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# ICC-ES Evaluation Report

**ESR-2429**

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**DIVISION: 09—FINISHES**
**Section: 09205—Furring and Lathing**

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**PERMALATH® 1000 GLASS FIBER LATH**

## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

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

**Properties evaluated:**

- Structural
- Durability
- Fire resistance
- Noncombustibility

## 2.0 USES

PermaLath® 1000 is used as reinforcement for exterior cement plaster conforming to ASTM C 926 or StuccoBase cementitious wall covering conforming to ESR-1064.

## 3.0 DESCRIPTION

PermaLath® 1000 is an open-weave, three-dimensional lath, formed from glass fibers. PermaLath® 1000 has a nominal thickness of $^1/_4$ inch (6.4 mm), weighs 8.8 oz/yard$^2$ (294 g/m$^2$) and is supplied in 39-inch-wide-by-150-foot (990.6 mm by 45.72 m) rolls.

## 4.0 INSTALLATION

### 4.1 General:

This report recognizes use of the lath installed over $^7/_{16}$-inch-thick (11.1 mm), Exposure 1, oriented strand board (OSB) complying with U.S. DOC PS2-92, or $^7/_{16}$-inch-thick (11.1 mm), Exterior or Exposure 1 plywood complying with U.S. DOC PS-1 or PS-2 for wood-framed assemblies; and $^1/_2$-inch-thick (12.7 mm) water-resistant core gypsum sheathing board complying with ASTM C 79 or ASTM C 1396 or ASTM C 1177 for metal-framed assemblies. The lath must be installed with a minimum 3-inch (76 mm) overlap at vertical and horizontal edges and must overlap over the flange of trim accessories. The lath must be applied flat and must be free of ripples, wrinkles, etc.

The lath is attached through the sheathing to either minimum No. 20 gage [base-metal thickness 0.033 inch (0.84 mm)] steel studs spaced a maximum of 16 inches (406 mm) on center using minimum No. 6 by $1^1/_4$-inch-long (32 mm), Type S, self-drilling, 0.32-inch-diameter head (8.1 mm) corrosion-resistant coated, bugle-head tapping screws or $1^1/_4$-inch-long-by-0.10-inch-diameter (32 mm-by-2.5 mm) VersaPIN Gripshank® fasteners by Aerosmith Fastening Systems with $1^1/_4$-inch-diameter (32 mm) Wind-Lock Lath Plates (legless) spaced 6 inches (152 mm) on center along studs and track; or to wood studs having a minimum specific gravity of 0.42 and at a maximum spacing of 16 inches (406 mm) on center with minimum $^3/_4$-inch-crown-by-$1^1/_4$-inch-long (19.1 by 32mm), No. 16 gage, galvanized metal staples placed every 6 inches (152 mm) along studs and plates.

Exterior cement plaster must be proportioned, mixed and installed in accordance with ASTM C 926 and must have a minimum thickness of $^3/_4$ inch (19.1 mm).

StuccoBase cementitious wall covering must be installed in accordance with ESR-1064, except as follows:

- The coating must have a minimum thickness of $^1/_2$ inch (12.7 mm).
- Installation is limited to the assemblies described in this report.

### 4.2 Transverse-load Resistance:

**4.2.1 Exterior Cement Plaster:** The maximum allowable positive and negative wind loads on the system incorporating PermaLath® 1000 glass fiber lath and exterior cement plaster with No. 20 gage [base-metal thickness of 33 mils (0.84 mm)] steel studs spaced a maximum of 16 inches (406 mm) on center, are 51 psf (2.44 kPa) and 21 psf (1.00 kPa), respectively. The maximum allowable positive and negative wind loads on the system incorporating PermaLath® 1000 glass fiber lath and exterior cement plaster with wood studs spaced at a maximum of 16 inches (406 mm) on center, are 54 psf (2.58 kPa) and 41 psf (1.96 kPa), respectively. Installation of assemblies must comply with Section 4.1 of this report.

