DCA09-DEC-069

BARRIER

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510 4th Street North
P.O. Box 379
Watkins, MN 55389 USA

An International Barrier Technology Company

www.intlbarrier.com

March 16, 2009

FILING AND ACKNOWLEDGEMENT
FILED, on this date, with the designated Agency Clerk, receipt of which is hereby acknowledged.

3/19/09
Miriam Snipes — Date
Deputy Agency Clerk

Florida Building Commission
Department of Community Affairs
Building Codes and Standards
255 Shumard Oak Boulevard
Tallahassee, FL 32399-2100

Re: Request for Declaratory Statement - Blazeguard® Fire-Rated Sheathing

Dear Florida Building Commission:

Barrier Technology Corporation, the manufacturers of Blazeguard Fire-Rated Sheathing (also known as *MuleHide FR Deck Panel*), is hereby requesting a formal interpretation of the suitability of using Blazeguard as a roof covering in Type II modular buildings being built as public schools in the State of Florida. In effect, the Blazeguard product would be used as a replacement product for such materials as DensDeck under a fully adhered single-ply membrane. A replacement for fully adhered DensDeck applications is being sought in states like Florida because wind uplift requirements may exceed DensDeck's classified limits. Barrier has been approached by a number of modular building manufacturers producing public classrooms in/for Florida regarding a clarification of this application.

The specific application detail would involve installing the Blazeguard/MuleHide FR Deck Panel, over the top of a structural steel deck and then fully adhering, or mechanically attaching, single-ply membranes directly to the Blazeguard panel as specified in UL classifications or in Barrier's ICC ESR #1365 (attached). The ICC ESR specifically allows the use of Blazeguard as 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); provided the Blazeguard product is coated on both faces.

I am aware that FRTW is not allowed in roof construction in public school buildings through mention in FBC Sections 423.11 and 423.27.7. Blazeguard is **not** considered FRTW. FRTW is evaluated for code suitability by ICC under Acceptance Criteria #66 (AC 66): ***Fire Retardant Treated Wood.*** Blazeguard is in an entirely different product category and is evaluated for code compliance by ICC under AC 264: ***Wood Structural Panels Laminated with an Inert Inorganic Fire Shield.***

The FBC Section that I believe is most pertinent to our request is Section 603.1.4 which permits combustible roof coverings that have a rated fire resistance of A, B, or C.

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I have attached the following technical documents for consideration in your review:

1) Blazeguard Overview;
2) ICC - ESR 1365 (notice section 4.2 – Applications, including 4.2.b where Blazeguard is allowed in walls and roof decks of Type I and II construction);
3) Blazeguard Material Safety Data Sheet;
4) Blazeguard Product Specifications (including Testing Summary).

The specific Class A and C single-ply fire classification listings and design specifications for Blazeguard are available at UL's website (www.ul.com) under file TGFU.R21591. Wind uplift resistance ratings and design specifications are also available at UL's website under file TGIK.R21591.

If attending one of your staff meetings or public hearings where product approvals or "declaratory statements" are discussed would be beneficial to your analysis and evaluation, I would be happy to attend. Please call with any questions.

Thank you and sincerely,

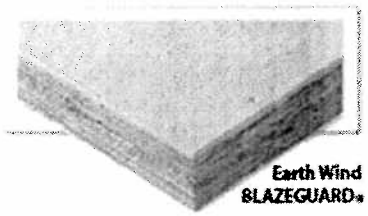
Michael Huddy, PhD
President and CEO
Barrier Technology Corporation
(800) 638-4570

cc Ken Godfrey

BLAZEGUARD

Fire Rated Wood Panels

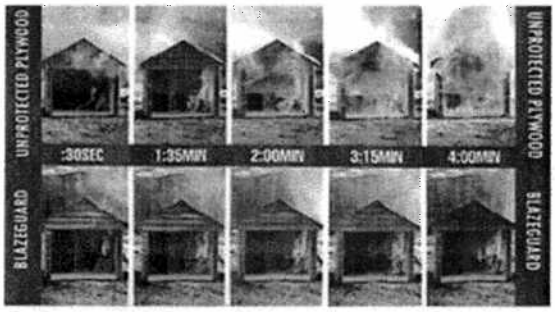
Blazeguard fire rated wood panels consist of a sheet of oriented strand board (OSB) or plywood combined with a thin coating of International Barrier's patented Pyrotite fire resistant formulation.



