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ESR-3343

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 44 16—PORCELAIN ENAMELED FACED PANELS

REPORT HOLDER:

BUTECH BUILDING TECHNOLOGY SA

CARRETERA VILA-REAL—PUEBLA DE ARENOSO
KM 2.5, CV-20
12540 VILA-REAL, CASTELLÓN
SPAIN

EVALUATION SUBJECT:

**BUTECH BUILDING TECHNOLOGY PORCELAIN PANEL VENTILATED FACADE SYSTEM
(VFS)**



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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 44 16—Porcelain Enameled Faced Panels

REPORT HOLDER:

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EVALUATION SUBJECT:

BUTECH BUILDING TECHNOLOGY PORCELAIN PANEL VENTILATED FAÇADE SYSTEM (VFS)

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Weather resistance
- Wind load resistance
- Interior finish
- Exterior walls in Types I, II, III and IV construction

1.2 Evaluation to the following green code(s) and/or standards:

- 2013 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2012 and ICC 700-2008)

Properties evaluated:

- See Section 3.1

2.0 USES

The Butech Building Technology Porcelain Panel Ventilated Façade System is used as a nonload-bearing exterior wall covering on nonfire-resistance-rated buildings of Type V construction. The system may be used as a nonload-bearing exterior wall covering on non-fire-

resistance-rated buildings of Type I, II, III and IV construction when installed in accordance with Section 4.5. The system may also be used for interior applications as part of a Class A interior wall finish.

3.0 DESCRIPTION

3.1 General:

The Butech Building Technology Porcelain Panel Ventilated Façade System is a cladding system of porcelain panels, with a substructure that allows air to circulate between the panels and the exterior face of the approved water-resistive barrier. The panels are held in place with stainless steel fixing clips mounted on the aluminum substructure of vertical T-profile and L-profile mounting brackets, fastened to the building substrate. The panels are embedded in a bead of vibration dampening waterproof adhesive along the length of each T-profile. The system weighs a maximum of 8 pounds per square foot (383 N/m²). See Figure 1 for system details.

The attributes of the cladding system have been verified as conforming to the provisions of (i) CALGreen Sections A4.405.1.3 (prefinished materials) and A5.406.1.2 (reduced maintenance); (ii) ICC 700-2012 Sections 601.7, 11.601.7, and 12.1(A).601.7 (site-applied finishing materials); and (iii) ICC 700-2008 Section 601.7 (site-applied finishing materials). Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. The code may provide supplemental information as guidance.

3.2 Components:

3.2.1 Porcelain Panels: The Butech Building Technology panels are unglazed vitrified porcelain panels complying with the requirements for rectified and porcelain panels in ANSI A137.1. The panels measure nominally 2 feet by 4 feet and are nominally 11 millimeters thick. Two-millimeter-wide (0.0787 inch) kerf slots are sawn into the panel edges to a maximum depth of 1/2 inch (12 mm) for use as attachment points for the stainless steel fixing clips. The kerfs are centered in the panel thickness to provide a minimum 4.5 ±0.25 millimeters (0.177 ±0.010 inch) of ceramic material between the kerf and the front and back face of the panel. The kerfs measure a maximum of 3 inches (76 mm) long and are located at least 1/2 inch (12 mm) away from panel corners. A nominally 1/2-inch mesh of fiberglass is bonded to the backs of the porcelain panels. The porcelain panels have a flame spread index of less than 25 and a smoke developed index of less than

450 when tested in accordance with ASTM E84, and are classified as noncombustible when tested in accordance with ASTM E136.

3.2.2 Stainless Steel Fixing Clips: The fixing clips are manufactured from 0.0393-inch-thick (1 mm), Grade 304 (UNS S30400) stainless steel and are formed to hold the panels in place at the kerfed slots. The clips are available in various configurations to hold the panels where one, two, three, or four panels meet. See Figure 2 for fixing clip details. The fixing clips are fastened to the T-profiles of the substructure using 0.165-inch-by-0.512-inch (4.2 by 13 mm) self-drilling stainless steel screws provided with the system.

