



Evaluation Report CCMC 12913-R Adex-RS / Adex-VCA / Adex-MFS

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1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “Adex-RS / Adex-VCA / Adex-MFS” exterior insulation and finish systems, when used as an exterior wall cladding that is designed to provide additional thermal insulation and a weather barrier for new and retrofit construction in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code (NBC) of Canada 2010:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Article 3.1.5.5., Combustible Components for Exterior Walls¹
 - Clause 3.1.5.12.(3)(d), Combustible Insulation and its Protection
 - Clause 3.2.3.8.(1)(b), Protection of Exterior Building Face¹
 - 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 9.27.2.2.(6), Minimum Protection from Precipitation Ingress
 - Sentence 9.27.2.3.(1), First and Second Planes of Protection
- 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)

The product has also been deemed to comply with the following standard:

- CAN/ULC-716.1-12, “Standard for Exterior Insulation and Finish Systems (EIFS) – Materials and Systems.”

This opinion is based on CCMC’s evaluation of the technical evidence in Section 4 provided by the Report Holder.

¹ See Section 4.1.27, Fire Performance of this Report.

Ruling No. 17-05-342 (12913-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 2017-05-04 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.

2. Description

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

- substrate;
- water penetration barrier coating;
- adhesive or mechanical fastener attachment;
- insulation board; and
- coating system (lamina).²

² 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.

A detailed description of the different product components of the system are discussed in the following sections.

Substrate

For applications falling under the scope of this Report, the substrate can be brick, masonry, monolithic concrete walls, 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 3.2 mm.

Water Penetration Barrier

The water penetration barrier (WPB) is a trowelled-on coating or a self-adhered modified bituminous membrane 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 case of systems with a WPB consisting of a trowelled-on coating, the continuity of the second plane of protection across joints and junctions at openings, penetrations and expansion joints must be maintained through 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 trowelled-on coating (WPB) must be installed in a two-coat application in which the first coat must have sufficient time to cure before the second coat is applied.

In the case of systems with a WPB consisting of a single layer of a self-adhered modified bituminous membrane that is installed over the substrate and around penetrations and openings, the insulation boards must be attached using mechanical fasteners to the studs or to the substrate that would have been designed to support the cladding.

Trowelled-on Coating (WPB)

“Adex Hydroflex AD” is a ready-to-use polymer-based liquid coating that is integrally reinforced with polypropylene fibres. “Adex Hydroflex AD” is supplied in 27.3-kg pails and is trowel applied in a continuous layer over the substrate to a wet thickness of 2.2 mm, which results in a dry thickness of 1.4 mm.

“Adex Hydroflex WO” is a rubber-based liquid-applied coating, supplied in 27.3-kg pails. It is applied using a trowel to a wet thickness of 1.3 mm, which results in a dry thickness of 0.8 mm.

“Adex Hydroflex VB” is a rubber-based liquid coating, supplied in 18-kg pails. It is applied using a trowel to a wet thickness of 0.7 mm, which results in a dry thickness of 0.4 mm.

“Adex Hydroflex STD” is a polymer-based wet mix coating that is supplied in 27.2-kg pails and is mixed on-site with Type GU Portland cement (1:1 by weight). “Adex Hydroflex STD” is applied in a continuous layer over the substrate to achieve a minimum wet thickness of 1.6 mm.

Self-Adhered Modified Bituminous Membrane

“SOPRASEAL STICK 1100T” or its equivalent would meet the waterproof characteristics of CGSB 37-GP-56M, Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing.” “SOPRASEAL STICK 1100T” is a self-adhered modified bituminous membrane consisting of a styrene butadiene styrene (SBS) rubberized asphalt compound, which is integrally laminated to a woven polyethylene film on one side and has a silicone-treated release backing on the reverse side. The membrane has a minimum thickness of 1 mm.

Adhesives

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 on-site, or a wet paste that does not require any additives.

“Adex Basecoat” is a polymer-based adhesive supplied in 27-kg pails. The adhesive is mixed on-site with Type GU Portland cement (1:1 by weight). Workability may be adjusted by the addition of a maximum of one (1) cup of clean potable water.

“Adex Basecoat” is applied in a continuous layer over the WPB 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 must be 38 mm and the size of the notches must be 9 mm wide and 13 mm deep.

Mechanical Fasteners

Mechanical fasteners are used for attaching the insulation to the substrate in systems having a self-adhered modified bituminous membrane as the WPB.

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

Insulation

“Adex Flat Board” and “Adex EPS-GD Board” are Type 1 or Type 2 polystyrene foam insulation boards that are made from 100% virgin materials and manufactured and packaged by an Adex Systems Inc. approved and licensed manufacturer/moulder. The insulation boards are aged in ambient air for a minimum of five weeks or kiln-dried.

“Adex Flat Board” is a typical flat EPS board.

“Adex EPS-GD Board” is an EPS board that features a proprietary drainage design consisting of diamond-shaped EPS protrusions. See Figure 1.

