



ICC-ES Evaluation Report

ESR-4244

Reissued August 2023

Revised May 2024

This report is subject to renewal August 2025.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 73.13—Fire-Retardant Wood Treatment

REPORT HOLDER:

KOPPERS PERFORMANCE CHEMICALS

EVALUATION SUBJECT:

FLAMEPRO® FIRE-RETARDANT-TREATED WOOD

ADDITIONAL LISTEES:

- ALLWEATHER WOOD LLC**
- BIEWER LUMBER**
- CULPEPER WOOD PRESERVERS**
- GREAT SOUTHERN WOOD PRESERVING, INC.**
- HIXSON LUMBER SALES**
- L.A. LUMBER TREATING, LTD.**
- MENDOCINO FOREST PRODUCTS, LLC**
- SOLIDWOOD FOREST LTD.**
- STEINKAMP WAREHOUSE, INC.**
- WESTERN WOOD PRESERVING COMPANY**
- WOODLAND WOOD PRESERVERS, LTD.**

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-4244 LABC and LARC Supplement](#).

Properties evaluated:

- Flame spread
- Structural
- Corrosion
- Hygroscopicity
- Fire-resistance-rated Wall Assemblies

2.0 USES

FlamePRO® 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:

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

FlamePRO® treatment of lumber of the following species have been evaluated 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

FlamePRO® treatment of plywood fabricated with face and back veneers of the following species have been evaluated as being fire retardant:

Douglas Fir	Southern Pine
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3.2 Flame Spread:

FlamePRO® fire-treated wood has a flame spread index of 25 or less when subjected to ASTM E84 tests in accordance with IBC Section 2303.2, 2021 IBC Section 2303.2.3 and 2021 IRC Sections R802.1.5.3 and R802.1.5.3.1 [2018 and 2015 IRC Section R802.1.5 (2012, 2009 and 2006 IRC Section R802.1.3)] 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 FlamePRO® 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 as required by this section. Load duration factors greater than 1.6 are not permitted to be used in the design.

The strength properties of lumber when treated with FlamePRO® fire-retardant chemicals and used in applications at ambient temperatures up to 150°F (66°C), are subject to the design factors shown in Tables 2 and 3 of this report.

The strength properties of plywood, when treated with FlamePRO® fire-retardant chemicals and used in applications at temperatures up to 170°F (77°C), are subject to the span limitations shown in Table 4 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 FlamePRO® fire-retardant treatment when the product is used as recommended by the manufacturer.

3.5 Hygroscopicity:

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

4.0 DESIGN AND INSTALLATION

4.1 General:

Structural systems that include FlamePRO® 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 2, 3 and 4 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 2, 3 and 4 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 150°F (66°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.

4.2 Fasteners:

Fasteners used in FlamePRO® fire-retardant-treated wood must be galvanized steel, stainless steel, silicon bronze or copper, in accordance with 2021 IBC Section 2304.10.6.3 {2018 and 2015 IBC Section 2304.10.5.3 [2012 and 2009 IBC Section 2304.9.5.3 (2006 IBC Section 2304.9.5)]} and 2021, 2018, 2015, 2012 and 2009 IRC Section 317.3.3 (2006 IRC Section R319.3), and must be subject to the design value adjustments indicated in Table 2 of this report.

4.3 Use as a Component of Fire-resistance-rated Wall Assemblies:

4.3.1 One-hour Exterior Wall Assemble (Rated from One-Side Interior): In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of FlamePRO® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Tables 2 and 3. The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 4 for FlamePRO® Wall/Subfloor. The fire-resistance rating is required from only the interior side. The wall must be constructed in accordance with Figure 2.

4.3.2 Two-hour Exterior Wall Assembly (Rated from One-Side Interior): In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of FlamePRO® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Tables 2 and 3. The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 4 for FlamePRO® Wall/Subfloor.

The fire-resistance rating is required from only the interior side. The wall must be constructed in accordance with Figure 3.

4.3.3 One-hour Exterior Wall Assembly (Rated from Interior and Exterior): In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of FlamePRO® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Tables 2 and 3. The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 4 for FlamePRO® Wall/Subfloor.

When the fire-resistance rating is required from either exterior or interior side, the wall must be constructed in accordance with Figure 4.

