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DIVISION: 06—WOOD AND PLASTICS
Section: 06080—Factory-Applied Wood Coatings
Section: 06160—Sheathing

REPORT HOLDER:

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EVALUATION SUBJECT:

BLAZEGUARD® FIRE-RATED SHEATHING AND MULE-HIDE FR DECK PANELS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2003 *International Building Code*® (IBC)
- 2003 *International Residential Code*® (IRC)

Properties evaluated:

- Surface-burning characteristics
- Durability
- Thermal barrier
- Component of fire-resistance-rated assemblies
- Component of roof covering classified assemblies

2.0 USES

Blazeguard® Fire-Rated Sheathing is used as a roof sheathing, a wall sheathing, an interior finish, a thermal barrier, a component of a fire-resistance-rated assembly and a component of a fire-classified roof covering assembly.

3.0 DESCRIPTION

3.1 General:

Blazeguard® Fire-Rated Sheathing is a composite panel consisting of a layer of Pyrotite—an inert, inorganic fire-shield—factory-applied to either plywood or oriented strand board (OSB) complying, respectively, with US DOC PS1 or US DOC PS2. Pyrotite is applied to one or both faces of the plywood or OSB, either adhesively, mechanically or through direct application, as described in Section 3.2.

The panels are available in sizes from 4 feet by 8 feet (1219 mm by 2438 mm) up to 8 feet by 24 feet (2438 mm by 7315 mm), and in nominal thicknesses of $\frac{3}{8}$ inch (9.5 mm), $\frac{15}{32}$ inch (12 mm), $\frac{1}{2}$ inch (12.7 mm), $\frac{5}{8}$ inch (15.9 mm) and $\frac{3}{4}$ inch (19 mm).

3.2 Methods of Applying Fire Shield:

3.2.1 Adhesive Method: A laminate of the appropriate thickness (see product descriptions in Section 3.3) is produced by applying a combination of Pyrotite slurry and fiberglass mat over a sheet of mylar plastic. The fiberglass mat shall have a minimum tensile strength in the MD of 30 psi (206 kPa), and a minimum basis weight of 1.6 pounds per 100 square feet (0.73 kg per 9.29 m²) for 0.045-inch (1.1 mm) Pyrotite thickness and 1.80 pounds per 100 square feet (0.82 kg per 9.29 m²) for 0.060-inch (1.5 mm) Pyrotite thickness. The material is rolled with an aluminum fiberglass roller sized to ensure appropriate thickness and penetration of the fiberglass. The slurry/fiberglass mixture is then heated and allowed to cure into a hardened laminate. The laminate, once cured, is separated from the plastic sheet and trimmed to size.

The adhesive, Isoset® WD3-A322 crosslinked with CX-47, manufactured by Ashland Specialty Chemical Company and recognized in evaluation report NER-165, is roller- or spray-applied to the surface of a selected substrate material following the guidelines and instructions of the adhesive manufacturer. The cured and trimmed Pyrotite laminate is then placed over the substrate material and placed in a press for a predetermined temperature and pressure (the temperature/pressure formula will vary slightly based on the approved adhesive) until the adhesive is appropriately hardened.

3.2.2 Mechanically Applied Method: A laminate is prepared as described in Section 3.2.1. The cured and trimmed Pyrotite laminate is placed over the substrate material and attached by mechanically nailing or stapling through the Pyrotite laminate into the substrate with $\frac{3}{8}$ -inch (9.53 mm) staples or nails. Care is taken to ensure the staples or nails do not protrude through the opposite side of the substrate. The nails/staples are spaced a maximum of every 6 inches (152.4 mm) along the perimeter of the panel and at a maximum of every 12 inches (304.8 mm) over the entire field of the panel.

3.2.3 Direct Application: The Pyrotite material is applied by spray application or by applying the Pyrotite slurry through other means (e.g., roll coating or curtain coating) upon the surface of an approved substrate. The Pyrotite slurry is allowed to cure prior to stacking. Excess material is trimmed from the panel edges. The thickness is determined by selected substrate and product type (see Section 3.3).

3.3 Product Numbers, Names and Descriptions:

3.3.1 15832-1: Blazeguard® Fire-Rated Sheathing—Adhesively or Mechanically Applied on Plywood: A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.045 inch (1.1 mm), applied by adhesive or mechanical process to a minimum $\frac{3}{8}$ -inch-thick (9.5 mm) plywood substrate. The finished panel has a minimum coating weight of 0.57 lb/ft² (2.78 kg/m²).

3.3.2 15832-2: Blazeguard® Fire-Rated Sheathing—Adhesively or Mechanically Applied on Oriented Strand Board (OSB): A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.060 inch (1.5 mm) applied by adhesive or mechanical process to a minimum $7/16$ -inch-thick (11.11 mm) OSB substrate. The finished panel has a minimum coating weight of 0.60 lb/ft² (2.93 kg/m²).