“Adex Flat Board” and “Adex EPS-GD Board” insulation boards must conform to the following:

- CAN/ULC-S701-01 and CAN/ULC-S701-05, “Thermal Insulation, Polystyrene, Boards and Pipe Covering”;
- Minimum board thickness of 25 mm when using “Adex Flat Board”;
- Minimum board thickness of 38 mm, when using “Adex EPS-GD Board”;
- Maximum board thickness:
 - As designed, when used in combustible construction, and
 - 127 mm, when used in non-combustible construction.
- Maximum board size is 600 mm × 1 219 mm;
- Average density of 16 kg/m³ for Type 1 and 24 kg/m³ for Type 2 EPS; and
- Flame-spread rating: 25–500, per CAN/ULC-S102.2-03, “Test for Surface Burning Characteristics of Building Materials and Assemblies.”

Synthetic Coating System (Lamina)

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

Base Coat

“Adex Basecoat” is a polymer-based adhesive supplied in 27-kg pails. “Adex Basecoat” is mixed on-site with Type GU Portland cement (1:1 by weight). Workability may be adjusted by the addition of a maximum of one (1) cup of clean potable water.

“Adex Basecoat” 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. The final thickness of “Adex Basecoat” must be sufficient enough so that the “Adex reinforcing mesh” is fully embedded in the base coat and not visible.

Reinforcing Mesh

“Adex Standard Mesh” is an alkali-resistant, glass-fibre reinforcing fabric that has a minimum nominal weight of 142 g/m² when using reinforcing mesh manufactured by both Gavazzi S.A. and Saint Gobain Adfor Canada Ltd. The mesh has trimmed edges to minimize the build-up on overlapping seams. Gavazzi S.A. manufactures mesh rolls that are red in colour and are 1 m wide and 44 m long. The mesh rolls made by Saint Gobain Adfor Canada Ltd. are 965 mm, 318 mm or 241 mm wide and 45.7 m long. Starter mesh for rendering surface articulations and terminations is available in rolls that are 240 mm wide.

The reinforcing mesh comes in the following six grades, represented in ascending order of strength:

- “Adex Standard Mesh” and “Adex Starter Mesh,” minimum 142 g/m²;
- “Adex Standard Mesh SG,” minimum 201 g/m²;
- “Adex Standard Mesh Plus,” minimum 190 g/m²;
- “Adex Intermediate Mesh,” minimum 375 g/m²; and
- “Adex Armour Mesh,” minimum 500 g/m².

Primer

“Primex is a ready-mix, polymer-based, slightly textured and coloured acrylic primer that provides a uniformly absorbent surface for selected “Adex Finish” coats. “Primex” is supplied in 24-kg pails. It is thoroughly mixed using a paddle mixer with an electric drill, and is applied using a long-bristled roller or a paintbrush.

Finish Coat

“Adex Finish” is a ready-mix, polymer-based finish coat supplied in 30-kg pails. It is factory-tinted to a desired colour. 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: “Siena” (2 coats), “Elasticoat Fine,” “Sands and Classix” (0.85 mm); “Medium,” “Elasticoat Medium,” “Mistral,” “Quartex” and “Monaco” (1.14 mm); “Platene,” “Micatex” and “Coarse” (1.20 mm).

Table 2.1 System Components of “Adex-RS / Adex-VCA / Adex-MFS”

System	Component						
	Insulation	Intended Substrate	Water Penetration Barrier	Adhesive	Base Coat	Primer	Finish Coat
Adex-RS	Adex EPS-GD Board	concrete masonry cement board glass-mat gypsum	Adex Hydroflex VB Adex Hydroflex WO Adex Hydroflex STD Adex Hydroflex AD	Adex Basecoat	Adex Basecoat	Primex	Adex Finish
		plywood/OSB	Adex Hydroflex WO	Adex Basecoat	Adex Basecoat	Primex	Adex Finish
Adex-VCA	Adex Flat Board	concrete masonry cement board glass-mat gypsum	Adex Hydroflex VB Adex Hydroflex WO Adex Hydroflex STD Adex Hydroflex AD	Adex Basecoat	Adex Basecoat	Primex	Adex Finish
	Adex Flat Board	plywood/OSB	Adex Hydroflex WO	Adex Basecoat	Adex Basecoat	Primex	Adex Finish
Adex-MFS	Adex Flat Board Adex EPS-GD Board	concrete masonry cement board glass-mat gypsum plywood/OSB	Self-adhered modified bituminous membrane	Mechanical fasteners	Adex Basecoat	Primex	Adex Finish