- A Blazeguard wood panel is able to achieve a Class A, structural flame spread rating (as measured by ASTM E-84 extended to 30 minutes) and its burn-through resistance (as measured by ASTM E-119) is nearly triple that of untreated wood panels.
- Blazeguard has been evaluated by code evaluation services agencies for use as structural roof sheathing, exterior fire resistant wall assemblies, interior panels, as a thermal barrier for structural insulated panels (SIPs), and as a component of floor decking.
- Blazeguard wood panels are stronger than uncoated wood panels, and do not lose strength over time. In contrast, pressure-impregnated, chemically treated fire retardant treated (FRT) plywood loses strength during the treatment process and thereafter.
- Blazeguard is resistant to periodic wetting, so rainstorms on the job site do not require "redrying," as does FRT plywood.
- Blazeguard waste (from board trimmings) is environmentally friendly and safe for any landfill that would normally accept plywood or OSB waste.
- Blazeguard is easy to handle and install, and is impact resistant.

Blazeguard is used in building applications where either a Class A flame spread or burn through resistance rating is required by building code, or where developers/builders generally desire a high quality, environmentally friendly, non-toxic product that delivers superior fire resistance and attributes such as mold and mildew resistance, structural strength and impact resistance. Insurance rates may be reduced if the fire safety of a building is enhanced by materials like Blazeguard.

The BlazeGuard® Difference



The Blazeguard® shield prevents ignition, inhibits flame spread and flame penetration, and significantly reduces both smoke and the production of toxic and combustible gasses, during a fire.

Strength, Performance and the Test of Time

In an evaluation conducted by Weyerhaeuser, over 80 different fire retardant technologies were tested on different attributes, including:

- Interaction with nails and staples to guard against corrosion
- Rain, moisture and heat resistance
- Smell
- Paint compatibility
- Fire resistance
- Flame spread
- Smoke developed
- Toxicity
- Environmental compatibility (landfill)
- Water content

Blazeguard was then tested for aging. After 50 simulated years or more in attic conditions of 170°F with 65% relative humidity, showed no relative change in panel strength or performance. Flame-spread remained Class A in the 30-minute ASTM E-84 fire test.

Blazeguard emerged as the superior product.

ESR-1365
Reissued April 1, 2008
This report is subject to re-examination in one year.

ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

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

REPORT HOLDER:

BARRIER TECHNOLOGY CORPORATION
POST OFFICE BOX 379
WATKINS, MINNESOTA 55389
(320) 764-5797
www.intlbarrier.com

EVALUATION SUBJECT:

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

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code®* (IBC)
- 2006 *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.

Barrier Technology Corporation also manufactures the product under the Mule-Hide FR Deck Panel product name for roofing applications.

3.0 DESCRIPTION

3.1 General:

The product 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 $^3/_8$ inch (9.5 mm), $^{15}/_{32}$ inch (12 mm), $^1/_2$ inch (12.7 mm), $^5/_8$ inch (15.9 mm) and $^3/_4$ 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 m^2) for 0.045-inch (1.1 mm) Pyrotite thickness and 1.80 pounds per 100 square feet (0.82 kg per 9.29 m^2) 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 $^3/_8$-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 $^3/_8$-inch-thick (9.5 mm)

plywood substrate. The finished panel has a minimum coating weight of 0.57 lb/ft^2 (2.78 kg/m^2).

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/ft^2 (2.93 kg/m^2).

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/ft^2 (2.78 kg/m^2).

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/ft^2 (2.93 kg/m^2).

3.3.5 15832-5: Mule-Hide FR Deck Panel A—Directly Applied on Plywood or Oriented Strand Board (OSB): 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 or a minimum $^7/_{16}$-inch-thick (11.11 mm) OSB substrate. The minimum coating weight of the finished panel is 0.66 lb/ft^2 (3.22 kg/m^2).

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/ft^2 (1.07 kg/m^2).