3.3.3 15832-3: Blazeguard® Fire-Rated Sheathing—Directly Applied on Plywood: A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.060 inch (1.5 mm) applied by direct process to a minimum $3/8$ -inch-thick (9.5 mm) plywood substrate. The finished panel has minimum coating weight of 0.57 lb/ft² (2.78 kg/m²).

3.3.4 15832-4: Blazeguard® Fire-Rated Sheathing—Directly Applied on Oriented Strand Board (OSB): A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.080 inch (2.03 mm) applied by direct process to a minimum $7/16$ -inch-thick (11.11 mm) OSB substrate. The finished panel has a minimum coating weight of 0.60 lb/ft² (2.93 kg/m²).

3.3.5 15832-5: Mule-Hide FR Deck Panel A—Directly Applied on Plywood: A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.080 inch (2.03 mm) directly applied to a minimum $3/8$ -inch-thick (9.5 mm) plywood substrate. The minimum coating weight of the finished panel is 0.66 lb/ft² (3.22 kg/m²).

3.3.6 15832-6: Mule-Hide FR Deck Panel C—Directly Applied on Plywood or Oriented Strand Board (OSB): A fire-rated sheathing panel with a minimum Pyrotite thickness of 0.04 inch (1.02 mm) directly applied to a minimum $3/8$ -inch-thick (9.5 mm) plywood or OSB substrate. The minimum coating weight of the finished panel is 0.22 lb/ft² (1.07 kg/m²).

4.0 INSTALLATION

4.1 General:

Blazeguard® Fire-Rated Sheathing shall be installed in accordance with the manufacturer's published literature and the requirements for wood structural panels in Chapter 23 of the IBC, or Sections R604 and R803.2 of the IRC.

The manufacturer's published installation instructions and this report shall be strictly adhered to, and a copy of the instructions shall be available at all times on the jobsite during installation.

If there are any conflicts between the manufacturer's instructions and this report, this report shall govern.

4.2 Applications:

Blazeguard® Fire-Rated Sheathing shall be installed in the following applications:

- Roof sheathing on buildings of Type III, IV and V construction for a distance of 4 feet (1220 mm) on both sides of a fire wall to provide continuity [IBC Section 705.6, Exception 4.3, and IRC Section R317.2.2(2) Exception]. The panels shall be installed with the Pyrotite laminate facing the interior of the building.
- Exterior walls and roof sheathing on buildings of Type I and II construction, as described in IBC Section 603.1 (1.2 and 1.3). The Pyrotite laminate shall be laminated to both sides of the panels.
- Class A interior finish material for walls and ceilings of Type V construction (IBC Section 803). The panels shall be installed with the Pyrotite laminate facing the interior of the building.
- Thermal barrier for separating foam plastic insulation from the interior of a building (IBC Section 2603.4). The panels

shall be installed with the Pyrotite laminate facing the interior of the building.

- Component of fire-resistance-rated construction (IBC Section 703). Refer to assemblies described in Section 4.3 of this report for orientation of the Pyrotite laminate.
- Component of fire-classified roof covering assemblies (IBC Section 505.1). Refer to Section 4.4 of this report for orientation of the Pyrotite laminate.

4.3 Fire-resistance-rated Wall Assemblies:

4.3.1 One-hour Exterior Wall Assembly—Wood Stud Limited Load Bearing Wall—Interior Fire Exposure:

The wall assembly shall be constructed of nominally 2-inch-by-4-inch, No. 1 grade, Douglas fir–larch ($G = 0.50$) wood studs spaced 16 inches (406 mm) on center, with two top plates and one bottom plate and horizontal cross-bracing at mid-height of the wall. The interior fire side of the wall shall be covered with one layer of $5/8$ -inch-thick (15.88 mm), 4-foot-by-10-foot (1.2 m by 3 m), Type X gypsum wallboard, applied vertically with horizontal joints blocked, and fastened with 6d, cement-coated, $17/8$ -inch-long (47.63 mm), cup-head drywall nails with 0.0915-inch (2.32 mm) shank diameters and $1/4$ -inch (6.35 mm) head diameters, spaced 7 inches (178 mm) on center along all studs and plates. The exposed fastener heads and wallboard joints shall be treated with two layers of gypsum compound. A minimum 2-inch-wide (51 mm) paper, plastic or fiberglass tape shall be embedded in the first layer of compound over wallboard joints. Stud cavities shall be filled with unfaced mineral fiber batt insulation, nominally $31/2$ inches (88.9 mm) thick and with a 3 pcf (48.06 kg/m³) nominal density, friction-fit between studs, cross-bracing, and top and bottom plates. The exterior face of the wall shall be a single layer of Blazeguard® Fire-Rated Sheathing of nominally $1/2$ -inch-thick plywood or OSB, APA rated $15/32$ -inch-thick (11.91 mm) plywood or $7/16$ -inch-thick (11.11 mm) OSB, with a 0.060-inch-thick (1.52 mm) Pyrotite laminate applied to only one face of the wood panel. The sheathing shall be installed vertically with horizontal joints blocked and with the Pyrotite laminate facing the wall cavity, and shall be attached to the studs with $17/8$ -inch-long (47.63 mm), galvanized, 6d common nails, spaced 6 inches (152 mm) on center around the perimeter of the sheathing and 12 inches (304.8 mm) on center in the field.