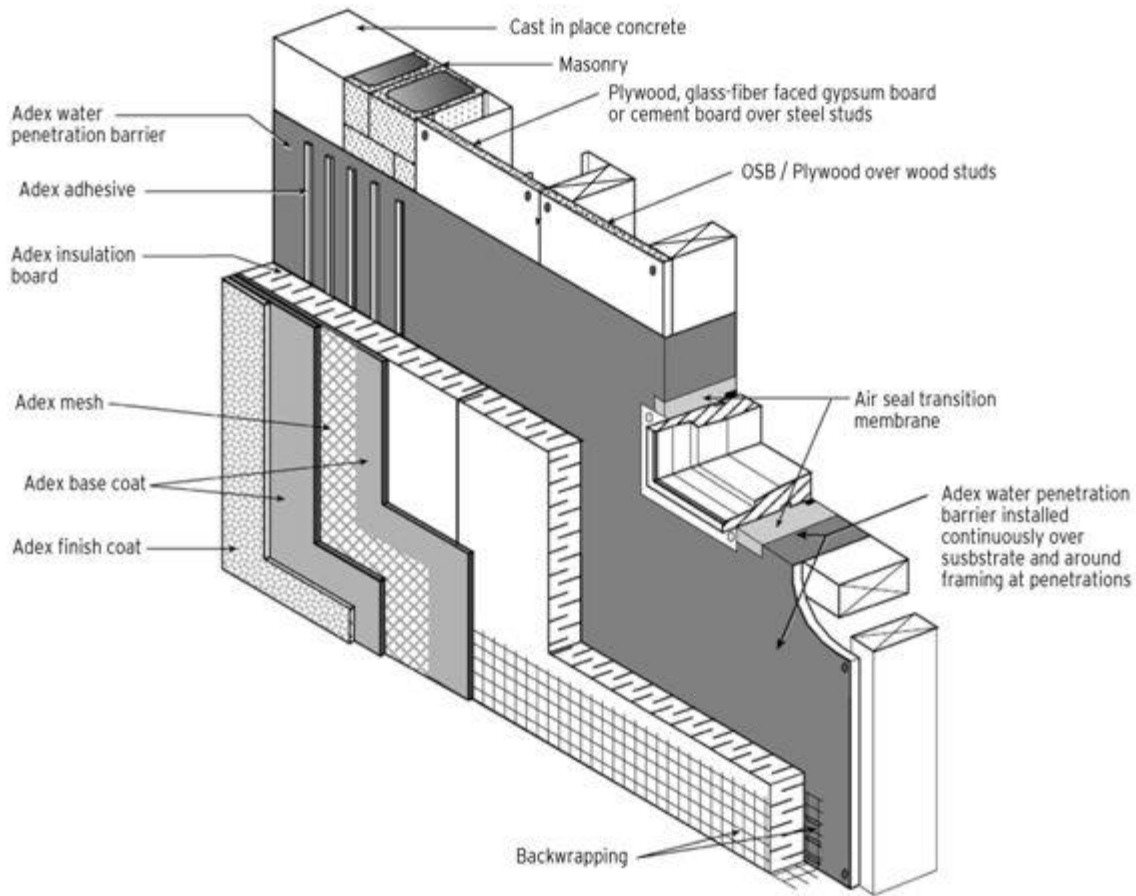


Figure 1. “Adex-RS / Adex-VCA / Adex-MFS” EIFS over plywood/OSB

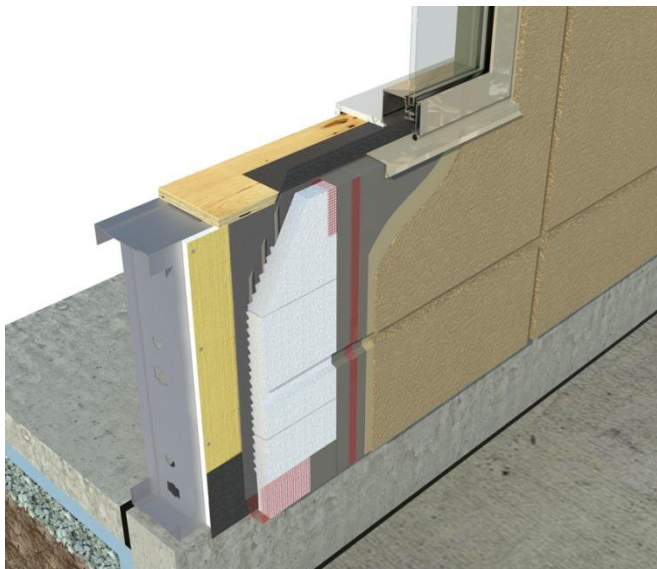


Figure 2a. “Adex-RS” system with a water penetration barrier over glass-fibre-faced gypsum