4.3.4 Two-hour Exterior Wall Assembly (Two-Hour Rated from Interior and One-Hour Rated from Exterior): In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of FlamePRO® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Tables 2 and 3. The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 4 for FlamePRO® Wall/Subfloor.

When the fire-resistance rating is required from either One-Hour exterior or Two-Hour interior side, the wall must be constructed in accordance with Figure 5.

4.4 Plywood Diaphragms and Shear Walls:

Wood-frame diaphragms and shear walls must be constructed in accordance with 2021, 2018, 2015, 2012 and 2009 IBC Sections 2306.2 and 2306.3 (2006 IBC Sections 2306.3 and 2306.4), respectively.

When FlamePro® fire-retardant-treated plywood is used in a diaphragm or shear wall, the panel thickness must be increased by 1/8 inch than that determined for the allowable shear values in Sections 4.2 or 4.3 of ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) or as shown in the tables referenced in 2021, 2018, 2015, 2012 and 2009 IBC Sections 2306.2 and 2306.3 (2006 IBC Sections 2306.3 or 2306.4). The span rating shall be as noted as per the evaluation report. Thickness to be used for FRT plywood compared to untreated plywood in diaphragm and shear walls are shown as follows:

FlamePRO® FRT Plywood Thickness (inches)	Untreated Plywood Thickness (inches)
$19/32$	$7/16$
$19/32$	$15/32$
$5/8$	$1/2$
$23/32$	$19/32$
$3/4$	$5/8$
$7/8$	$23/32$
$7/8$	$3/4$

5.0 CONDITIONS OF USE

The FlamePRO® 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:

- 5.1 Strength calculations must be subject to the design factors or span ratings shown in Tables 2, 3 and 4 of this report.
- 5.2 The design value adjustment factors and span ratings given in this report must only be used for unincised dimension lumber and plywood of the species noted in this report.
- 5.3 FlamePRO® treated wood must not be installed where it will be exposed to precipitation, direct wetting or regular condensation.
- 5.4 FlamePRO® treated wood must not be used in contact with the ground.
- 5.5 FlamePRO® lumber must not be ripped or milled as this will alter the surface-burning characteristics and invalidate the flame spread classification. Wall, Floor and Roof Framing, consisting of end cuts, holes, joints such as tongue and groove, bevel, scarf, and lap, may be used.
- 5.6 Treatment is at the facilities of the listees noted in Table 1 of this report under a quality control program with inspections by ICC-ES and Underwriters Laboratory FR-S, Timber Products Inspection, Inc. (AA-696) or Southern Pine Inspection Bureau (AA-680).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Fire-retardant-treated Wood (AC66), dated June 2015, (editorially revised July 2022).

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4244) along with the name, registered trademark, or registered logo of the report holder or listee must be included in the product label.
- 7.2 In addition, lumber and plywood treated with FlamePRO® 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 [Underwriters Laboratory FR-S, Timber Products Inspection, Inc. (AA-696) or Southern Pine Inspection Bureau (AA-680)]; the Koppers Performance Chemicals, or listee, name and location; the production plant identification; labeling information in accordance with 2021, 2018, 2015, 2012 and 2009 IBC Section

2303.2.4 (2006 IBC Section 2303.2.1) or 2021, 2018 and 2015 IRC Section R802.1.5.4 [2012 and 2009 IRC Section R802.1.3.4 (2006 IRC Section R802.1.3.1)]; and the evaluation report number (ESR-4244). Refer to Figure 1.

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

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

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

ALLWEATHER WOOD LLC
715 DENVER AVENUE
LOVELAND, COLORADO 80537
(970) 667-4082
www.allweatherwood.com

BIEWER LUMBER
524 EAST UNION STREET
SENECA, ILLINOIS 61360
(815) 357-6792
www.biewerlumber.com

CULPEPER WOOD PRESERVERS
POST OFFICE BOX 1148
CULPEPER, VIRGINIA 22701
(540) 825-5200
www.culpeperwood.com

GREAT SOUTHERN WOOD PRESERVING, INC.
2290 PLUNKETT ROAD
CONYER, GEORGIA 30012
(770) 922-8714
www.yellowood.com

HIXSON LUMBER SALES
POST OFFICE BOX 816028
DALLAS, TEXAS 75381
(972) 446-9000
www.hixsonlumber.com

L.A. LUMBER TREATING LTD.
15500 VALENCIA AVENUE
FONTANA, CALIFORNIA 92335
(909) 357-2136
CaliforniaCascade.com

