# ICC-ES Evaluation Report

**ESR-2535**

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**DIVISION: 09 00 00—FINISHES**
**Section: 09 24 00—Portland Cement Plastering**

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**BMI 690 PLASTER**

## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2009 *International Building Code*® (2009 IBC)
- 2009 *International Residential Code*® (2009 IRC)
- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)

**Properties evaluated:**

- Structural
- Durability
- Noncombustible Construction

## 2.0 USES

BMI 690 Plaster is a cementitious exterior wall covering installed over exterior walls of wood or steel framed, concrete or masonry construction. The coating materials are used as the first and second coat of three-coat exterior plaster applied under 2009 and 2006 IBC Section 2512 or 2009 and 2006 IRC Section R703.6. When applied in a single coat, the coating materials are an alternative to the first and second coat of three-coat exterior plaster (scratch and brown coat). When installed over steel framing and gypsum sheathing, the BMI 690 Plaster may be installed on walls required to be Type I, II, III, IV and V construction.

## 3.0 DESCRIPTION

### 3.1 General:

The BMI 690 Plasters are factory-prepared mixtures of portland cement, lime, sand and fibers, and are reinforced with wire fabric or metal lath. The products are supplied in 90-pound (40.82 kg) bags, 2500-pound (1134 kg) super bags or in portable bulk silos (mixers) containing 30 tons (27 216 kg).

### 3.2 Materials:

**3.2.1 BMI 690 Plaster:** BMI 690 Plaster is a factory-prepared mix consisting of Type I or Type II portland cement complying with ASTM C 150, Type S lime complying with ASTM C 206 and limestone or siliceous sand meeting the gradation requirements of ASTM C 897. The mixture complies with ASTM C 926 as Plaster Mix C.

**3.2.2 BMI 690 Plaster with Fibers:** BMI 690 Plaster with Fibers is identical to the BMI 690 Plaster except that polypropylene fibers complying with ASTM C 1116 are added. The mixture complies with ASTM C 926 as Plaster Mix C.

**3.2.3 Lath:**

**3.2.3.1 Wire Fabric Lath or Metal Lath:** No. 17 gage, $1^1/_2$-inch (38 mm), woven wire lath or metal lath complying with the ICC-ES Acceptance Criteria for Metal Plaster Bases (Lath) AC191 and recognized in a current ICC-ES evaluation report. The lath must be furred a minimum of $^1/_4$ inch (6.35 mm) from solid substrates or framing members.

**3.2.3.2 Structa Mega Lath:** The lath is recognized in ESR-2017 as an alternative to No. 17 gage, $1^1/_2$-inch (38 mm), woven wire lath and metal lath described in Section 3.2.3.1.

**3.2.4 Water-resistive Barrier:** Application of the barrier must comply with 2009 and 2006 IBC Section 1404.2 or 2009 and 2006 IRC Section R703.2. Except as described below for wood-based sheathing, the water-resistive barrier must be either a minimum of one layer of asphalt felt complying with ASTM D 226, Type I, or a water-resistive barrier recognized as equivalent to ASTM D 226, Type I, in a current ICC-ES evaluation report.

When installation is over wood-based sheathing, the water-resistive barrier must be a minimum of two layers of Grade D kraft building paper as set forth in 2009 and 2006 IBC Section 2510.6 and 2009 and 2006 IRC Section R703.6.3, or an equivalent recognized in a current ICC-ES evaluation report.

**3.2.5 Vapor Retarder:** Protection against condensation must be provided in accordance with 2009 and 2006 IBC Section 1403.2. Under the IRC, a vapor retarder complying with the 2009 IRC Section R601.3 and 2006 IRC Section R318.1 must be provided, unless its omission is permitted under the exceptions to the 2009 IRC Section R601.3 and 2006 IRC Section R318.1.

## 4.0 INSTALLATION

### 4.1 Three-coat Application:

**4.1.1 General:** BMI 690 Plaster is applied to exterior walls of wood or steel frame, concrete or masonry construction in accordance with 2009 and 2006 IBC Section 2512 or 2009 and 2006 IRC Section R703.6 and as described in ASTM C 926 for Plaster Mix C. The BMI 690 Plaster must be mixed with water using a D30 mixer supplied by BMI Products; or, when product is delivered in portable silos, the plaster mixture is mixed with water using a mixer head attached at the bottom of the portable silo. The mix ratio is 1.75 gallons (6.65 L) of water to each 90 pounds (40.82 kg) of dry plaster mix. The product is applied in the conventional manner in two coats. The third coat of the three-coat stucco system must be a job-mixed finish coat complying with Table 4 of ASTM C 926 applied in accordance with ASTM C 926. All other details of installation are as required in ASTM C 926.