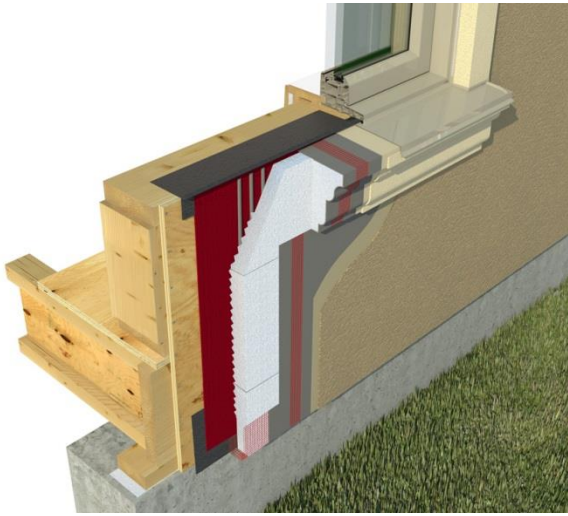


Figure 2b. “Adex-RS” system with a water penetration barrier over plywood/OSB

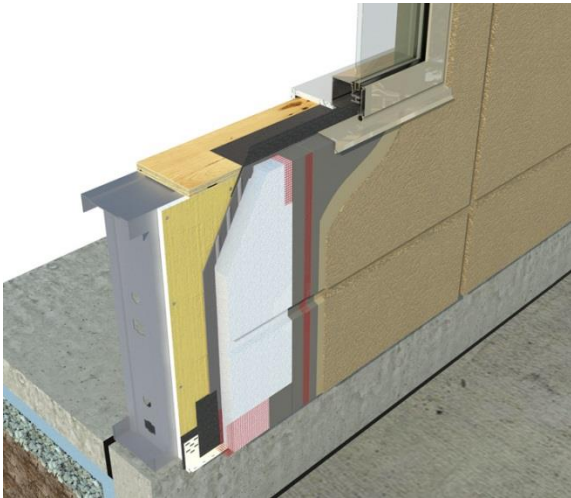


Figure 3a. “Adex-VCA” system with a water penetration barrier over glass-fibre-faced gypsum

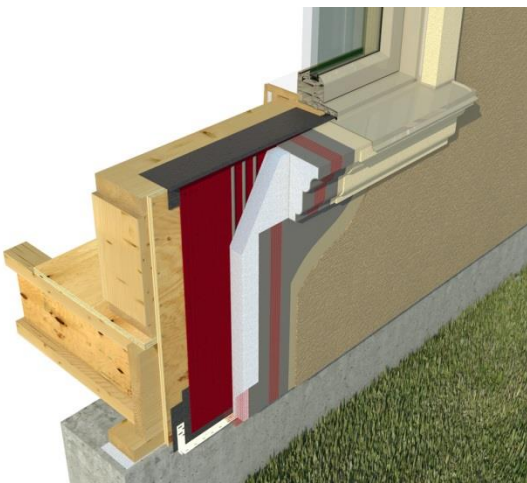


Figure 3b. “Adex-VCA” system with a water penetration barrier over plywood/OSB

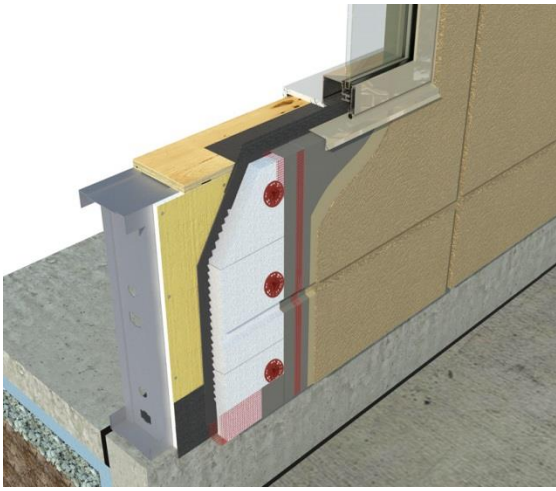


Figure 4. “Adex-MFS” system over a modified bituminous membrane on glass-fibre-faced gypsum

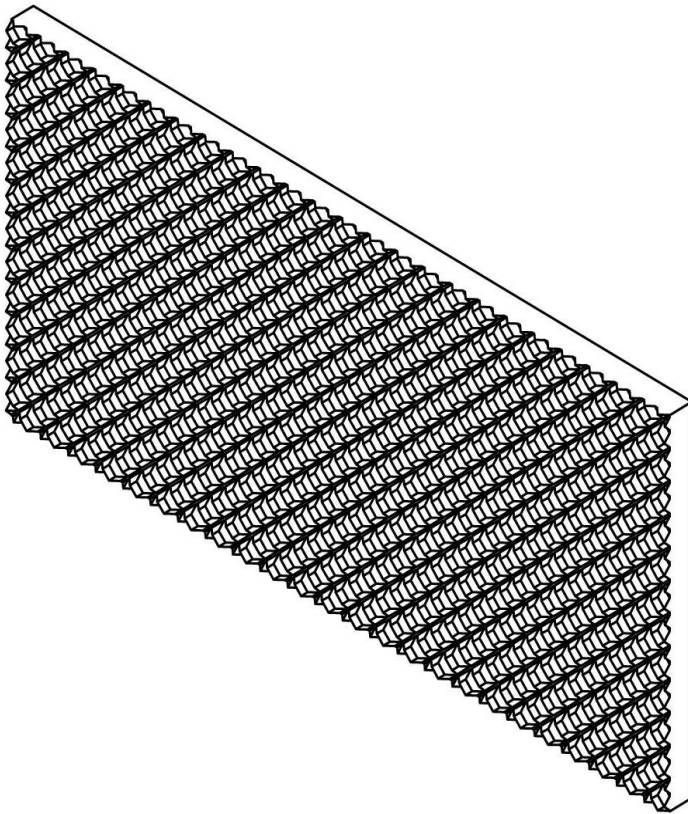


Figure 5. “Adex EPS-GD Board” insulation drainage board

3. Conditions and Limitations

CCMC’s compliance opinion in Section 1 is bound by the “Adex-RS / Adex-VCA / Adex-MFS” being used in accordance with the conditions and limitations set out below:

- The products are intended for use as an exterior insulation and finish wall system 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.

