• dry state		0.3	–	
• 2 h drying		0.1	0.51	
• 7 d drying		0.3	0.65	
Durex Flexcrete to Glass-Mat Gypsum				
• dry state		0.3	-	
• 2 h drying		0.1	0.13	
• 7 d drying		0.3	0.38	
Durex Green Guard/Blue Shield to Concrete				
• dry state		0.3	0.53	
• 2 h drying		0.1	0.55	
• 7 d drying		0.3	0.67	
Durex Green Guard/Blue Shield to Glass Mat Gypsum				
• dry state		0.3	0.53	
• 2 h drying		0.1	0.55	
• 7 d drying	0.3	0.67		
Durex Ectoflex to Concrete				

Table 4.1.3 Adhesion of WPB to substrates other than plywood/OSB (cont.)

Property	Unit	Requirement	Result
• dry state		0.3	1.65
• 2 h drying		0.1	0.87
• 7 d drying		0.3	1.63
Durex Ectoflex to Cement Board			
• dry state		0.3	0.58
• 2 h drying		0.1	0.20
• 7 d drying		0.3	0.50
Durex Ectoflex to Glass-Mat-Gypsum			
• dry state		0.3	0.32
• 2 h drying		0.1	0.12
• 7 d drying		0.3	0.31

Table 4.1.4 Adhesion bond of adhesive to WPB

Property	Unit	Requirement	Result
Adhesion bond of:	MPa	No detachment at bonding plane @:	
Durex Flexcrete to Durex Green Guard			
• dry state		0.3	–
• 2 h drying		0.1	0.14
• 7 d drying		0.3	0.38
Durex Flexcrete to Durex Ectoflex			
• dry state		0.3	1.25
• 2 h drying		0.1	0.76
• 7 d drying		0.3	1.30
Durex Flexcrete to Durex Mastic 100			
• dry state		0.3	–
• 2 h drying		0.1	0.44
• 7 d drying		0.3	0.84
Durex VCA to Durex Green Guard/Blue Shield			
• dry state		0.3	1.73
• 2 h drying		0.1	0.98
• 7 d drying		0.3	1.60
Durex VCA to Durex Flexcrete			
• dry state		0.3	1.66
• 2 h drying		0.1	1.14
• 7 d drying		0.3	1.72
Durex VCA to Durex Ectoflex			
• dry state		0.3	1.56
• 2 h drying		0.1	0.95
• 7 d drying		0.3	1.36
Durex Monobase to Durex Green Guard/Blue Shield			
• dry state		0.3	–
• 2 h drying		0.1	0.14

Table 4.1.4 Adhesion bond of adhesive to WPB (cont.)

Property	Unit	Requirement	Result
• 7 d drying		0.3	0.40
Durex Monobase to Durex Ectoflex			
• dry state		0.3	1.38
• 2 h drying		0.1	0.64
• 7 d drying		0.3	1.38
Durex Monobase to Durex Flexcrete			
• dry state		0.3	–
• 2 h drying		0.1	0.13
• 7 d drying		0.3	0.38

Table 4.1.5 Adhesion bond of adhesive to insulation

Property	Unit	Requirement	Result
Adhesion bond of:	MPa	No detachment at bonding plane @:	
Durex Flexcrete to EPS			
• dry state		0.1	–
• 2 h drying		0.1	0.62
• 7 d drying		0.1	0.90
Durex Monobase to EPS			
• dry state		0.1	–
• 2 h drying		0.1	0.35
• 7 d drying		0.1	0.38
Durex VCA 3.0 to EPS			
• dry state		0.1	0.28
• 2 h drying		0.1	0.23
• 7 d drying		0.1	0.27
Durex Monobase to XPS			
• dry state		0.1	–
• 2 h drying		0.1	0.24
• 7 d drying		0.1	0.78

Table 4.1.6 Lamina bond strength tests (base coat/finish coat/insulation)

Property	Unit	Requirement	Result
Adhesion bond of:	MPa	No detachment at bonding plane @:	
Durex Flexcrete (Venecian) to EPS			
• dry state		0.1	–
• 2 h drying		0.1	0.62
• 7 d drying		0.1	0.90
Durex Monobase (Venecian) to EPS			
• dry state		0.1	–
• 2 h drying		0.1	0.35
• 7 d drying		0.1	0.38
Durex Monobase (Venecian) to XPS			

Table 4.1.6 Lamina bond strength tests (base coat/finish coat/insulation) (cont.)