The wall shall have a fire separation distance of 5 feet (1524 mm) or greater.

When use is as a load-bearing wall with a one-hour fire-resistance-rating, the design axial load shall not exceed 78 percent of the design load for the wood members.

4.3.2 Two-hour Exterior Wall Assembly—Wood Stud Limited Load Bearing Wall—Interior Fire Exposure:

The wall assembly shall be constructed of nominally 2-inch-by-4-inch, No. 1 grade, Douglas fir–larch ($G = 0.50$) wood studs spaced 16 inches (406 mm) on center, with two top plates and one bottom plate and horizontal cross-bracing at mid-height of the wall [maximum wall height of 10 feet (3 m)]. The interior fire side of the wall shall be covered with two layers of $5/8$ -inch-thick (15.9 mm), 4-foot-by-10-foot (1.2 m by 3 m), Type X gypsum wallboard, applied vertically. The inner layer of wallboard shall be fastened with 6d, cement-coated, $17/8$ -inch-long (47.63 mm), cup-head drywall nails with 0.0915-inch (2.32 mm) shank diameters and $1/4$ -inch (6.35 mm) head diameters, spaced 6 inches (152 mm) on center along all studs and plates. The outer layer of wallboard shall be installed vertically with joints staggered a minimum of 16 inches (406 mm), and fastened with 8d, cement-coated, $23/8$ -inch-long (60.33 mm), cup-head drywall nails with 0.113-inch (2.87 mm) shank diameters and $9/32$ -inch (7.14 mm) head diameters, spaced 8 inches (203.2 mm) on center along studs

and plates. The face layer of the wallboard shall have the exposed fastener heads and board joints treated with two layers of gypsum compound. A minimum 2-inch-wide (51 mm) paper, plastic or fiberglass tape shall be embedded in the first layer of compound over wallboard joints. Stud cavities shall be filled with unfaced mineral fiber batt insulation, nominally 3 $\frac{1}{2}$ inches (89 mm) thick and with a 3 pcf (48 kg/m³) nominal density, friction-fit between studs, cross-bracing, and top and bottom plates. The exterior face of the wall shall be a single layer of Blazeguard® Fire-Rated Sheathing of nominally $\frac{1}{2}$ -inch plywood or OSB, APA rated $\frac{15}{32}$ -inch-thick (11.91 mm) plywood or $\frac{7}{16}$ -inch-thick (11.11 mm) OSB, with a 0.060-inch-thick (1.52 mm) Pyrotite laminate applied to both faces of the wood panel. The plywood core panels shall be nominally $\frac{5}{8}$ inch (15.88 mm) thick and the OSB core panels shall be nominally $\frac{9}{16}$ inch (14.29 mm) thick. The sheathing shall be installed vertically with horizontal joints blocked, and attached to the studs with 1 $\frac{7}{8}$ -inch-long (47.63 mm), galvanized, 6d common nails, spaced 6 inches (152 mm) on center around the perimeter of the sheathing and 12 inches (305 mm) on center in the field.

The wall shall have a fire separation distance of 5 feet (1524 mm) or greater.

When use is as a load-bearing wall with a two-hour fire-resistance rating, the design axial load shall not exceed 78 percent of the design load for the wood members.