- The products are acceptable for use on new and existing exterior vertical walls. The system is not acceptable for use on horizontal surfaces.
- 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 2010.
- The products are not suitable for use as a structural sheathing for bracing purposes.
- The products are not intended for use as below-grade insulation and should terminate at least 200 mm above grade level.
- The WPB is a self-adhered modified bituminous membrane that must meet the waterproofing characteristics of CGSB 37-GP-56M, "Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing."
- Use of the products with the mechanical fasteners indicated in Table 2.1 is limited to geographical areas where the wind design value is $Q_{50} < 1.00$ kPa.
- The possibility of moisture accumulation within the wall construction is mainly a function 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 2010.
- When used in new construction, the design of the inboard/outboard insulation of "Adex-RS / Adex-VCA / Adex-MFS" must be in accordance with the requirements of Section 9.25., Heat Transfer, Air Leakage and Condensation Control, of Division B of the NBC 2010.
- In retrofit constructions the addition of thermal insulation onto 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 Appendix Note A-9.25.2.4.(3), Loose-Fill Insulation in Existing Wood-Frame Walls, of Division B of the NBC 2010. As a result, existing exterior walls that are intended to be retrofitted with EIFS must meet the requirements of the NBC 2010 for heat transfer, air leakage and condensation control.
- The products 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.
- 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 Model National Energy Code of Canada for Buildings 2011.
- Where allowed by the Code through conformance to Article 3.1.5.5., Combustible Components for Exterior Walls, of Division B of the NBC 2010, the systems having "Adex Hydroflex VB"/"Adex Hydroflex WO"/"Adex Hydroflex STD"/"Adex Hydroflex AD" as a water penetration barrier; "Adex Basecoat" as an adhesive and base coat; "Adex EPS-GD Board" as a Type 1 EPS insulation, 101 mm thick; "Adex Standard Mesh" with a minimum 150g/m² and minimum of 64-mm mesh overlap; and "Adex Finish" as a finish coat is acceptable for use in buildings required to be of noncombustible construction that are not more than three storeys in height if not sprinklered, and to greater than three storeys in height if sprinklered throughout, 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 2010. For a detailed description of the compliance of the related system to the requirements of Article 3.1.5.5. of Division B of the NBC 2010, please refer to Intertek Listing RS-ASI-DAFS 15-01, Project No. 100958464TOR-001B.
- 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 2010, "Adex-RS" having "Adex Hydroflex VB"/"Adex Hydroflex WO"/"Adex Hydroflex STD"/"Adex Hydroflex AD" as a water penetration barrier; "Adex Basecoat" as an adhesive and base coat; "Adex EPS-GD Board" as a Type 1 EPS insulation, 127 mm thick; "Adex Standard Mesh" with a minimum 150g/m² and minimum of 64-mm mesh overlap; and "Adex Finish" as a finish coat is acceptable for use in the exposed face of buildings that are required to be of noncombustible 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 2010. For a detailed description of the compliance of the related system to the requirements of Clause 3.2.3.8.(1)(b) of the NBC 2010, please refer to Intertek Listing RS-ASI-DAFS 15-01, Project No. 100958464TOR-001A.
- 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 2010.
- 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), Protection of Foamed Plastics, and 9.10.17.10.(1)(c), Protection of Foamed Plastics, of Division B of the NBC 2010.
- The system 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 2010 regarding fire blocks 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-S102.2-07, "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.
- 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.
- The products 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.
- Specifications and a description of surface sealers must be provided by the manufacturer.
- OSB and/or plywood sheathing boards used in conjunction with the products must comply with the requirements of CSA O437 SERIES-93 (R2011), "OSB and Waferboard" (in the case of OSB) and CSA O121-08, "Douglas Fir Plywood," CSA O151-M1978, "Canadian Softwood Plywood," CSA O153-M1980 (R2008), "Poplar Plywood" or CSA O325.0-07, "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 mm and not more than 3 mm.
- OSB and/or plywood sheathing boards used in conjunction with the products must be fastened to the framing in conformance with Article 9.23.3.5. of Division B of the NBC 2010.
- When used in coastal areas for residential occupancies for buildings falling under the scope of Part 9 of Division B of the NBC 2010, the products 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 2010. Coastal areas are defined by the NBC 2010 as areas where:
 - the number of degree-days is less than 3 400 and the moisture index is greater than 0.90, or
 - the number of degree-days is 3 400 or more, and the moisture index is greater than 1.0.
- When used in non-coastal areas or non-residential occupancies, the WPB coating must be installed in a two-coat application.
- Using the products with the adhesives indicated in Table 2.1 is limited to geographical areas where the wind design value is $Q_{50} < 0.75$ kPa.
- When the products have a self-adhered modified bituminous membrane as a water penetration barrier, their use is limited to geographical locations where the wind design value is $Q_{50} < 1.00$ kPa.
- The moisture content of lumber and/or wood sheathing must not be more than 19% at the time of the application of the WPB.
- The drainage cavity created by the use of the notched trowel adhesive ribbons and/or the protrusions in the EPS (in the case of "Adex EPS-GD Board") must 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 must 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. (V grooves refer to ribbons touching and closing the drainage path.)
- When using flat EPS insulation over plywood/OSB sheathing boards, the notched trowel adhesive ribbons must be 9 mm wide, 9 mm deep and 38 mm apart. The first 50 mm from the vertical edges of the EPS boards must remain free from any adhesive ribbons to avoid the creation of V grooves.
- The products must be installed according to Adex Systems Inc. specifications, as referenced on www.adex.ca, by applicators authorized by the manufacturer.