Property	Unit	Requirement	Result
• dry state		0.1	–
• 2 h drying		0.1	0.24
• 7 d drying		0.1	0.78
Durex Uniplast (Venecian) to EPS			
• dry state		0.1	–
• 2 h drying		0.1	0.52
• 7 d drying		0.1	0.65
Durex Uniplast (Venecian) to XPS			
• dry state		0.1	–
• 2 h drying		0.1	0.45
• 7 d drying		0.1	1.21

Table 4.1.7 Water vapour transmission of WPB

Property	Unit	Requirement	Result
Water vapour transmission of:	ng/pa·s·m ²	Report value	
Durex Flexcrete			276
Green Guard/Blue Shield			
• 1 mm wet			48
• 1.5 mm wet			11
Mastic 100			
• 1.5 mm wet			248
• 2.5 mm wet			216
Durex Ectoflex			
• 1.5 mm 1 coat (wet)			90
• 1.5 mm 2 coat (wet)			77

Table 4.1.8 Water vapour transmission of lamina

Property	Unit	Requirement	Result
Water vapour transmission of:	ng/pa·s·m ²	≥ WVP of EPS	
Base coat (Durex Flexcrete)			276
Base coat (Durex Flexcrete)/EPS			65.77
Base coat (Durex Uniplast)/EPS			43.03
Base coat (Durex Monobase)/EPS			47.13
Finish coat (Venecian)			387

Table 4.1.9 Water absorption

Property	Unit	Requirement	Result
Water absorption of base coat:	%	≤ 20 of the dry weight	
Durex Flexcrete			9.27
Durex Monobase			11.52
Durex Uniplast			11.56

Table 4.1.10 Water absorption coefficient of WPB at 72 hours

Property	Unit	Requirement	Result
Water absorption coefficient of (WPB) @72 hours of:	kg/(m ² · s ^{1/2})	≤ 0.004	
Durex Flexcrete			0.0007
Durex Green Guard			0.0001
Durex Blue Shield			0.0001
Durex Mastic 100			0.0006
Durex Ectoflex:			
• 0.75 mm (wet)			0.0006
• 1.0 mm			0.0005
• 1.5 mm			0.0005

Table 4.1.11 Impermeability to water

Property	Unit	Requirement	Result
Impermeability to water of base coat:	Hours	No water penetration in less than 2 h	
Durex Flexcrete			Pass
Durex Monobase			Pass
Durex Uniplast			Pass

Table 4.1.12 Mildew and fungus resistance

Property	Unit	Requirement	Result
Mildew and fungus resistance finish coat (Venecian)	No unit	No growth	Pass

Table 4.1.13 Accelerated weathering resistance

Property	Unit	Requirement	Result
Accelerated weathering resistance of:	No unit	No cracking, flaking or deleterious effects	
Lamina @ 2000 hrs:			
• Durex Flexcrete (Venecian)			Pass
• Durex Uniplast (Venecian)			Pass
• Durex Monobase (Venecian)			Pass
WPB @ 250 hrs:			
• Durex Green Guard			Pass
• Durex Blue Shield			Pass

Table 4.1.14 Salt spray resistance

Property	Unit	Requirement	Result
Salt spray resistance @ 300 hours:	No unit	No cracking, flaking or deleterious effects	
Durex Flexcrete			Pass
Durex Monobase			Pass
Durex Uniplast			Pass

Table 4.1.15 Durability under environmental cyclic conditions

Property	Unit	Requirement	Result
Preconditioning (drainage evaluation)	Liters	Report water quantity	
		• Introduced	13.5
		• Drained	9.60
		• Retained	3.90
Environmental cycling (60 cycles) ⁽¹⁾	No unit	No cracking, blistering or sagging of base coat, and no detachment or crazing of finish coat	Pass
Reduction in adhesive bond strength	MPa	0.1	0.8

Note to Table 4.1.15:

(1) The chosen system for the durability under environmental cyclic conditions was based on a worse-case scenario. The required number of cycles is 60, however, the system was tested for up to 120 cycles and met the established requirements.

Table 4.1.16 Breaking strength resistance of reinforcement mesh = (155.0 g/m² - Gavazzi S.A.)