4.0 INSTALLATION

4.1 General:

The panels must 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:

The panels must be installed in the following applications:

a. 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.

b. 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.

c. 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.

d. 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.

e. 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.

f. Component of fire-classified roof covering assemblies (IBC Section 1505.1). 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, $1^7/_8$-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 (178mm) 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 $3^1/_2$ inches (88.9 mm) thick and with a 3 pcf (48.06 kg/m^3) 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 $1^7/_8$-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 (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, $1^7/_8$-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, $2^3/_8$-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 $3^1/_2$ inches (89 mm) thick and with a 3 pcf (48 kg/m^3) 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 plywood or OSB, APA rated $^{15}/_{32}$-inch-thick (11.91 mm) plywood or $^7/_{16}$-inch-thick (11.11mm) 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 $^5/_8$ inch (15.88 mm) thick and the OSB core panels shall be nominally $^9/_{16}$ inch (14.29 mm) thick. The sheathing shall be installed vertically with horizontal joints blocked, and attached to the studs with $1^7/_8$-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 $^1/_2$-inch plywood or OSB, APA rated $^{15}/_{32}$-thick (11.91 mm) plywood or $^7/_{16}$-inch-thick (11.11mm) 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 $1^7/_8$-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 $^5/_8$-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, $2^3/_8$-inch-long (60.33 mm), cup-head drywall nails with 0.113-inch (2.87 mm) shank diameters and $^9/_{32}$-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 $3^1/_2$ inches (89 mm) thick and with a 3 pcf (48.0 kg/m^3) 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:

The following assembles must be installed at a maximum roof slope of $^1/_2$:12 (4.2 percent).

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+ sealant, 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 m^2).

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 m^2).

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 and Mule-Hide FR Deck Panels are manufactured by Barrier Technology Corporation, in Watkins, Minnesota, under a quality control program with inspections by Intertek Testing Services NA, 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 covered by this report shall be identified by a stamp bearing the manufacturer's name (Barrier Technology Corporation), the product name, the product identification number, the name of the inspection agency Intertek Testing Services NA, 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.

1 – Product Identification

Manufacturer Name and Address: Barrier
510 4th Street North
P.O. Box 379
Watkins, MN 55389-0379 USA

Emergency Phone: 1 (800) 638-4570

Phone for Additional Information: 1 (800) 638-4570

Product Name: Blazeguard®

Synonym: Fire-Rated Sheathing

Date Prepared: 1/8/91

Date Revised: 6/20/05

Prepared By: Barrier
Technical Data Department

MSDS Number: WC195-02

2 – Hazardous Ingredients/Identity Information

Chemical or Common Name	Percent	CAS#
Core		
Plywood or Oriented Strandboard	81.9-88.1	None

Wood Dust Exposure Limits:
OSHA PEL-TWA 5 mg/m3 (Softwood or hardwood total dust)
OSHA PEL-STEL 10 mg/m3 (Softwood or hardwood total dust)
OSHA PEL-TWA 2.5 mg/m3 (Western red cedar total dust)
ACGIH TLV-TWA 5 mg/m3 (Softwood total dust)
ACGIH TLV-STEL 10 mg/m3 (Softwood total dust)
ACGIH TLV-TWA 1 mg/m3 (Selected hardwood total dust; beech, oak)

Face		
Refractory Cement Board	11.8-18.1	None

Note: Refractory cement board is a mixture of metal oxide, aluminum cement, amorphous silicate, metal salts and fiberglass.

Amorphous Silica (crystalline quartz)	0.8-2.5	14808-60-7

Cement Board Exposure Limits:
OSHA PEL-TWA 0.1 mg/m3 (Total dust)
ACGIH TLV-TWA 0.1 mg/m3 (Total dust)

Appearance and Odor
White, opaque Pyrotite layer of refractory cement board over plywood or OSB panels.

The wood component may consist of alder, aspen, beech, birch, cottonwood, fir, gum, hemlock, hickory, maple, oak, pecan, pine, poplar, spruce, walnut and/or western red cedar.