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 Results of Testing the Ash Content in the Products

Property	Component	Unit	Requirement	Result
Ash content	Adex Hydroflex STD	%	Report value	57.4
	Adex Hydroflex VB			49.5
	Adex Hydroflex WO			49.3
	Adex Hydroflex AD			67.4
	Adex Basecoat (base coat)			57.8
	Adex Finish (finish coat)			75.0

Table 4.1.2 Results of Testing the Adhesion of the WPB to Substrates Other Than Plywood/OSB

Property		Unit	Requirement – No Detachment at Bonding Plane at	Result
Adhesion bond to cement board	Adex Hydroflex STD	dry state	0.3	0.42
		2-h drying	0.1	0.16
		7-d drying	0.3	0.37
	Adex Hydroflex VB	dry state	0.3	0.48
		2-h drying	0.1	0.28
		7-d drying	0.3	0.53
	Adex Hydroflex WO	dry state	0.3	0.46
		2-h drying	0.1	0.38
		7-d drying	0.3	0.42
	Adex Hydroflex AD	dry state	0.3	0.60
		2-h drying	0.1	0.31
		7-d drying	0.3	0.36

Table 4.1.3 Results of Testing the Adhesion Bond of the Adhesive to the WPB

Property			Unit	Requirement – No Detachment at Bonding Plane at	Result
Adhesion bond strength of adhesive Adex Basecoat to WPB	Adex Hydroflex STD	dry state	MPa	0.3	0.77
		2-h drying		0.1	0.29
		7-d drying		0.3	0.48
	Adex Hydroflex VB	dry state		0.3	0.49
		2-h drying		0.1	0.16
		7-d drying		0.3	0.48
	Adex Hydroflex WO	dry state		0.3	0.55
		2-h drying		0.1	0.39
		7-d drying		0.3	0.50
	Adex Hydroflex AD	dry state		0.3	0.48
		2-h drying		0.1	0.24
		7-d drying		0.3	0.28

Table 4.1.4 Results of Testing the Adhesion Bond of the Adhesive to Insulation

Property			Unit	Requirement – No Detachment at Bonding Plane at	Result
Adhesion bond strength of adhesive Adex Basecoat to insulation	ADEX Basecoat to EPS	dry state	MPa	0.1	0.36
		2-h drying		0.1	0.34
		7-d drying		0.1	0.42

Table 4.1.5 Results of Testing the Adhesion Bond of Adhesive to Insulation (Base Coat to Finish Coat to Insulation)

Property			Unit	Requirement – No Detachment at Bonding Plane at	Result
Adhesion bond strength of adhesive Adex Basecoat to insulation	Adex Finish to Adex Basecoat to EPS	dry state	MPa	0.1	0.75
		2-h drying		0.1	0.45
		7-d drying		0.1	0.86

Table 4.1.6 Results of Testing the Water Vapour Transmission (WVT) of the WPB

Property	Component	Unit	Requirement	Result
Water vapour transmission of WPB	Adex Hydroflex STD	ng/(Pa·s·m ²)	Report value	802.7
	Adex Hydroflex VB ¹			94
	Adex Hydroflex WO ¹			55
	Adex Hydroflex AD			243

Note to Table 4.1.6:

¹ The results are based on the WVT testing on substrates other than wood.

Table 4.1.7 Results of Testing the WVT of Lamina

Property	Component	Unit	Requirement	Result
WVT of lamina	Adex Basecoat	ng/(Pa·s·m ²)	Report value	344
	lamina (Adex Basecoat/Adex Finish)			101

Table 4.1.8 Results of Testing the Water Absorption

Property	Component	Unit	Requirement	Result
Water absorption of base coat	Adex Basecoat	kg/(m ² ·s ²)	≤ 20% of the dry weight	2.95
	lamina “optional” (Adex Basecoat/Adex Finish)			4.15

Table 4.1.9 Results of Testing the Water Absorption Coefficient (WPB)

Property	Component	Unit	Requirement	Result
Water absorption coefficient (WPB) at 72 h	Adex Hydroflex STD	kg/(m ² ·s ²)	≤ 0.004	0.0007
	Adex Hydroflex VB			0.0008
	Adex Hydroflex WO			0.0019
	Adex Hydroflex AD			0.0006