3.2.3 Substructure: The substructure components are 0.108-inch-thick (2.73 mm) T-profile and L-profile brackets made of extruded 6005-T6 alloy aluminum. The T-profiles are 3.94 inches (100 mm) wide and have a 2.36-inch (60 mm) leg. The L-profile brackets are 1.57 inches (40 mm) wide by 2.36 inches (60 mm) deep. The T-profiles are fastened to the L-profile brackets using 0.217-inch-by-1.30-inch (5.5 by 33 mm), self-drilling stainless steel screws provided with the system.

3.2.4 Adhesive: The panels must be adhered at the jobsite to the aluminum substructure using a single-component polyurethane Butech p-404 sealant/adhesive suitable for bonding ceramic panels to aluminum to achieve the loads shown in Table 1. The adhesive must be durable and suitable for exterior use, and must be approved by the building official. The adhesive must be installed in accordance with the adhesive manufacturer's published installation instructions.

4.0 DESIGN AND INSTALLATION

4.1 General:

The Butech Building Technology Porcelain Panel Ventilated Façade System must be installed over wall assemblies capable of supporting the imposed loads, including, but not limited to, transverse wind loads. The substructure L-profile brackets must be securely fastened to the supporting wall with corrosion-resistant fasteners that are compatible with the wall assembly substrate.

4.2 Design:

The allowable wind loads for the Butech Building Technology Porcelain Panel Ventilated Façade System given in Table 1, and for the attachment of the substructure to the underlying wall, must equal or exceed the design uniform transverse wind loads determined in accordance with IBC Chapter 16. The attachment of the brackets to the substructure to withstand gravity and transverse forces must be designed by a licensed design professional in accordance with the IBC, and the details must be submitted to the building official for approval. The allowable loads must be reduced to the capacity of the attachment system connections if these are less than the allowable load values for the wall cladding system.

4.3 Installation:

The Butech Building Technology Porcelain Panel Ventilated Façade System must be installed in accordance with the manufacturer's published installation instructions, the project-specific structural calculations and details, and this report by qualified installers recognized by Butech Building Technology. When necessary, the panels may be cut and kerfed in the field in accordance with this report and the manufacturer's published installation instructions. A copy of the instructions must be available on the jobsite during construction.

The system must be installed over wall assemblies complying with IBC Section 1403.3, using the substructure described in Section 3.2.3 of this report. The L-profile brackets must be fastened to the building substrate according to the design and at a maximum spacing of 24 inches on center, both vertically and horizontally. The T-profiles must be attached to each L-profile bracket with self-drilling screws described in Section 3.2.3. Adhesive must be applied along the flange of each T-profile to hold the panel in place and to isolate the panel from vibrations. The minimum diameter of the adhesive bead must be in accordance with the approved design, the adhesive manufacturer's installation instructions, or $\frac{3}{8}$ -inch, whichever is larger. A 0.197- to 0.315-inch-wide (5 mm to 8 mm) gap must be left between the panels, and a minimum $\frac{1}{8}$ -inch-deep (3 mm) air space must be left between the backs of the panels and the face of the installed water-resistive barrier, to allow air to circulate. The panels must be attached to the substructure with the stainless steel fixing clips at each kerf location according to the design. The clips must be fastened to the T-profiles using self-drilling screws described in Section 3.2.2. The panels must be held with a fixing clip at a maximum of every 2 feet, and must be embedded in the adhesive described in Section 3.2.4 along the entire length of each T-profile.

Exterior wall assemblies, on which the system is to be installed, must include flashing, a water-resistive barrier, a means of draining water, and protection against condensation in accordance with IBC Section 1403.2.

4.4 Special Inspection:

Special inspections are required in accordance with IBC Section 1704.2, or the fabricator must be approved by the code official in accordance with 2012 IBC Section 1704.2.5.2 or 2009 IBC Section 1704.2.2, as such operations are outside the scope of this report. The special inspection must verify the suitability of the adhesive; the adhesive type; adhesive expiration date; panel embedment in the adhesive; that the façade system is installed in accordance with the Façade System manufacturer's published installation instructions and this report; and that the adhesive is used in accordance with the adhesive manufacturer's published installation and handling instructions. The special inspector must be on the jobsite initially during installation of the panels to verify the proper use of the adhesive in accordance with the design approvals; and periodically to confirm that the proper use of the adhesive is continued throughout the installation of the panels.