Property	Unit	Requirement	Result	
			Weft	Warp
Initial strength	N/mm	35	68	50
Loss of strength after	%	<ul style="list-style-type: none"> • ≤ 60 for adhered EIFS • ≤ 50 mechanically fastened EIFS 		
• 30-day soak			29	28
• 60-day soak			38	28
• 90-day soak			46	26
Residual strength after	N/mm	<ul style="list-style-type: none"> • ≥ 15 for adhered EIFS • ≥ 25 mechanically fastened EIFS 		
• 30-day soak			48	36
• 60-day soak			42	36
• 90-day soak			37	37

Table 4.1.17 Breaking strength resistance of reinforcement mesh (201.0 g/m² - Saint-Gobain)

Property	Unit	Requirement	Result	
			Weft	Warp
Initial strength	N/mm	35	39.5	52.4
Loss of strength after	%	<ul style="list-style-type: none"> • ≤ 60 for adhered EIFS • ≤ 50 mechanically fastened EIFS 		
• 30-day soak			13	29
• 60-day soak			35	40
• 90-day soak			32	48
Residual strength after	N/mm	<ul style="list-style-type: none"> • ≥ 15 for adhered EIFS • ≥ 25 mechanically fastened EIFS 		
• 30-day soak			34.3	37.4
• 60-day soak			25.8	31.4
• 90-day soak			27.0	27.1

Table 4.1.18 Impact resistance

Property	Unit	Requirement	Result
Impact resistance	No units	Six of 10 free-fall drops shall show no perforation (broken mesh)	
10 joules:			
• Durex Flexcrete/(040 std. mesh 142 g/m ²) (Venecian)			Pass
• Durex Uniplast/(040 std. mesh 142 g/ m ²) (Venecian)			Pass
3 joules:		Six of 10 free-fall drops shall show no cracks	
• Durex Flexcrete/(040 std. mesh 142 g/m ²) (Venecian)			Pass
• Durex Uniplast/(040 std. mesh 142 g/ m ²) (Venecian)	Pass		

Table 4.1.19 Wind load resistance ⁽¹⁾⁽²⁾

Pressure (kPa)	Net mid-spans stud deflection under negative loads (mm)	Net mid-span sheathing deflection under negative loads (mm)
	Span: 3124 mm	Span: 406 mm
-0.72	4.5	0.6
-1.44	9.6	1.5
-2.16	13.9	3.0
-2.88 ⁽³⁾	20.1	6.1

Notes to Table 4.1.19:

(1) The wind load testing on “Durex Flexlite/Durex Insulite/Durex Quantum” has been conducted based on ASTM E 330-90 “Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.” We would roughly correspond the obtained test pressure result (2.80 kPa) to the “one in fifty” (Q₅₀) wind pressure loadings that are less than 0.75, Q₅₀ < 0.75 kPa. The “one in fifty” (Q₅₀) wind pressure loadings that are less than 0.75, Q₅₀ < 0.75 kPa correspond to a sustained wind pressure load P₁, P₁' of 750 Pa, a cyclic load P₂, P₂' of 1090 Pa and a gust load P₃, P₃' of 1630 Pa.

(2) Based on the following assumption:

- Wall assembly specimen of 3048 mm x 3124 mm,
- 18-gauge steel stud @ 406 mm c/c with 13 mm -thick glass-fibre-faced gypsum sheathing mechanically fastened to steel studs with 32-mm-long self-drilling screws @ 300 mm c/c,
- “Durex Flexcrete” trowel-applied onto the sheathing substrate, "Flexcrete" as an adhesive/base coat and "Durex Architectural Coatings" as a finish coat,
- 600 mm x 1200 mm, 50 mm thick expanded polystyrene insulation adhered to the substrate using “Flexcrete,” trowel-applied adhesive/base coat.
- “Flexcrete” base coat embedding 142 g/m² reinforcing mesh.

(3) Sheathing separation from steel studs at 2.80 kPa.

