

# ICC-ES Evaluation Report

**ESR-2245**

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**DIVISION 07 00 00—THERMAL AND MOISTURE  
PROTECTION****Section: 07 18 13—Pedestrian Traffic Coatings****REPORT HOLDER:**

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**EVALUATION SUBJECT:****ENDURO-KOTE AND ENDURO-FLEX KOTE WALKING  
DECK AND ROOF COVERING SYSTEMS****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)
- 1997 *Uniform Building Code*™ (UBC)

**Properties evaluated:**

- Durability
- Wind resistance
- Fire classification
- Fire-resistance-rated construction

**2.0 USES**

Enduro-Kote and Enduro-Flex Kote are used in walking deck and classified roof covering systems. Enduro-Kote is designed for use directly over plywood substrates as described in Section 4.2. Enduro-Flex Kote is designed for use directly over steel deck and concrete substrates as described in Section 4.3. When installed in accordance with Section 4.2 of this report, Enduro-Kote has a Class A roof classification. When installed in accordance with Section 4.3 of this report, Enduro-Flex Kote also has a Class A roof classification.

**3.0 DESCRIPTION****3.1 Enduro-Kote:**

The Enduro-Kote system consists of three coats of EKC cementitious mixture combined in the field with EKL acrylic emulsion and an EKS color coat, applied over metal lath stapled to a plywood substrate. See Section 4.2 for Enduro-Kote configurations and corresponding component requirements.

**3.1.1 Materials:**

**3.1.1.1 EKC Cementitious Mixture:** A dry mixture of portland cement and silica sand packaged in 46-pound (21 kg) bags. Shelf life is one year when unopened and stored in a dry area at temperatures no lower than 50°F (10°C).

**3.1.1.2 EKL Acrylic Emulsion:** An acrylic emulsion packaged in 5-gallon (18.9 L) containers. Shelf life is one year when unopened and stored at temperatures no lower than 50°F (10°C).

**3.1.1.3 EKS Color Coat:** An acrylic color coat packaged in 5-gallon (18.9 L) containers. Shelf life is one year when unopened and stored at temperatures no lower than 50°F (10°C).

**3.1.1.4 Metal lath:** A minimum 2.5-pound-per-square-yard (0.84 kg./m<sup>2</sup>), hot-dipped galvanized, expanded metal lath, complying with ASTM C 847.

**3.1.1.5 Staples:** Minimum No. 16 gage, <sup>7</sup>/<sub>8</sub>- or 1-inch-wide (22.2 or 25.4 mm), and <sup>5</sup>/<sub>8</sub>-inch-long (15.9 mm), corrosion-resistant staples, complying with ASTM F 1667.

**3.1.1.6 Plywood Substrate:** A minimum <sup>5</sup>/<sub>8</sub>-inch-thick (15.9 mm), exterior-grade plywood, with tongue-and-groove edges, complying with U.S. Department of Commerce Product Standard PS-1 (UBC Standard 23-2) or PS-2 (UBC Standard 23-3).

**3.2 Enduro-Flex Kote:**

Enduro-Flex Kote consists of one coat of EFC-UL98 cementitious mixture combined with EFL-94 acrylic polymer dispersion, two coats of Enduro-Kote (second coat and texture coat) and an EKS Color Coat. See Section 4.3 for Enduro-Flex Kote configurations and corresponding component requirements.

**3.2.1 Materials:****3.2.1.1 Enduro-Flex Kote:**

**3.2.1.1.1 EFC-UL98 Cementitious Mixture:** A dry mixture of portland cement and silica sand packaged in 28-pound (12.7 kg) bags. Shelf life is one year when

unopened and stored in a dry area at temperatures no lower than 50°F (10°C).

**3.2.1.1.2 EFL-UL94 Acrylic Polymer Dispersion:** An acrylic polymer dispersion packaged with 2 gallons (7.6 L) of material in a 5-gallon (18.9 L) pail. Shelf life is one year when unopened and stored at temperatures no lower than 50°F (10°C).

**3.2.1.2 Enduro-Kote Components:** As described in Sections 3.1.1.1., 3.1.1.2 and 3.1.1.3.

### 3.2.2 Substrates:

**3.2.2.1 Concrete:** Concrete substrates must comply with the requirements of the applicable code.

**3.2.2.2 Steel Deck:** Steel deck substrates consist of flat steel sheets and must be backed by a solid substrate. The steel deck and solid substrate must comply with the requirements of the applicable code.