4.5 Exterior Wall Assembly in Types I, II, III and IV Construction:

When installed in accordance with this section, the Butech Building Technology Porcelain Panel Ventilated Façade System may be used on the exterior face of exterior walls of buildings required to be Type I, II, III or IV construction.

4.5.1 Interior Finish: One layer of $\frac{5}{8}$ -inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C36 or ASTM C1396, must be applied horizontally to steel framing with all edges blocked. The wallboard must be fastened to the framing with No. 6 by $1\frac{1}{4}$ -inch-long (32 mm), Type S bugle-head screws spaced a maximum of 8 inches (203 mm) on center along the perimeter of the wallboard and 12 inches (305 mm) in the field of the wallboard. All joints must be taped and treated with joint compound in accordance with ASTM C840 or GA216. Fastener heads must be treated with joint compound in accordance with ASTM C840 or GA216.

4.5.2 Steel Framing: The steel framing must be minimum $3\frac{5}{8}$ -inch-deep (92 mm), minimum 16 gage [0.0598 inch (1.52 mm)] steel studs, spaced a maximum of 16 inches (406 mm) on center. Header and sill framing consists of $3\frac{5}{8}$ -inch-deep (92 mm), minimum 16 gage [0.0598 inch (1.52 mm)] steel track.

4.5.3 Openings: The perimeter of wall opening framing must be covered with 0.090-inch-thick (2.3 mm) aluminum flashing. The flashing must overlap the exterior face of the opening 9 inches (229 mm). The flashing must overlap the interior face of the opening 3 inches (76.2 mm). The flashing is attached with No. 8 by $1\frac{1}{4}$ -inch-long (32 mm) self-drilling screws.

4.5.4 Exterior Sheathing: One layer $\frac{5}{8}$ -inch-thick Georgia-Pacific DensGlass[®] gypsum sheathing must be installed with the long dimension oriented horizontally over the exterior face of the framing. The sheathing must be fastened to the framing with No. 6 by $1\frac{1}{4}$ -inch-long (32 mm), Type S bugle-head screws spaced a maximum of 8 inches (203 mm) on center along the perimeter of the sheathing and 12 inches (305 mm) in the field of the sheathing.

4.5.5 Water-resistive barrier: The water-resistive barrier must be one layer of Tyvek CommercialWrap[™] installed over the exterior face of the gypsum sheathing in accordance with ESR-2375.

4.5.6 Substructure: The substructure described in Section 3.2.3 must be installed in accordance with Section 4.3.

4.5.7 Exterior insulation: Twenty-four-inch-by-48-inch-by-2-inch-thick (610 mm by 1219 mm by 50.8 mm) Roxul ComfortBatt mineral wool insulation batts, having a 4 pcf (64 kg/m³) density, must be installed between the substructure components covering all exposed surfaces of the water-resistive barrier. Each insulation batt must be installed with four stainless steel fasteners.

4.5.8 Porcelain Panels: The porcelain panels described in Section 3.2.1 must be installed to the substructure as described in Section 4.3. The adhesive described in Section 3.2.4 must be Butech p-404 polyurethane sealant/adhesive applied to the L-profiles and T-profile extensions prior to each panel installation.

5.0 CONDITIONS OF USE

The Butech Building Technology Porcelain Panel Ventilated Façade System described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report; the manufacturer's published installation instructions and the applicable code. If there is a conflict between the installation instructions and this report, this report governs.
- 5.2 The underlying substructure and wall must be adequate to resist the design positive and negative transverse wind loads and the gravity loads of the system.
- 5.3 Drawings, design details and calculations verifying compliance with this report and adequacy of the connections to the substrate, must be submitted to the building official for approval. The drawings and calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is constructed.

5.4 The Butech Building Technology Porcelain Panel Ventilated Façade System must be installed by qualified installers recognized by Butech Building Technology.

5.5 Special inspections are required in accordance with Section 4.4.

5.6 The maximum allowable wind pressures for the Butech Building Technology Porcelain Panel Ventilated Façade System are shown in Table 1. The design wind pressures must not exceed the allowable capacities shown in the table. The capacity of the supporting wall and substrate, and the capacity of the connections used to attach the system to the wall, must equal or exceed the demands of gravity forces and design wind pressure.