Applications over Wood Substrates (Plywood/OSB)

Table 4.1.20 Adhesion of WPB to plywood/OSB substrates

Property	Unit	Requirement	Result
Adhesion bond to OSB of:	MPa	No detachment at bonding plane @	
Durex Green Guard/Blue Shield			
• dry state		0.3	0.583
• 1 h soaking		0.3	0.694
• 24 hrs soaking		0.3	0.864
Durex Mastic 100			
• dry state		0.3	–
• 1 h soaking		0.3	0.44
• 24 hrs soaking		0.3	0.84

Table 4.1.21 Joint disruption resistance

Property	Unit	Requirements ⁽¹⁾	Result		
Joint disruption resistance		The WPB at joints on 2 assemblies shall show no cracking, delaminating or any other deleterious effects at a transverse bending of L/180	Joint Width		
			2 mm	4 mm	
Joint Extension @ L/180 (mm)	mm	Report Value	0.12	0.17	Pass
Joint Extension @ L/360 (mm)			0.09	0.11	
Joint Extension @ L/720 (mm)			0.05	0.06	
Applied Load @ L/180 (kN)	kN		5.82	5.85	
Applied Load @ L/360 (kN)			2.93	2.94	
Applied Load @ L/720 (kN)			1.44	1.47	

Note to Table 4.1.21:

(1) The system's joint disruption resistance was measured as well at L/360 and L/720.

Table 4.1.22 Joint relaxation resistance

Property	Unit	Requirement	Result	
Joint relaxation resistance	kg/m ² .s	Five WPB-coated OSB specimens subject to 1.3 mm extension following exposure to fifteen 24-hr environmental cycles shall have a max. average Water Transmission Rate (WTR) of 2×10^{-7} kg/m ² .s	Sample No.	
			1	1.39×10^{-7}
			2	1.02×10^{-7}
			3	1.31×10^{-7}
			4	0.64×10^{-7}
			5	1.18×10^{-7}

Table 4.1.23 Water transmission resistance

Property	Unit	Requirement	Result	
Water transmission resistance	kg/m ² .s	Five WPB-coated OSB specimens subjected to a 25 mm head of water shall have a max. average WTR rate of 2×10^{-7} kg/m ² .s measured at 10 days	Sample No.	
			1	0.96×10^{-7}
			2	1.52×10^{-7}
			3	0.80×10^{-7}
			4	0.91×10^{-7}
			5	0.86×10^{-7}

Table 4.1.24 Water vapour transmission

Property	Units	Requirements	Result			
Water vapour transmission	ng/ pa.s.m ²	Report value of the WVT rate of the WPB in combination with the OSB applied at the maximum thickness and the OSB alone.	Sample No.	Coated	Un-coated	Difference
			1	67.5	112.8	45.3
			2	68.1	131.1	63
			3	64.3	120.2	55.9
			Average	66.6	121.4	54.8

Table 4.1.25 Accelerated weathering of WPB

Property	Unit	Requirement	Result	
Accelerated weathering resistance	No units	The WPB applied over OSB shall show no cracking, delamination, flaking or any deleterious effects following 250 hrs exposure to Xenon arc.	Sample No.	
			1	Pass
			2	Pass
			3	Pass
			4	Pass
			5	Pass
			6	Pass

Table 4.1.26 Drainage capacity

Property	Requirement	Result			
		Retained water (g)	1 hr	48 hrs	
Drainage Capacity	Panel 1 total (g)				
	The unit-retained water (based on the projected drainage area) following one hour, and 48 hours of drainage period shall not be greater than 30g/m ² and 15 g/m ² respectively for any single test specimen	Per unit area (g/m ²)	24.7	0.0	Pass
	The drainage capacity shall not be less than 98% of the water mass delivered into the EIFS wall specimen	Drainage capacity (%)	99.6		
	Panel 2 total (g)				
	The unit-retained water (based on the projected drainage area) following one hour, and 48 hours of drainage period shall not be greater than 30g/m ² and 15 g/m ² respectively for any single test specimen	Per unit area (g/m ²)	18.3	0.0	Pass
	The drainage capacity shall not be less than 98% of the water mass delivered into the EIFS wall specimen	Drainage capacity (%)	99.7		
	Panel 3 total (g)				
	The unit-retained water (based on the projected drainage area) following one hour, and 48 hours of drainage period shall not be greater than 30g/m ² and 15 g/m ² respectively for any single test specimen	Per unit area (g/m ²)	20.3	0.0	Pass
	The drainage capacity shall not be less than 98% of the water mass delivered into the EIFS wall specimen	Drainage capacity (%)	99.7		

Table 4.1.27 Nail popping resistance

Property	Units	Requirement	Result	
Nail popping resistance	No unit	There shall be no cracking or delamination of the WPB following 1 mm nail protrusion from the nails original preset of 1 mm below the surface of the OSB substrate.	Sample No.	
			1	Pass
			2	Pass
			3	Pass
			4	Pass
			5	Pass
			6	Pass

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