## 4.0 INSTALLATION

### 4.1 General:

Installation of the Enduro-Kote and Enduro-Flex Kote must be in accordance with the manufacturer's published installation instructions, the applicable code and this report. The manufacturer's installation instructions must be available on the jobsite during application. Installation is limited to conditions when the weather is dry and the ambient air temperature is between 50°F and 95°F (10°C and 35°C). Materials must not be applied if precipitation is occurring or is expected within 24 hours after application.

### 4.2 Enduro-Kote:

**4.2.1 General:** The Enduro-Kote walking deck and roof-covering system consists of three coats of EKC cementitious mixture combined with EKL acrylic emulsion. The first coat is troweled into the galvanized expanded metal lath that is stapled to the plywood substrate. A second coat is troweled over the first coat and a texture coat is spray-applied, followed by two coats of EKS color coat, producing a minimum total dry thickness of  $\frac{1}{4}$  inch (6.4 mm).

**4.2.2 Preparation of Plywood Substrate:** The substrate must be structurally sound, clean and dry, and must be sloped a minimum of  $\frac{1}{4}$  inch per 1 foot (2 percent slope). One layer of plywood is applied to structural framing members spaced a maximum of 16 inches (406 mm) on center. All joints must be blocked or tongue and grooved, supported along all edges, and fastened by ring shank nails, screw nails or countersunk wood screws, sized and spaced in accordance with the requirements of the applicable code. All penetrations through and terminations of the sheathing must be protected with metal flashing in accordance with the requirements of the applicable code and the manufacturer's published installation instructions.

**4.2.3 Metal Lath:** The metal lath with no overlap at seams is attached to the plywood substrate with staples, not less than 24 per square foot (258 fasteners per m<sup>2</sup>), uniformly distributed. Metal lath sections are spliced at butt joints with staples as described above, spaced no greater than 1 inch (25.4 mm) on center. The metal lath must lap metal flashing to the vertical riser of the flashing, a minimum of 2 inches (51 mm).

**4.2.4 First Coat:** The mixture consists of one 46-pound (21 kg) bag of EKC cementitious mixture, and 1 gallon (3.8 L) of EKL acrylic emulsion. The mixture is troweled

into the metal lath for a maximum coverage of 46 square feet (4.27 m<sup>2</sup>), filling all holes in the lath to a minimum thickness of  $\frac{1}{8}$  inch (3.2 mm). Minimum time for air curing is two hours, before application of the next coat.

**4.2.5 Second Coat:** The second coat mixture is identical to the first coat. It is troweled over the first coat to a minimum thickness of  $\frac{1}{16}$  inch (1.6 mm), and yields a maximum coverage of 92 square feet (8.55 m<sup>2</sup>). Temperature and weather conditions are the same as for the first coat. The next coat is applied when the surface is hard.

**4.2.6 Texture Coat:** The texture coat mixture is identical to the second coat mixture and is spray-applied, with thickness and coverage being the same. Minimum air cure time is two hours before application of the color coat.

**4.2.7 Color Coat:** The EKS color coat is applied in two coats with a paint roller. One gallon of EKS covers a maximum of 180 square feet (17.1 m<sup>2</sup>) for two coats. The second coat can be applied when the first coat is dry to the touch.

Ceramic tile, pavers, brick, or  $1\frac{1}{2}$ -inch-thick (38 mm) lightweight concrete may be used over the Enduro-Kote system.

**4.2.8 Method of Repair:** The damaged area is cleared and cleaned of all existing material and replaced in exactly the same manner as for new installations described in Section 4.2.

**4.2.9 Wind Resistance:** The roof deck construction over which the system is installed must be designed to resist the minimum design wind pressures set forth in the applicable code.

**4.2.10 Roof Classification:** When the Enduro-Kote system is installed as described in Section 4.2 at a roof slope of  $\frac{1}{4}$  inch per foot (2 percent slope), the system has a Class A roof classification.

**4.2.11 One-hour Fire-resistance-rated Construction:** The  $\frac{1}{4}$ -inch (6.4 mm) Enduro-Kote system, installed in accordance with Section 4.2, with minimum nominally 2-by-8 joists spaced at 16 inches (406 mm) on center, may be substituted for the double wood floor described in IBC Table 720.1(3), Assembly 13 (UBC Table 7-C, Assembly 13). When installed over nominally 2-by-8 joists, the design bending stress assigned to the joists must be limited to 78 percent of the code-prescribed design values.