MENDOCINO FOREST PRODUCTS, LLC
880 KUNZLER RANCH ROAD
UKIAH, CALIFORNIA 95482
(707) 272-1141
www.mfp.com

SOLIDWOOD FOREST LTD.
42511 OLD HOUSTON HIGHWAY
WALLER, TEXAS 77484
(281) 351-9109

SOLIDWOOD FOREST, LTD.
16801 FM2920
TOMBAL, TEXAS 77277
(281) 351-9109
www.solidwoodforest.com

STEINKAMP WAREHOUSE, INC.
1000 NORTH MAIN STREET – HIGHWAY 231
HUNTINGBURG, INDIANA 47542
(812) 683-3860

WESTERN WOOD PRESERVING COMPANY
POST OFFICE BOX 1250
SUMNER, WASHINGTON 98390
(253) 863-8191
www.westernwoodpreserving.com

WOODLAND WOOD PRESERVERS, LTD.
POST OFFICE BOX 1443
WOODLAND, CALIFORNIA 95776
(530) 666-1261

TABLE 1 — TREATMENT LOCATIONS

ADDITIONAL LISTEE	TREATMENT LOCATIONS
Allweather Wood LLC	Loveland, Colorado
Biewer Lumber	Seneca, Illinois
	Lansing, Michigan
Culpeper Wood Preservers	Columbia, South Carolina
	Fredericksburg, Virginia
	Orangeburg, South Carolina
	Athens, New York
Great Southern Wood Preserving, Inc.	Conyers, Georgia
Hixson Lumber Sales	Houston, Texas
	Plumerville, Arkansas
	Winnfield, Louisiana
L.A. Lumber Treating Ltd.	Fontana, California
Mendocino Forest Products, LLC	Ukiah, California
Solidwood Forest Ltd.	Waller, Texas
	Cresson, Texas
Steinkamp Warehouse, Inc.	Huntingburg, Indiana
Western Wood Preserving Company	Sumner, Washington
Woodland Wood Preservers, Ltd.	Woodland, California

TABLE 2—STRENGTH DESIGN FACTORS FOR FlamePRO® FIRE RETARDANT TREATED LUMBER COMPARED TO UNTREATED LUMBER APPLICABLE AT SERVICE TEMPERATURES UP TO 100°F (38°C)

STRENGTH DESIGN FACTORS	SOUTHERN PINE	DOUGLAS FIR	SPRUCE-PINE-FIR	OTHER SPECIES
Modulus of Rupture (MOR), [F _b]	0.91	1.00	0.95	0.91
Modulus of Elasticity (MOE), [E]	0.98	1.00	0.94	0.94
Work to Maximum Load (WML)	0.90	0.93	0.90	0.90
Ultimate Tensile Strength (UTS), [F _t]	0.99	1.00	0.98	0.98
Maximum Compressive Strength (MCS), [F _c]	0.96	0.96	1.00	0.96
Ultimate Shear Strength (USS), [F _v]	0.95	1.00	0.99	0.95
Fasteners/Connectors	0.90	0.90	0.90	0.90

TABLE 3—STRENGTH DESIGN FACTORS FOR FlamePRO® FIRE RETARDANT TREATED LUMBER COMPARED TO UNTREATED LUMBER APPLICABLE AT SERVICE TEMPERATURES UP TO 150°F (66°C) ^{1,2}

STRENGTH DESIGN FACTORS	Southern Pine			Douglas Fir			Spruce-Pine-Fir			Other Species		
	Climate Zone			Climate Zone			Climate Zone			Climate Zone		
	1A	1B	2	1A	1B	2	1A	1B	2	1A	1B	2
Modulus of Rupture (MOR), [E]	0.91	0.91	0.91	0.88	0.93	0.98	0.81	0.87	0.93	0.81	0.87	0.91
Modulus of Elasticity (MOE), [E]	0.98	0.98	0.98	1.00	1.00	1.00	0.94	0.94	0.94	0.94	0.94	0.94
Work to Maximum Load (WML)	0.90	0.90	0.90	0.92	0.93	0.93	0.69	0.77	0.87	0.69	0.77	0.87
Ultimate Tensile Strength (UTS), [F _t]	0.70	0.84	0.96	1.00	1.00	1.00	0.81	0.90	0.97	0.70	0.84	0.96
Maximum Compressive Strength (MCS), [F _c]	0.66	0.81	0.93	0.84	0.89	0.94	0.83	0.91	0.98	0.66	0.81	0.93
Ultimate Shear Strength (USS), [F _v]	0.66	0.80	0.93	0.88	0.93	0.98	0.82	0.91	0.97	0.66	0.80	0.93
Fasteners/Connectors	0.66	0.81	0.90	0.84	0.89	0.90	0.83	0.90	0.90	0.66	0.81	0.90