3 – Physical/Chemical Characteristics

Boiling Point (F or C): N/A
Vapor Pressure (mm Hg): N/A
Vapor Density (AIR =1): N/A
Specific Gravity (H2O = 1): Variable: 0.40-0.80 (Wood)
NAV (Refractory cement board)
Melting Point (F or C): N/A
Evaporation Rate (Butyl Acetate = 1): N/A
Solubility in Water: Insoluble
% Volatile by Water @ 70F: 0

4 – Fire and Explosion Hazard Data

Flash Point (Method Used): NAP
Flammable Limits: LEL: N/A
UEL: N/A
Extinguishing Media: Dry chemical, carbon dioxide, and sand
Auto Ignition Temperature (F or C): Wood component: 400-500°F
Face component: N/A
Special Fire Fighting Procedures: Fire fighters should wear self-contained breathing apparatus (SCBA).
Unusual Fire and Explosion Hazards: Depending on moisture content and more importantly particle diameter, wood dust may explode in the presence of an ignition source. An airborne concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the LEL for wood dusts. Refractory cement board dust is neither combustible nor explosive.

5 – Reactivity Data

Stability:
( ) Unstable (X) Stable Conditions to Avoid: NAP
Hazardous Polymerization:
( ) May Occur (X) Will Not Occur Conditions to Avoid: NAP
Incompatibility (Materials to Avoid): Avoid contact with oxidizing agents. Avoid open flame. Wood components may ignite at temperatures in excess of 400°F.
Hazardous Decomposition or By-Products: Thermal decomposition products may include carbon monoxide, carbon dioxide, aliphatic aldehydes, rosin acids, terpenes, polycyclic aromatic hydrocarbons.

6 – Precautions for Safe Handling and Use

Steps To Be Taken in Case Material is Released or Spilled: Not applicable for product in purchased form. Dust produced by cutting or remanufacturing may be vacuumed or shoveled for recovery or disposal. Avoid dusty conditions and provide good ventilation. Use NIOSH/MSHA approved dust respirator and goggles where ventilation is not possible.

Waste Disposal Method: If disposed or discarded in its purchased form, dry land disposal is acceptable in most states. It is, however, the user's responsibility to determine at the time of disposal whether the user's product meets RCRA criteria for hazardous waste. Follow applicable federal, state, or local regulations.

6 – Continued

Precautions To Be Taken in Handling and Storage: No special handling precautions are required. This product will release small amounts of gaseous formaldehyde. Store in a well ventilated, cool, dry place away from open flame.

Other Precautions: A NIOSH/MSHA- approved dust respirator and goggles should be worn when the allowable exposure limits may be exceeded.

All cutting should be done under adequate ventilation to remove dust.

7 – Health Hazard Data

Primary Route(s) of Exposure:
( ) Ingestions
(X) Skin: Dust
(X) Inhalation: Dust

Acute Health Hazards
Signs and symptoms of exposure/emergency and first aid procedures:
Ingestion: Not applicable under normal use.
Eye Contact: Dust may cause mechanical irritation. Treat dust in eyes as foreign object. Flush with water to remove dust particle. Get medial help if irritation persists.
Skin Contact: Dust(s) can cause mechanical irritation resulting in erythema (reddening) hives and dryness. Get medical help if rash, irritation, or dermatitis persists.
Skin Absorption: Not known to occur under normal use.
Inhalation: Dust may cause unpleasant deposit/obstruction in the nasal passages, resulting in dryness of nose, dry cough, and headaches. Remove to fresh air. Get medical help if persistent irritation, severe coughing, or breathing difficulty occurs.

Medical Conditions Generally Aggravated by Exposure: Wood dust may aggravate preexisting respiratory conditions or allergies.

Chronic Health Hazards: The Federal Dept. of Housing and Urban Development (HUD) recognizes phenolic panel products as low emitters of formaldehyde and has exempted them from the Testing and Certification Requirement of the Manufactured Home Construction and Safety Standards (24 CFR Part 3280).

Wood dust(s), depending on the species (for example, irko, cocobolo), may cause allergic contact dermatitis on prolonged, repetitive contact, and respiratory sensitization after prolonged exposure to elevated dust levels (for example, western red cedar). Wood dust has been alleged to cause nasal/paranasal sinus cancer (certain European hardwoods: oak and beech).

Prolonged and repeated inhalation of crystalline silica dust may result in development of a fibrogenic lung disease (silicosis) and may be a contributing factor to the onset of other respiratory illness. Silica dust has been identified by IARC (International Agency for Research on Cancer) as a probable animal carcinogen. There is limited evidence for carcinogenicity in humans.