5.7 A water-resistive barrier complying with IBC Section 1403.2 must be installed behind the wall cladding system.

5.8 When installation is on interior walls, the system must be installed over a substrate having a Class A finish.

5.9 When use is in noncombustible (Types I, II, III and IV) construction, the exterior wall assembly must comply with Section 4.5 of this report.

5.10 The panels are manufactured in Vila-Real, Spain, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Reports of panel properties testing in accordance with ANSI A137.1.
- 6.2 Reports of panel resistance to freeze-thaw cycling testing in accordance with ASTM C1026.
- 6.3 Reports of panel resistance to temperature cycling testing.
- 6.4 Reports of panel flexural strength testing in accordance with ASTM C880.
- 6.5 Reports of anchorage strength testing in accordance with ASTM C1354.
- 6.6 Reports of transverse wind load testing of the system in accordance with ASTM E330.
- 6.7 Reports of panel noncombustibility testing in accordance with ASTM E136.
- 6.8 Report of panel surface burning testing in accordance with ASTM E84.
- 6.9 Structural calculations.
- 6.10 Report of testing in accordance with NFPA 285.

7.0 IDENTIFICATION

The Butech Building Technology Porcelain Panel Ventilated Façade System Panels are labeled with the manufacturer's name (Porcelanosa Grupo / Butech Building Technology SA), the product name (Butech Building Technology Porcelain Panel Ventilated Façade System), the panel batch number, and the evaluation report number (ESR-3343).

The Butech Building Technology fixing clips and screws, T-profiles and screws, and L-profile brackets are packed in cartons that are labeled with the Butech Building Technology company logo, product identification number, product description, and evaluation report number (ESR-3343).

TABLE 1—ALLOWABLE WIND LOADS FOR THE BUTECH BUILDING TECHNOLOGY PORCELAIN PANEL VENTILATED FAÇADE SYSTEM

ALLOWABLE TRANSVERSE WIND LOAD ¹ (psf)	
Positive	Negative
130	117

For SI: 1 inch=25.4mm; 1 psf = 0.0479 kPa.

¹Maximum allowable positive and negative transverse wind loads for use of the Panels embedded in a continuous bead of suitable single-component polyurethane sealant/adhesive along each T-profile and fastened to the aluminum substructure with clips at maximum 24 inches on center (2 clips along the 2-foot short edges and 3 clips along the 4-foot long edges of each Panel). Allowable loads must be reduced to the capacity of the attachment, determined in accordance with Section 4.2, used to connect the Façade System to the underlying wall or substrate.