¹ Climate Zone definitions:

Zone 1 – Minimum design roof live load or maximum ground snow load ≤ 20 psf (960 Pa)

Zone 1A – Southwest Arizona, Southeast Nevada (Area Bounded by Las Vegas-Yuma-Phoenix-Tucson)

Zone 1B – All other qualifying areas of the United States

Zone 2 – Maximum ground snow load > 20 psf (960 Pa)

² Duration of load adjustments for snow loads, 7-day (construction) loads, and wind loads as given in the *National Design Specification® for Wood Construction®* (NDS) also apply.

TABLE 4—MAXIMUM LOADS AND SPANS FOR FlamePRO® FIRE RETARDANT TREATED PLYWOOD AT SERVICE TEMPERATURES FROM > 100°F (38°C) UP TO 170°F (77°C) ^{1,2,3,4,5}

PANEL/SHEATHING THICKNESS	Span Rating for Untreated Roof/Sub-floor Sheathing	FlamePRO® Roof Sheathing Maximum Total Load (psf)				FlamePRO® Wall or Subfloor Span (Inches)
		Span (Inches)	Climate Zone			
			1A	1B	2	
15/32, 1/2	32/16	24	31	47	68	16 24 (walls only)
19/32, 5/8	40/20	24	48	74	107	20
		32	27	42	60	20
23/32, 3/4	48/24	32	34	52	76	24
		48	15	23	34	24
7/8		32	43	66	95	24
		48	19	29	42	24
1		32	58	88	127	24
		48	26	39	57	24
1 1/8	32	73	111	161	24	
	48	32	49	71	24	

¹ For Surface Temperatures < 100°F, use Untreated Span Ratings

² Allowable total loads are for unsanded, Structural 1 & 2 Grade plywood, manufactured with Group 1 Species, stress grade S-2 (F_b=1650 psi), one-and-two span conditions.

³ For allowable live loads, subtract dead loads (assumed to be 8 psf) from total loads listed above.

⁴ Climate Zone definitions:

Zone 1 – Minimum design roof live load or maximum ground snow load ≤ 20 psf (960 Pa)

Zone 1A – Southwest Arizona, Southeast Nevada (Area Bounded by Las Vegas-Yuma-Phoenix-Tucson)

Zone 1B – All other qualifying areas of the United States

Zone 2 – Maximum ground snow load > 20 psf (960 Pa)

⁵ For other load conditions, contact manufacturer.