Table 4.1.10 Results of Testing the Impermeability to Water

Property	Component	Unit	Requirement	Result
Water absorption of base coat	Adex Basecoat	Hours	No water penetration in less than 2 h	Pass
	lamina “optional” (Adex Basecoat/Adex Finish)			Pass

Table 4.1.11 Results of Testing the Mildew and Fungus Resistance

Property	Component	Requirement	Result
Mildew and fungus resistance	Adex Finish Coat	No growth	Pass

Table 4.1.12 Results of Testing the Accelerated Weathering Resistance

Property	Component	Requirement	Result
Accelerated weathering resistance of lamina at 2 000 h	Adex Basecoat/Adex Finish	No cracking, flaking or deleterious effects	Pass

Table 4.1.13 Results of Testing the Salt Spray Resistance

Property	Component	Requirement	Result
Salt spray resistance at 300 h	Adex Basecoat/Adex Finish	No cracking, flaking or deleterious effects	Pass

Table 4.1.14 Results of Testing the Durability Under Environmental Cyclic Conditions

Property	Unit	Requirement	Result	
Preconditioning (drainage evaluation)	Litres	Report water quantity	Introduced	13.5
			Drained	9.60
			Retained	3.90
Environmental cycling (60 cycles)	—	No cracking, blistering or sagging of base coat, and no detachment or crazing of finish coat	Pass	
Adhesive bond strength after environmental cycling	base coat	MPa	≥ 0.1	0.32
	finish coat			0.67

Table 4.1.15 (a) Results of Testing the Physical Characteristics of the Glass Fibre Reinforcement made by Saint Gobain Adfor Canada Ltd.

Property	Unit	Requirement	Result		
Ash content	%	Report value	14.0		
Mass per unit area	g/m ²	Report value	1 420		
Mesh dimension	mm	< 10	Warp	Weft	
			3.91	4.11	
Weight of glass	g/m ²	Report value	122.0		
Elongation	%	Report value	Warp	Weft	
			Initial	5.1	5.12
			After alkali resistance test ¹	3.0	3.0
Tensile strength	N/mm	≥ 35	Warp	Weft	
			Initial	41.0	39.9
			After alkali resistance test	22.2	29.8

Note to Table 4.1.15 (a):

¹ Alkaline test based on 28-day immersion in tri-alkali solution.

Table 4.1.15 (b) Results of Testing the Physical Characteristics of the Glass Fibre Reinforcement made by Gavazzi S.A.¹

Property	Unit	Requirement	Result	
Mass per unit area	g/m ²	Report value	155.0	
Tensile strength	N/mm		Warp	Weft
Initial		≥ 35	50	68
After alkali resistance test		≥ 15 ²	37	37

Notes to Table 4.1.15 (b):

¹ Gavazzi S.A. mesh, in compliance with ash content, mesh dimensions, weight of glass and elongation, is based on CSTB R2EM/EM12-118 Certification.

² Alkaline test based on 90-day immersion in cement solution that requires a 60% residual strength of at least 15 N/mm in comparison with the immersion in tri-alkali solution that requires a 50% residual strength of at least 20 N/mm.

Table 4.1.16 Results of Testing the Impact Resistance

Property			Requirement	Result
Impact resistance	Adex Basecoat/ Adex Finish	10 joules	Six of 10 free-fall drops must show no perforation (broken mesh).	9/10 Pass
	Adex Basecoat/ Adex Finish	3 joules	Six of 10 free-fall drops must show no cracks.	9/10 Pass

Table 4.1.17 Results of Testing the Wind Load Resistance of “Adex-RS”¹

Reference Wind Pressure (kPa)	Sustained		Cycling		Gust		Deflection Test		
	P ₁ , P' ₁ (Pa)		P ₂ , P' ₂ (Pa)		P ₃ , P' ₃ (Pa)		Test Pressure (Pa) 3.3 P ₁ , P' ₁	Measured Maximum Net Mid-span Deflections (mm)	
								Stud Height 3 050 mm	Stud Spacing 406 mm
Q ₁₀ < 0.40	±400	Pass	±530	Pass	±800	Pass	+1 320	8.6	0.5
							-1 320	8.1	0.9
Q ₁₀ < 0.60	±600	Pass	±800	Pass	±1 200	Pass	+1 980	11.8	1.1
							-1 980	10.7	2.0
Q ₁₀ < 0.80	±800	Pass	±1 060	Pass	±1 600	Pass	+2 640	16.9	2.7
							-2 640	16.1	3.8
Maximum test pressure at L/180 deflection							+2 700	16.9	—
							-2 810		
Ultimate structural test pressure							+3 223	OK	
							-2 970	Sheathing separation from steel studs occurred	

Note to Table 4.1.17:

¹ The wind load testing on “Adex-VCA” has been conducted based on the “one in ten” (Q₁₀) wind pressure loading. The Q₁₀ < 0.80 tested wind design pressures would correspond roughly to Q₅₀ < 0.75 where the maximum positive and negative pressures of sustained, cyclic and gust loads are P₁, P'₁ = 750 Pa, P₂, P'₂ = 1 090 Pa and P₃, P'₃ = 1 630 Pa. The maximum deflection is measured at the D 0.75 at 1 630 Pa.