**4.1.2 Fire-resistance rated Construction:** When BMI Plaster is installed in accordance with Section 4.1.1 of this report and 2009 and 2006 IBC Section 720, the fire-resistance rating is as noted in 2009 and 2006 IBC Table 720.1(2).

**4.1.3 Shear Walls:** When BMI Plaster is installed on wood-framed walls in accordance with Section 4.1 of this report, 2009 IBC Section 2306.7 and 2006 IBC Section 2306.4.5, the allowable racking shear value is 180 plf (2627 kN/m). For seismic loads, the shear walls are designated as Item A.14 in Table 12.2-1 of ASCE 7-05 (limited to Seismic Design Categories A, B, C, and D).

### 4.2 Two-coat Application:

**4.2.1 General:** All details of application are as described in ASTM C 926, except as noted in this section (Section 4.2.) Lath is attached to wood framing spaced a maximum of 16 inches (406 mm) on center with minimum No. 16 gage corrosion-resistant staples spaced a maximum of 6 inches (152 mm) on center. Lath is attached to steel framing spaced a maximum of 16 inches (406 mm) on center with minimum $^{5}/_{8}$-inch-long (0.625 mm), S-12 corrosion-resistant screws spaced a maximum of 6 inches (152 mm) on center. As an alternative to the first and second coats described in ASTM C 926, the BMI plaster may be applied, in a single pass, to the full thickness of $^{3}/_{4}$ inch (19.1 mm) to $^{7}/_{8}$ inch (22 mm) when application is in accordance with the BMI Products published installation instructions and Section 4.1.1 of this report. The finish coat of the two-coat stucco system must be a job-mixed finish coat complying with Table 4 of ASTM C 926, applied in accordance with ASTM C 926.

**4.2.2 Wind Resistance:** The allowable wind load for the systems installed as described in Section 4.2.1 is as follows:

- For wood studs having a minimum specific gravity of 0.50 (Douglas fir– larch), allowable wind load is 50 psf (2.39 kPa), positive or negative.
- For minimum No. 20 gage steel studs, allowable wind load is 24 psf (1.15 kPa) negative (outward) and 45 psf (2.15 kPa) positive (inward).
- Framing must be designed to resist the applicable design forces. The maximum allowable deflection of the framing components must not exceed L/360, where L is the height of the framing members.

### 4.3 Noncombustible Construction:

When installed over steel framing and gypsum sheathing, the BMI Plaster may be installed on walls required to be of Type I, II, III or IV construction.

## 5.0 CONDITIONS OF USE

The BMI Products 690 plaster products described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

**5.1** Materials and methods of installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

**5.2** The products must be field-mixed with water using equipment supplied by BMI Products.

**5.3** Two-coat applications described in Section 4.2 are limited to use in Type V-B construction except as noted in Section 4.3 of this report, and buildings under the 2009 and 2006 IRC. Use to resist racking loads is outside the scope of this report.

## 6.0 EVIDENCE SUBMITTED

**6.1** Data showing compliance with 2009 and 2006 IBC Section 2512 and 2009 and 2006 IRC Section R703.6.

**6.2** Data in accordance with the ICC-ES Acceptance Criteria for Cementitious Exterior Wall Coatings (AC11), dated March 2010.

## 7.0 IDENTIFICATION

The factory-prepared mixes are delivered to the jobsite in water-resistant bags or in portable silos. The bags bear labels and the silos are accompanied with certification of compliance to ASTM C 926 and both labels and certification documents carry the following information:

a. Name and address of the manufacturer (BMI Products) and the evaluation report number (ESR-2535).

b. Product name and component information.

c. Weight of packaged mix or net weight of bulk product when delivered in silos.

d. Storage instructions.

e. Maximum amount of water and conditions that must be considered during field-mixing with water.

f. Curing instructions.