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ICC-ES Evaluation Report

ESR-2666

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Reissued 02/2019

This report is subject to renewal 02/2020.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 05 73.33—PRESERVATIVE WOOD TREATMENT

REPORT HOLDER:

KOPPERS PERFORMANCE CHEMICALS, INC.

EVALUATION SUBJECT:

FIREPRO® FIRE-RETARDANT-TREATED WOOD



"2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence"



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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 73.33—Preservative Wood Treatment

REPORT HOLDER:

KOPPERS PERFORMANCE CHEMICALS, INC.

EVALUATION SUBJECT:

FIREPRO® FIRE-RETARDANT-TREATED WOOD

ADDITIONAL LISTEES:

MAINE WOOD TREATERS, INC.

ROYAL PACIFIC INDUSTRIES, INC.

WESTERN WOOD PRESERVING COMPANY

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2012, 2009 and 2006 *International Residential Code*® (IRC)

Property evaluated:

- Flame spread
- Structural
- Corrosion
- Hygroscopicity

2.0 USES

FirePro® fire-retardant-treated wood is used in areas that are not exposed to the weather or wetting, but may be exposed to dampness where the code permits the use of wood or fire-retardant-treated wood.

3.0 DESCRIPTION

3.1 General:

FirePro® fire-retardant-treated wood is lumber and plywood impregnated with FirePro® fire-retardant chemicals by a pressure process.

FirePro® treatment of lumber of the following species is recognized as being fire retardant:

Southern Pine	Red Pine
Douglas Fir	Ponderosa Pine
Western Hemlock	White Fir
Alpine Fir	Hem Fir
Lodgepole Pine	Balsam Fir
White Spruce	Jack Pine
Spruce-Pine-Fir	Engelmann Spruce
Red Spruce	Black Spruce

FirePro® treatment of plywood fabricated with face and back veneers of the following species is recognized as being fire retardant:

Douglas Fir

3.2 Flame Spread:

FirePro® fire-treated wood has a flame-spread index of 25 or less when subjected to ASTM E84 tests and shows no evidence of significant progressive combustion when the tests are continued for an additional 20-minute period.

3.3 Structural Strength and Durability:

The effects of FirePro® fire-retardant treatment on the strength of the treated lumber and plywood must be accounted for in the design of the wood members and their connections. Load duration factors greater than 1.6 are not permitted to be used in the design.

The strength properties of lumber when treated with FirePro® fire-retardant chemicals and used in applications at ambient temperatures up to 180°F (82°C), are subject to the design factors shown in Table 1 of this report.

The strength properties of plywood, when treated with FirePro® fire-retardant chemicals and used in applications at temperatures up to 170°F (77°C), are subject to the span limitations shown in Table 2 of this report.

3.4 Corrosion:

The corrosion rate of aluminum, carbon steel, galvanized steel, stainless steel, copper or red brass in contact with wood is not increased by FirePro® fire-retardant treatment when the product is used as recommended by the manufacturer.

3.5 Hygroscopicity:

FirePro® treated wood qualifies as an Interior Type A (HT) fire-retardant wood in accordance with the American Wood-Preservers' Association (AWPA) Standard U1, Commodity Specification H, Use Category UCFA.

4.0 DESIGN AND INSTALLATION

4.1 General:

Structural systems that include FirePro® fire-retardant-treated lumber or plywood must be designed and installed in accordance with the applicable code using the appropriate lumber design value adjustment factors and plywood spans from Tables 1 and 2 of this report. Ventilation must be provided in accordance with the applicable codes.

The design value adjustment factors and plywood load and spans in Tables 1 and 2 of this report are applicable under elevated temperatures resulting from cyclic climatic conditions. They are not applicable under continuous elevated temperatures resulting from manufacturing or other processes that require special consideration in design.

The treated lumber and plywood must only be used in areas (including attic spaces) where the lumber is exposed to temperatures of 180°F (82°C) or less and the plywood is exposed to temperatures of 170°F (76.5°C) or less.

Exposure to precipitation during storage or installation must be avoided. If material does become wet, it must be replaced or permitted to dry (maximum 19 percent moisture content for lumber and 15 percent moisture content for plywood) prior to covering or enclosure by wallboard or other construction materials (except for protection during construction).

4.2 Fasteners:

Fasteners used in FirePro® fire-retardant-treated wood must be galvanized steel, stainless steel, silicon bronze or copper, in accordance with Section 2304.9.5 of the 2012, 2009 and 2006 IBC, Section 317.3 of the 2012 and 2009 IRC, and Section R319.3 of the 2006 IRC, and must be subject to the design value adjustments indicated in Table 1 of this report.

5.0 CONDITIONS OF USE

- 5.1 The FirePro® fire-retardant-treated wood 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:
- 5.2 Strength calculations must be subject to the design factors or span ratings shown in Tables 1 and 2 of this report.
- 5.3 The design value adjustment factors and span ratings given in this report must only be used for unincised dimensional lumber and plywood of the species noted in this report.
- 5.4 FirePro® treated wood must not be installed where it will be exposed to precipitation, direct wetting or regular condensation.