Table 4.1.18 Results of Testing the Adhesion of the WPB to Plywood/OSB Substrates

Property	Component		Unit	Requirement	Result
Adhesion bond to OSB	Adex Hydroflex VB	dry state	MPa	0.3	0.956
		1-h soaking		0.3	1.0228
		24-h soaking		0.3	0.829

Table 4.1.19 Results of Testing the Joint Disruption Resistance

Property	Unit	Requirement	Result		
			Joint Width		
Joint disruption resistance	—	The WPB at joints on 2 assemblies must show no cracking, delaminating or any other deleterious effects at a transverse bending of L/180.	2 mm	4 mm	Pass
Joint extension at L/180	mm	Report value	0.11	0.15	

Table 4.1.20 Results of Testing the Joint Relaxation Resistance

Property	Unit	Requirement	Sample No.	Result
Joint relaxation resistance	kg/m ² ·s	Five WPB-coated OSB specimens subjected to a 1.3-mm extension following exposure to 15 24-h environmental cycles must have a maximum average WTR rate of 2 × 10 ⁻⁷ kg/m ² ·s.	1	0.85 × 10 ⁻⁷
			2	0.45 × 10 ⁻⁷
			3	0.55 × 10 ⁻⁷
			4	1.92 × 10 ⁻⁷
			5	0.84 × 10 ⁻⁷

Table 4.1.21 Results of Testing the Water Transmission Resistance

Property	Unit	Requirement	Sample No.	Result
Water transmission resistance (WTR)	kg/m ² ·s	Five WPB-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 ·s measured at 10 days.	1	1.73×10^{-7}
			2	1.66×10^{-7}
			3	1.32×10^{-7}
			4	0.61×10^{-7}
			5	1.35×10^{-7}
Average				1.33×10^{-7}

Table 4.1.22 Results of Testing the Water Vapour Transmission

Property	Unit	Requirement	Result		
			Sample No.	Coated	Uncoated ¹
Water vapour transmission (WVT)	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.	1	68	116
			2	58	130
			3	55	127
Average				60.3	124.3

Note to Table 4.1.22:

¹ The tested WVT of the OSB is specific to the product and thickness used in the test. For typical values of WVT rates of OSB, see Table A-9.25.5.1.(1) of Division B of the NBC 2010.

Table 4.1.23 Results of Testing the Accelerated Weathering Resistance of the WPB

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

Table 4.1.24 Results of Testing the Drainage Capacity

Property	Requirement	Result		
		Retained Water (g) Per Unit Area (g/m ²)	Drainage Capacity (%) After 1 h	
Drainage capacity	The unit-retained water (based on the projected drainage area) following 1 hour of drainage period must not be greater than 40 g/m ² for any single test specimen. The drainage capacity must not be less than 98% of the water mass delivered into the EIFS wall specimen.	Panel 1 total (g)	21.2	99.7
		Panel 2 total (g)	20.5	99.7
		Panel 3 total (g)	19.4	99.8
		Panel 4 total (g)	18.6	99.8

Table 4.1.25 Results of Testing the Nail Popping Resistance

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

4.1.2 Fire Performance

“Adex Basecoat” is in compliance with CAN/ULC S114-05, “Standard Method of Test for Determination of Non-Combustibility in Building Materials.” Please see Intertek Testing Services NA Ltd. Report No. 3192482COQ-002, issue date October 28, 2009, revised date November 4, 2009.

Adex exterior insulation and finish systems having “Adex Hydroflex VB”/“Adex Hydroflex WO”/“Adex Hydroflex STD”/“Adex Hydroflex AD” as a water penetration barrier; “Adex Basecoat” as an adhesive and base coat; “Adex EPS-GD Board” as a Type 1 EPS insulation, 101 mm thick; “Adex Standard Mesh” with a minimum 150 g/m² and minimum of 64-mm mesh overlap; and “Adex Finish” as a finish coat conform to Article 3.1.5.5., Combustible Components for Exterior Walls, of Division B of the NBC 2010. For detailed information on the compliance of the above systems to the requirements of Article 3.1.5.5., please refer to Intertek Listing RS-ASI-DAFS 15-01, Project No. 100958464TOR-001B.

“Adex-RS” having “Adex Hydroflex VB”/“Adex Hydroflex WO”/“Adex Hydroflex STD”/“Adex Hydroflex AD” as a water penetration barrier; “Adex Basecoat” as an adhesive and base coat; “Adex EPS-GD Board” as a Type 1 EPS insulation, 127 mm thick; “Adex Standard Mesh” with a minimum 150 g/m² and minimum of 64-mm mesh overlap; and “Adex Finish” as a finish coat conform to the requirements of Clause 3.2.3.8.(1)(b), Protection of Exterior Building Face, of Division B of the NBC 2010. For detailed information on the compliance “Adex-RS” to the requirements of Clause 3.2.3.8.(1)(b), please refer to Intertek Listing RS-ASI-DAFS 15-01, Project No. 100958464TOR-001A.

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