4.3.3 Two-hour Assembly—Wood Stud Limited Load Bearing Fire-resistance-rated—Interior Party Wall: The wall assembly is a double-framed wall consisting of two identical stud walls with a space of 1 inch (25.4 mm) separating them. The walls shall be constructed of nominally 2-inch-by-4-inch, No. 1 grade, Douglas fir–larch (G = 0.50) wood studs spaced 16 inches (406 mm) on center, with two 2-by-4 top plates and one 2-by-4 bottom plate and horizontal cross-bracing at mid-height of the wall [maximum wall height of 10 feet (3 m)]. Both faces of the wall shall be covered with an inner layer of Blazeguard® Fire-Rated Sheathing of nominally $\frac{1}{2}$ -inch plywood or OSB, APA rated $\frac{15}{32}$ -thick (11.91 mm) plywood or $\frac{7}{16}$ -inch-thick (11.11 mm) OSB, with a 0.060-inch-thick (1.52 mm) Pyrotite laminate applied to only one face of the wood panel. The sheathing is installed vertically with the Pyrotite laminate facing the wall cavity, and attached to the studs with 1 $\frac{7}{8}$ -inch-long (47.6 mm), galvanized, 6d common nails, spaced 6 inches (152mm) on center around the perimeter of the sheathing and 12 inches (305 mm) on center in the field. Both faces of the assembly shall be covered with an outer layer of $\frac{5}{8}$ -inch-thick (15.88 mm), 4-foot-by-10 foot (1.2 m by 3 m), Type X gypsum wallboard, applied vertically with joints staggered a minimum of 16 inches (406 mm) from the Pyrotite laminate sheathing and fastened with 8d, cement-coated, 2 $\frac{3}{8}$ -inch-long (60.33 mm), cup-head drywall nails with 0.113-inch (2.87 mm) shank diameters and $\frac{9}{32}$ -inch (7.1 mm) head diameters, spaced 8 inches (203 mm) on center along studs and plates. The face layer of the wallboard shall have the exposed fastener heads and board joint treated with two layers of gypsum compound. A minimum 2-inch-wide (51 mm) paper, plastic or fiberglass tape shall be embedded in the first layer of compound over wallboard joints. Stud cavities shall be filled with unfaced mineral fiber batt insulation, nominally 3 $\frac{1}{2}$ inches (89 mm) thick and with a 3 pcf (48.0 kg/m³) nominal density, friction-fit between studs, cross-bracing, and top and bottom plates.

Fire exposure may be from either side of the wall.

When use is as a load-bearing wall with a two-hour fire-resistance rating, the design axial load shall not exceed 78 percent of the design load for the wood members.

4.4 Fire-classified Roof Covering Assemblies:

4.4.1 Class A, Fully Adhered, Single-ply Membrane Roof Covering Assembly: The roof deck shall be product No. 15832-5, Mule-Hide FR Deck Panel A installed with the Pyrotite laminate facing the exterior (up). All deck joints shall be blocked with nominally 2-by-4 lumber. Gaps in the deck panels shall be caulked with W.R. Grace & Co. FlameSafe FS900+ caulk, recognized in evaluation report ESR-1043. The deck shall be covered with Mule-Hide EPDM Membranes, either 0.045 or 0.060 inch (1.14 or 1.52 mm) thick, recognized in ER-5867. The membrane shall be fully adhered to the deck with Mule-Hide Water-Base Bonding adhesive recognized in ER-5867. The adhesive shall be applied at a rate of 1 gallon per 100 square feet (3.79 L per 9.29 m²).

4.4.2 Class C, Fully Adhered, Singly-ply Membrane Roof Covering Assembly: The roof deck shall be product No. 15832-6, Mule-Hide FR Deck Panel C installed with the Pyrotite laminate facing the exterior (up). The deck shall be covered with Mule-Hide EPDM Membranes, either 0.045 or 0.060 inch (1.14 or 1.52 mm) thick, recognized in ER-5867. The membrane shall be fully adhered to the deck with Mule-Hide Water-Base Bonding adhesive recognized in ER-5867. The adhesive shall be applied at a rate of 1 gallon per 100 square feet (3.79 L per 9.29 m²).

5.0 CONDITIONS OF USE

The Blazeguard® Fire-Rated Sheathing and Mule-Hide FR Deck Panels 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 The structural system is outside the scope of this report and shall be designed in accordance with the IBC or the IRC.
- 5.2 Use of the Blazeguard® Fire-Rated Sheathing for applications other than those noted in Section 4.2 of this report is outside the scope of this report.
- 5.3 Blazeguard® Fire-Rated Sheathing is manufactured by Barrier Technology Corporation, in Watkins, Minnesota, under a quality control program with inspections by Omega Point Laboratories, Inc. (AA-657).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Wood Structural Panels Laminated with an Inert, Inorganic Fire Shield (AC264), dated October 2004.

7.0 IDENTIFICATION

Each panel of Blazeguard® Fire-Rated Sheathing covered by this report shall be identified by a stamp bearing the manufacturer's name (Barrier Technology Corporation) and/or trademark, the product name, the product identification number, the name of the inspection agency [Omega Point Laboratories, Inc. (AA-657)] and the evaluation report number (ESR-1365).

Each panel shall have the grade, thickness and span rating designation for the wood structural panels visible for field identification after lamination.