### 4.3 Enduro-Flex Kote:

**4.3.1 General:** The Enduro-Flex Kote walking deck and roof covering system consists of one coat of Enduro-Flex Kote consisting of a mixture of EFC-UL98 cementitious mixture and EFL-UL94 acrylic polymer dispersion, troweled over the substrate. This coat is covered with an Enduro-Kote second coat, texture coat and color coat to achieve a minimum dry thickness of  $\frac{3}{16}$  inch (4.8 mm).

### 4.3.2 Preparation of Substrates:

**4.3.2.1 Concrete:** Structural concrete must be designed and installed in accordance with the requirements of the applicable code and ACI (American Concrete Institute) 301, Specifications for Structural Concrete for Buildings. The concrete surface must be steel troweled, fine broom finished, and free of loose particles, fins, ridges, voids or air-entrained holes. The concrete substrate must be sloped for proper drainage in accordance with the requirements of the applicable code. The surface must be free of curing agents, bond breakers, oil, grease, dust, or any foreign

matter which would prevent adequate bonding. Water blasting, sand blasting, or acid etching may be used for cleaning the surfaces in accordance with the manufacturer's published installation instructions.

Control joints and expansion joints must be installed at all known deck stress concentration points throughout the surface of the deck, to control cracking caused by shrinkage and deflection.

**4.3.2.2 Steel:** Surfaces must be solidly backed by a rigid substrate and have sufficient rigidity to not exceed the maximum deflection allowed by the applicable code. The surface must be roughened sufficiently to assure proper bonding, which may be obtained by sanding or grinding. All dust, oil, grease, and foreign matter must be removed from the surface.

**4.3.3 First Coat:** The mixture consists of 2 gallons (7.57 L) of EFL-UL94 acrylic polymer dispersion and 28 pounds (12.7 kg) of EFC-UL98 cementitious mixture. The mixture is troweled over the substrate to a minimum dry thickness of  $\frac{1}{16}$  inch (1.6 mm), with an approximate coverage of 110 square feet (10.2 m<sup>2</sup>) per mixture. A minimum of two hours of air-cure time, depending on humidity and air temperature, and in accordance with the manufacturer's instructions, is allowed before application of the Enduro-Kote.

**4.3.4 Second Coat, Texture Coat and Color Coat:** The Enduro-Kote is as described in Sections 4.2.5, 4.2.6 and 4.2.7. The total minimum thickness of the Enduro-Flex Kote system must be  $\frac{3}{16}$  inch (4.8 mm).

Ceramic tile, pavers, brick, or  $1\frac{1}{2}$ -inch-thick (38 mm) lightweight concrete may be used over the Enduro-Flex Kote system.

**4.3.5 Method of Repair:** The damaged area is cleared and cleaned of all existing material and replaced in exactly the same manner as for new installations described in Section 4.3.

**4.3.6 Wind Resistance:** The roof deck construction over which the system is installed must be designed to resist the minimum design wind pressures set forth in the applicable code.

**4.3.7 Roof Classification:** When the Enduro-Kote Flex system is installed as described in Section 4.3 at a roof slope of  $\frac{1}{4}$  inch per foot (2 percent slope), the system has a Class A roof classification.

## 5.0 CONDITIONS OF USE

The Enduro Products Enduro-Kote and Enduro-Flex Kote walking deck and roof covering systems 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 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 shall govern.
- 5.2 The deck on which the coating system is installed must be designed to resist the design wind pressures of the applicable code.
- 5.3 When Enduro-Kote is installed as a component of a fire-resistance-rated assembly, the construction must be as set forth in Section 4.2.11.
- 5.4 Products are manufactured in the Enduro Products, Inc., facility in Anaheim, California, under a quality control program with inspections by PFS Corporation (AA-652).

## 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Walking Decks (AC39), dated February 2010.
- 6.2 Report of testing in accordance with ASTM E 119 (UBC Standard 7-1).

## 7.0 IDENTIFICATION

Each container bears the manufacturer's name and address, product name, shelf life, batch number keyed to date of manufacture, evaluation report number (ESR-2245) and the name of the inspection agency (PFS Corporation).