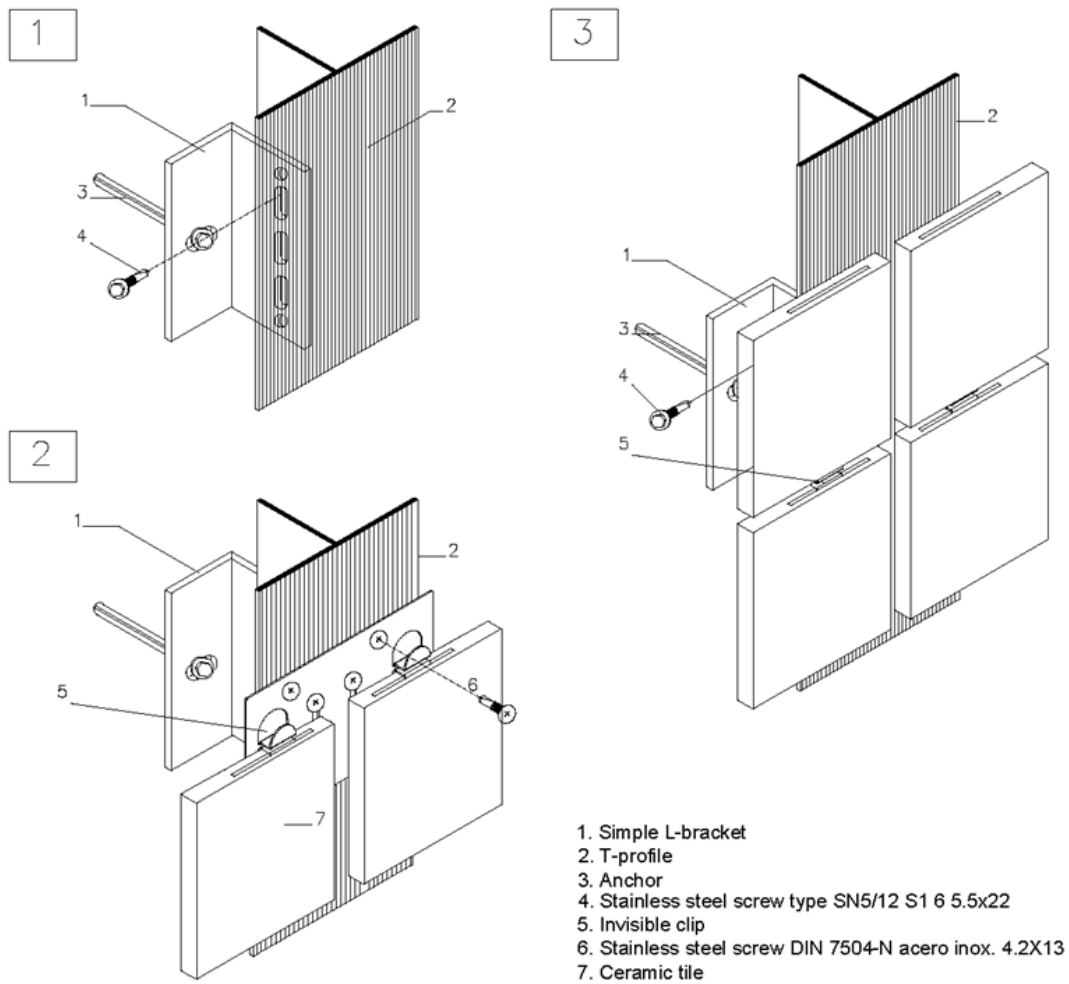


FIGURE 1—TYPICAL SYSTEM DETAILS



FIGURE 4—TYPICAL INSTALLATION

ICC-ES Evaluation Report

ESR-3343 CBC Supplement

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Section: 07 44 16—Porcelain Enameled Faced Panels

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EVALUATION SUBJECT:

BUTECH BUILDING TECHNOLOGY PORCELAIN PANEL VENTILATED FAÇADE SYSTEM (VFS)

1.0 REPORT PURPOSE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Butech Building Technology Porcelain Panel Ventilated Façade System, recognized in ICC-ES master evaluation report ESR-3343, has also been evaluated for compliance with the code noted below.

Applicable code edition:

2013 *California Building Code* (CBC)

2.0 CONCLUSIONS

The Butech Building Technology Porcelain Panel Ventilated Façade System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3343, complies with CBC Chapter 14, provided the design and installation are in accordance with the *International Building Code*® provisions noted in the master report and the additional requirements of CBC Sections 1405 and 1410, as applicable.

The system has not been evaluated under CBC Chapter 7A for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Area.

The system recognized in this supplement has not been evaluated for compliance with the *International Wildland–Urban Interface Code*®.

This supplement expires concurrently with the master report, reissued December 2017.

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Butech Building Technology Porcelain Panel Ventilated Façade System, recognized in ICC-ES master report ESR-3343, has also been evaluated for compliance with the code noted below.

Applicable code edition:

2010 *Florida Building Code—Building*

2.0 CONCLUSIONS

The Butech Building Technology Porcelain Panel Ventilated Façade System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3343, complies with the 2010 *Florida Building Code—Building*, provided the design and installation are in accordance with the *International Building Code*® provisions noted in the master report and the following conditions apply:

- Design wind loads must be based on Section 1609 of the 2010 *Florida Building Code—Building*.
- Load combinations must be in accordance with Section 1605.2 or Section 1605.3 of the 2010 *Florida Building Code—Building*, as applicable.

Use of the Butech Building Technology Porcelain Panel Ventilated Façade System for compliance with the High-Velocity Hurricane Zone provisions of the 2010 *Florida Building Code—Building* has not been evaluated, and is outside the scope of this evaluation report.

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, reissued December 2017.