**4.2.2 StuccoBase Cementitious Wall Coating:** The maximum allowable positive and negative wind loads on the system incorporating PermaLath® 1000 glass fiber lath and StuccoBase with No. 20 gage [base-metal thickness of

33 mils (0.84 mm)] steel studs spaced a maximum of 16 inches (406 mm) on center, are 23 psf (1.10 kPa) and 21 psf (1.00 kPa), respectively. The maximum allowable positive and negative wind loads on the system incorporating PermaLath® 1000 glass fiber lath and StuccoBase with wood studs spaced at a maximum of 16 inches (406 mm) on center, are 23 psf (1.10 kPa) and 30 psf (1.44 kPa), respectively. Installation of assemblies must comply with Section 4.1 of this report.

**4.3 One-hour Fire-resistance-rated Wall Assembly:**

**4.3.1 First Assembly (Nonload-bearing):**

**4.3.1.1 Interior Face:** One layer of $^5/_8$-inch-thick (15.9 mm), Type X gypsum wallboard complying with ASTM C 36 or ASTM C 1396 is applied vertically to minimum 20 gage steel studs spaced a maximum of 16 inches (406 mm) on center. The gypsum wallboard shall be attached with No. 6, 1-inch-long (25.4 mm), bugle head, corrosion-resistant, self-tapping screws spaced 12 inches (305 mm) on center at intermediate framing and 8 inches (203 mm) on center at the perimeter. All wallboard joints must be backed by framing. All wallboard joints are taped with joint tape and compound, and screw heads are covered with joint compound in accordance with ASTM C 840 or GA216.

**4.3.1.2 Exterior Face:** One layer of $^5/_8$-inch-thick (15.9 mm), Type X, water-resistant core treated gypsum sheathing, complying with ASTM C 79 or ASTM C 1396, is applied horizontally to the studs with No. 6, $1^1/_4$-inch-long (31.8 mm), self-tapping, corrosion-resistant, bugle head screws spaced a maximum of 8 inches (203 mm) on center at intermediate framing and at the perimeter. One layer of water-resistive barrier is required over the sheathing. PermaLath 1000 is fastened over the water-resistive barrier to the framing with No. 6, $1^1/_4$-inch-long (31.8 mm), self-tapping, corrosion-resistant, bugle head screws or $1^1/_4$-inch-long (32 mm) VersaPIN Gripshank® fasteners with $1^1/_4$-inch-diameter (31.8 mm) Lath Plates by Wind-Lock, spaced 6 inches (152 mm) on center at intermediate framing and at the perimeter. Minimum $^1/_2$-inch-thick (12.7 mm) StuccoBase is applied as described in Section 4.1.1 of ESR-1064 over the PermaLath 1000.

**4.3.2 Second Assembly (Nonload-bearing):**

**4.3.2.1 Interior Face:** One layer of $^5/_8$-inch-thick (15.9 mm), Type X gypsum wallboard complying with ASTM C 36 or ASTM C 1396 is applied vertically to minimum 20 gage steel studs spaced a maximum of 16 inches (406 mm) on center. The gypsum wallboard shall be attached with No. 6, 1-inch-long (25.4 mm), bugle head, corrosion-resistant, self-tapping screws spaced 12 inches (305 mm) on center at the intermediate framing and 8 inches (203 mm) on center at the perimeter. All wallboard joints must be backed by framing. All wallboard joints are taped with joint tape and compound, and screw heads are covered with joint compound in accordance with ASTM C 840 or GA216.

**4.3.2.2 Exterior Face:** One layer of minimum $^5/_8$-inch-thick (15.9 mm), Type X, water-resistant core treated gypsum sheathing, complying with ASTM C 79 or ASTM C 1396, is applied horizontally to the studs with No. 6, $1^1/_4$-inch-long (31.8 mm), self-tapping, corrosion-resistant, bugle head screws spaced a maximum of 8 inches (203 mm) on center at intermediate framing and at the perimeter. One layer of water-resistive barrier is applied over the sheathing. PermaLath 1000 is fastened over the water-resistive barrier to the framing with No. 6, $1^1/_4$-inch-long (31.8 mm), self-tapping, corrosion-resistant, bugle head screws or $1^1/_4$-inch-long (32 mm) VersaPIN GripShank® fasteners with $1^1/_4$-inch-diameter (31.8 mm) Lath Plates by Wind-Lock, spaced 6 inches (152 mm) on center at intermediate framing and at the perimeter. Minimum $^3/_4$-inch-thick (19 mm) exterior cement plaster complying with ASTM C 926 is applied in accordance with ASTM C 926 (Section 2510.3 of the IBC and Section R703.6 of the IRC) using the PermaLath 1000 in lieu of the metal lath.