Carcinogenicity Listing:
(X) NTP: Formaldehyde
(X) IARC Monographs: Formaldehyde and crystalline silica
(X) OSHA Regulated: Formaldehyde

8 – Control Measures

Personal Protective Equipment:
Respiratory Protection: Not applicable for product in purchased form: However, A NIOSH/MSHA-approved respirator is recommended when the allowable exposure limit may be exceeded (i.e., while cutting, routing, sanding and drilling).
Protective Gloves: Not required. However, cloth, canvas, or leather gloves are recommended to minimize potential mechanical irritation from handling product.
Eye Protection: Not applicable for product in purchased form. Goggles or safety glasses are recommended when machining this product.
Other Protective Clothing Equipment: Not applicable for product in purchased form. Outer garments may be desirable in extremely dusty areas.
Work/Hygienic Practices: Follow good hygienic and housekeeping practices. Clean-up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize blowdown or other practices which generate high airborne-dust concentrations.

Ventilation:
Local Exhaust: Provide local exhaust as needed so that exposure limits are met.
Mechanical (general): Provide general ventilation in processing and storage areas as needed so that exposure limits are met.
Special: Self-contained breathing apparatus (SCBA) recommended when fighting fire.

9 – User's Responsibility

The information contained in this Material Safety Data Sheet is based on the experience of occupational health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the information is suitable for their applications and to follow safety precautions as may be necessary. The user has the responsibility to make sure that this sheet is the most up-to-date-issue.

10 – Additional Information

Definition of Common Terms:
ACGIH – American Conference of Governmental Industrial Hygienists
C – Ceiling Limit
CAS# - Chemical Abstracts System Number
IARC – International Agency for Research on Cancer
MSHA – Mining Safety and Health Administration
NAV – Not Available
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OSHA – Occupational Safety and Health Administration
PEL – Permissible Exposure Limit
STEL – Short Term Exposure Limit (15 minutes)
TLV – Threshold Limit Value
TWA – Time-Weighted Average (8 hours)

Blazeguard® is an exceptionally durable fire resistant structural building panel. Fire resistance is provided by a tough, thin layer of inert, inorganic material. Blazeguard's performance features include:

Fire: Exceeds the most stringent flame-spread rating required by building codes with a flame spread index of 5, and the flame front advance of less than 9' after 30 minutes. Meets Class A (1) flame-spread requirements.

Blazeguard in 7/16" OSB thickness provides a 15-minute thermal barrier for plastic insulations. One-hour and two-hour assemblies using Blazeguard are listed by a code-recognized independent laboratory.

Strength: Stronger than the panel selected as substrate. The fire retardant shield does not reduce panel strength, but actually increases it.

Smoke: Develops only a small fraction of the amount allowed by building codes. For example, compared to the smoke-developed index limit of 450, Blazeguard has a smoke-developed index of 40 or less.

Corrosion: Blazeguard will not promote corrosion of nails, staples, or screws.

Permeability: Blazeguard's breathable fire shield will not promote rot by trapping moisture in the wood.

Durability: The fire shield is factory applied to plywood, OSB, or particle board substrates using Barrier's proprietary process. Under normal construction and application conditions, the shield will not flake, crack, or peel. It has more resistance to abrasion than uncovered wood.

Applications: Use Blazeguard for: structural roof and wall sheathing; as the thermal barrier for structural foam core panels; siding; sub flooring; shelving; ceiling; wall paneling; partitions; and storage containers. Also recommended for all types of construction where fire protection is a design requirement or desired in order to decrease insurance premiums.

Workability: Can be cut, drilled, nailed, and stapled using common carpentry tools.

Products: Blazeguard is available in two product types:

Plywood: Proprietary high strength shield factory applied to one or both faces of any standard thickness and size.

OSB: Proprietary high strength shield factory applied to one or both faces of any standard thickness of OSB, up to 8' x 24' in size.

Chemical/Biological: Blazeguard contains inorganic material that inhibits the growth of fungus and molds. It is resistant to reaction with common solvents, fuels, and lubricants.

Finishing/Special: Blazeguard can be painted for use as wall paneling in corridors or other exposed surfaces. For continuous exposure to weather, CCA treated plywood can be provided as an alternative substrate for added protection against rot and decay.