- 5.5 FirePro® treated wood must not be used in contact with the ground.

- 5.6 FirePro® lumber must not be ripped or milled as this will alter the surface-burning characteristics and invalidate the flame spread classification. Framing, end cuts, holes, joints such as tongue and groove, bevel scarf and lap may be used.

- 5.7 Treatment is at the facilities of the listees noted in this report under a quality control program with inspections by ICC-ES and Timber Products Inspection, Inc. (AA-696).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Fire-retardant-treated Wood (AC66), dated June 2012 (editorially revised February 2014).

7.0 IDENTIFICATION

- 7.1 Lumber and plywood treated with FirePro® fire-retardant chemicals must be identified by the structural grade mark of an approved agency. In addition, all treated lumber and plywood must be stamped with the name of the inspection agency [Timber Products Inspection, Inc. (AA-696)]; the Koppers Performance Chemicals, Inc., or listee, name and address; the production plant identification; labeling information in accordance with Section 2303.2.4 of the 2012 and 2009 IBC and Section 2303.2.1 of the 2006 IBC; and the evaluation report number (ESR-2666). Refer to Figure 1.

- 7.2 The report holder's contact information is the following:

KOPPERS PERFORMANCE CHEMICALS, INC.
1016 EVEREE INN ROAD
GRIFFIN, GEORGIA 30224
(770) 233-4200
www.koppersperformancechemicals.com

- 7.3 The Additional Listees' contact information is the following:

MAINE WOOD TREATERS, INC.
58 WALKER ROAD
MECHANIC FALLS, MAINE 04256

ROYAL PACIFIC INDUSTRIES, INC.
4035 NE RIVERSIDE DRIVE
McMINNVILLE, OREGON 97128

WESTERN WOOD PRESERVING COMPANY
1313 ZEHNDER STREET
SUMNER, WASHINGTON 98390

**TABLE 1—DESIGN VALUE ADJUSTMENT FACTORS FOR
FIREPRO® FIRE RETARDANT TREATED LUMBER COMPARED TO UNTREATED LUMBER
APPLICABLE AT SERVICE TEMPERATURES UP TO 180°F (82°C)**

ADJUSTMENT FACTORS	SPECIES			
	Southern Pine	Douglas Fir	Spruce	Other Species
Compression Parallel, Fc	0.99	0.77	0.92	0.77
Horizontal Shear, Fv	1.00	0.94	0.84	0.84
Tension Parallel, Ft	0.83	0.85	0.94	0.83
Bending: Modulus of Elasticity, E	0.93	1.00	0.99	0.93
Bending: Extreme Fiber Stress, Fb	0.87	0.98	0.86	0.86
Fasteners/Connectors	0.90	0.77	0.90	0.77

**TABLE 2—FIREPRO™ FIRE RETARDANT TREATED PLYWOOD SPAN RATINGS FOR RATED SHEATHING
APPLICABLE AT TEMPERATURES UP TO 170° F (76° C)**

APA Rating	Panel Thickness (Inches)	FirePRO™ Rating
12/0	$\frac{5}{16}$	12/0
16/0	$\frac{5}{16}, \frac{3}{8}$	16/0
20/0	$\frac{5}{16}, \frac{3}{8}$	20/0
24/0	$\frac{3}{8}, \frac{7}{16}, \frac{1}{2}$	24/0
24/16	$\frac{7}{16}, \frac{1}{2}$	24/16
32/16	$\frac{15}{32}, \frac{1}{2}$	32/16
32/16	$\frac{5}{8}$	32/16
40/20	$\frac{19}{32}, \frac{5}{8}$	40/20
40/20	$\frac{3}{4}, \frac{7}{8}$	40/20
48/24	$\frac{23}{32}, \frac{3}{4}$	48/24
48/24	$\frac{7}{8}$	48/24

Table 2 Notes:

1. **SI** Units conversion: 1 inch = 25.4 mm.
2. Glue lines shall be exterior and face plies shall be Douglas Fir.
3. Allowable uniformly distributed roof load at maximum span for rated sheathing is 30 psf (1426 Pa) for live loads plus 8.5 psf (407 Pa) dead load, and allowable distributed floor load at maximum span is 50 psf (2394 Pa) live load plus 5 psf (239 Pa) dead load, or 200 pounds (890 N) concentrated load in each case.
4. Deflection criteria for treated plywood is 1/180 of span due to total load (live load plus dead load).
5. The $\frac{5}{16}$ -inch and $\frac{3}{8}$ -inch-thick (7.9 mm or 9.5 mm) panels are not permitted for roofing applications.
6. Spans provided for FirePro® treated plywood are based on environmental temperature and relative humidity as expected from cyclic climatic conditions in the continental United States for roof sheathing applications. Other conditions, such as industrial processing, which would expose the sheathing treated with FirePro® to elevated temperatures and or humidity, are beyond the scope of this report.
7. For roof sheathing applications in the geographic area located inside a line represented by Las Vegas, Yuma, Phoenix and Tucson, the designated roof sheathing spans shall be reduced by 2 inches (51 mm).

FirePRO® Sample Labels



FIGURE 1—LUMBER AND PLYWOOD STAMPS