**4.3.3 Third Assembly (Limited Load-bearing):**

**4.3.3.1 Interior Face:** One layer of $^5/_8$-inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C 36 or ASTM C 1396, is applied vertically to 2-by-4 wood studs spaced a maximum of 16 inches (406 mm) on center. The gypsum wallboard is attached with $1^7/_8$-inch-long (47.6 mm), 0.0975-inch-diameter (2.47 mm), galvanized steel, cup head drywall nails spaced 8 inches (203 mm) on center at intermediate and perimeter framing. All wallboard joints must be backed by framing. All wallboard joints are taped with joint tape and compound, and screw heads are covered with joint compound in accordance with ASTM C 840 or GA216. Kraft paper–faced fiberglass insulation batts are placed in the cavities between the studs, with the kraft paper surface on the interior side of the wall and fastened to the studs. The insulation batts must have an R-11 thermal resistance value and measure $3^1/_2$ inches (89mm) thick.

**4.3.3.2 Exterior Face:** One layer of $^7/_{16}$-inch-thick (11.1 mm) OSB complying with U.S. DOC PS-2 is applied horizontally to the studs with 6d sinker nails spaced a maximum of 8 inches (203 mm) on center at intermediate framing and at the perimeter. Two layers of water-resistive barrier are applied over the sheathing in accordance with IBC Section 2510.6 and IRC Section R703.6. PermaLath 1000 is installed over the water-resistive barrier into framing with 16 gage, 1-inch-thick (25.4 mm), $1^1/_4$-inch-long (31.8 mm), corrosion-resistant staples, spaced 6 inches (152 mm) on center at the intermediate framing and at the perimeter. Minimum $^3/_4$ inch-thick (19 mm) exterior cement plaster complying with ASTM C 926 is applied in accordance with ASTM C 926 (Section 2510.3 of the IBC and Section R703.6 of the IRC), using the PermaLath 1000 in lieu of the metal lath.

**4.3.3.3 Axial Design:** Axial loads applied to the wall assembly shall be limited to the lesser of the following:

1. 1,100 pounds (4893 N) per stud.
2. A maximum of 47.5 percent of the load calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS.
3. Design stress of 0.78 $F'_c$ calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS.
4. Design stress of 0.78 $F'_c$ at a maximum $l_e/d$ of 33 calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS.

**4.3.3.4 Fire Separation Distance:** When installed in accordance with Section 4.3.3, exterior walls shall have a minimum fire separation distance of 5 feet (1524 mm) in accordance with IBC Section 704.5.

**4.4 Noncombustible Construction:**

PermaLath 1000 embedded into exterior cement plaster complying with the code or StuccoBase cementitious exterior wall coating (ESR-1064) is considered noncombustible in accordance with Section 703.4 of the IBC.

## 5.0 CONDITIONS OF USE

The PermaLath® 1000 glass fiber lath 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** The materials and methods of installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and the requirements of this report, this report governs.

**5.2** The use of this system is limited to Type V-B construction under the IBC and to buildings constructed under the IRC, except as described in Section 4.3 for one-hour fire-resistance-rated wall assemblies and Section 4.4 for noncombustible construction.

**5.3** Design loads resisted by the exterior wall covering systems described in this report must be determined in accordance with the applicable code and must not exceed the allowable transverse loads described in Section 4.2 of this report. The framing and sheathing must be designed and installed in accordance with the applicable code.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Glass Fiber Lath Used in Cementitious Exterior Wall Coatings or Exterior Cement Plaster (Stucco) (AC275), dated June 2007.

## 7.0 IDENTIFICATION

Each roll of PermaLath® 1000 must be identified by a label bearing the company name (BASF Wall Systems), roll dimensions, and the ICC-ES evaluation report number (ESR-2429).