Environmental: Blazeguard's fire shield is a clean and safe inorganic compound. It is not hazardous or toxic and does not contain or use harmful or environmentally unsound chemicals in its manufacture. Disposal of trim scrap is by ordinary trash disposal methods. Toxicity tests show that Blazeguard releases fumes that are less toxic than plain wood under fire conditions.

Packaging/Handling: Blazeguard is shipped protected from the elements. Procedures for handling on the job site are the same as those for traditional structural wood panels.

Testing: Blazeguard has been extensively tested. Independent laboratories verified all results. Intertek/Omega Point Laboratories provides product listing services, which include unannounced quarterly audits and periodic follow-up testing.

Blazeguard meets or exceeds the requirement set by local, county, and state building codes and insurance underwriters and rating bureaus.

Availability: Panel Unit Sizes

Blazeguard Plywood Substrate (4' x 8')

Thickness	Panel/Unit
15/32"	63
19/32"	53
23/32"	45

Blazeguard OSB Substrate (4' x 8')

Thickness	Panel/Unit
7/16"	60
15/32"	56
19/32"	53
23/32"	45

(320) 764.5797 *main*
(320) 764.5799 *fax*
(800) 638.4570 *toll free*
510 4th Street North
P.O. Box 379
Watkins, MN 55389 USA
A Barrier Product
www.intlbarrier.com

Testing Summary

Test Specifications	Property	Results
ASTM E-84 (extended to 30 minutes)	Flame Spread	FSI=5, SDI = 40, Maximum Progressive Advance (30 min) = 7.5 ft for DFPW
APA F-4	Adhesion Shield	Pass
MIL-L 19140 E	Corrosion	No contribution to metal corrosion, 0.069-0.138 mils/year for brass, 0.00 mils/yr for both steel and aluminum
ASTM G-53	Weathering (1000 hrs.)	No deterioration
ASTM D-2247	Weathering (500 hrs.)	No deterioration
ASTM D-1037	Accelerated Aging – Bending Test	No deterioration of strength after 56 days in 170° F, 65% RH Chamber. MOR: (psi x 1000) Blazeguard/DFPW = 4,240, OSB = 4,960
ASTM D-2794	Impact Resistance	Pass – slight indent @ 160 lbs
ASTM D-790	Bending Strength	MOR (psi x 1,000): Pyrotite (MD) = 6.97, Pyrotite (XD) = 5.98 MOE (psi x 1,000,000): Pyrotite (MD) = 1.27, Pyrotite (XD) = 1.25
Special Protocol	Nail Penetration	No wood exposed
Special Protocol	Microbial/Fungal Growth	Pyrotite appears to be more resistant to microbial/fungal attacks than untreated wood products
Combustion Toxicity Test	Pittsburgh Smoke Toxic Potency	The toxic potency is equal to or less than untreated plywood, LC50 = 17.7 & 67.3 grams
ASTM D-2898	Weathering Exterior (1,680 hrs.)	After D-2898 procedure, ASTM R-84 extended for 30 minutes resulted in FSI = 5, SDI = 20
Freeze/Thaw	Soak 48 hrs., Freeze at –40°F for 8 hrs., then subject to ASTM D-1037 impact test	No brittleness effect at cold temperatures or failure due to freezing
Outdoor Storage of Blazeguard	Warp and Swell over 90 Days	Incremental warp less than 3/8", no swell compared to unlaminated controls
ASTM D-2898 Modified	Accelerated Weathering of Blazeguard on Trusses	No measurable warping of Blazeguard after 96 hrs. of rain followed by drying (one cycle) for 12 cycles (2,304 hrs.). Suitable for exterior applications
ASTM E-96	Permeability	Passes Vapor, > 3 perms
ASTM E-119	One-Hour Fire Resistance Assembly (Structural)	Listed assemblies include both T-11 Blazeguard siding and pre-finished aluminum surface Blazeguard
ASTM E-119	Two-Hour Fire Resistance Assembly (Structural)	Listed assembly using Blazeguard fire-rated structural sheathing
ASTM E-1119/UBC 17-3 and UBC 17-5	15-Minute Thermal Barrier	Listed as a thermal barrier. Blazeguard substrate = 7/16" OSB

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