FlamePRO® Sample Labels

<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">LUMBER</p> <p>FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less</p> <p>SPIB Monitored (AA-680) STD-FLP-18</p>
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<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">PLYWOOD</p> <p>FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less</p> <p>SPIB Monitored (AA-680) STD-FLP-18</p>
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<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">LUMBER</p> <p>FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less</p> <p>TP Monitored (AA-696) STD-FLP-18</p>
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<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">PLYWOOD</p> <p>FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less</p> <p>TP Monitored (AA-696) STD-FLP-18</p>
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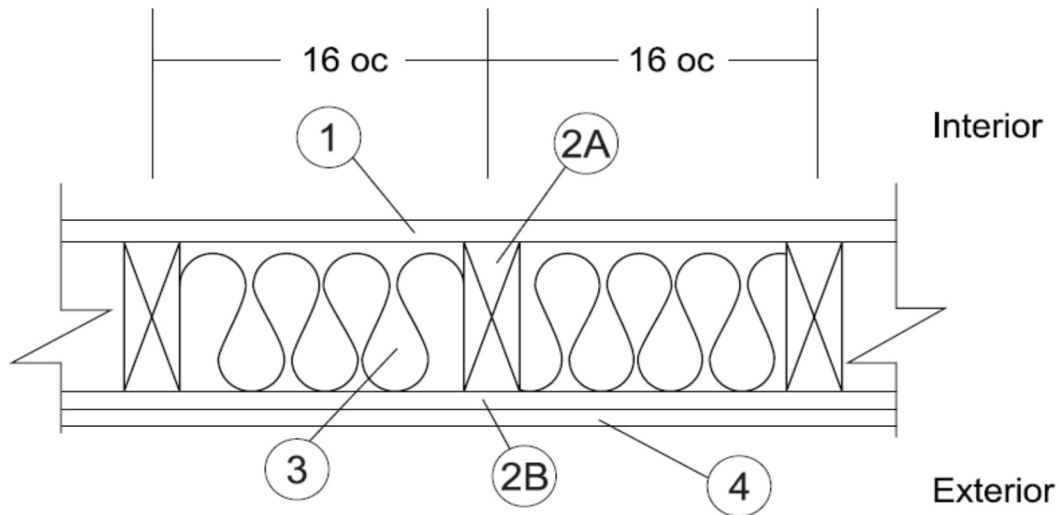
<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">UL Classified FR-S LUMBER</p> <p>FLAME SPREAD/SMOKE DEVELOPED: 30 MINUTE TEST: 25 or less</p> <p>STD-FLP-18</p>
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<p>FlamePRO® FIRE RETARDANT TREATED WOOD</p> <p>Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT</p> <p>Species Year</p> <p>Treater Name • Location</p>	<p style="text-align: center;">UL Classified FR-S PLYWOOD</p> <p>FLAME SPREAD/SMOKE DEVELOPED: 30 MINUTE TEST: 25 or less</p> <p>STD-FLP-18</p>
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FIGURE 1—LUMBER AND PLYWOOD STAMPS

Fire Retardant Wood FlamePRO® Lumber and Plywood
ASTM E119 Rating: One-Hour Load Bearing (2015 NDS – F 0.96 for FRWT)
Rated from One Side (Interior Side Only)

1 Hour Load Bearing Wall

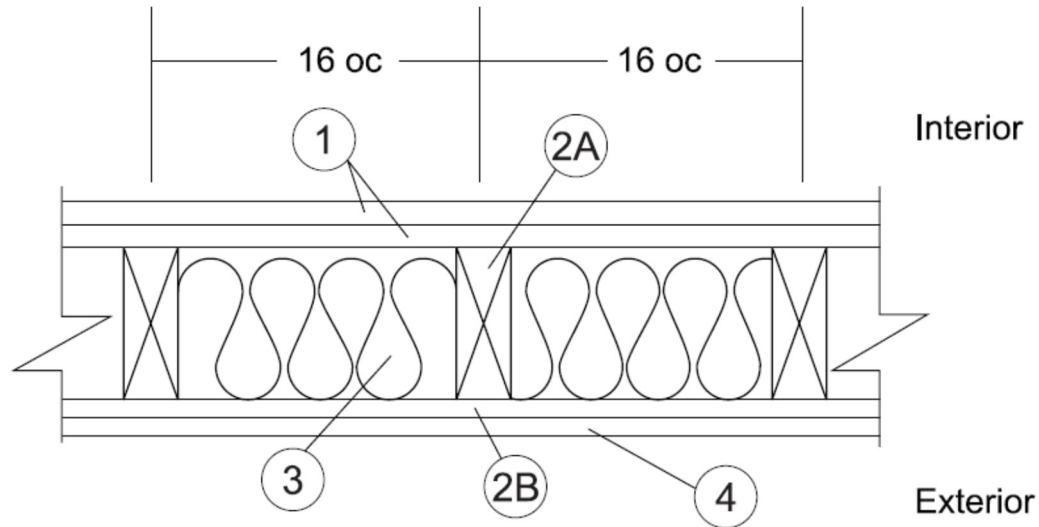


1. GYPSUM BOARD [Interior]: One-layer Type C USG Firecode® C Core complying with ASTM C1396, minimum 5/8-inch-thick (16 mm), 4 feet (1.2 m) wide applied vertically, fastened to framing. Joints covered with paper tape and joint compound.
 FASTENERS (Not Shown):
 - A. FACE LAYER- Minimum No. 6 x 2 inches (51 mm) long Type S or W screws spaced maximum 8 inches (203 mm) on center (o.c.) and heads covered with joint compound.
 - B. BASE LAYER – Minimum No. 6 x 1 5/8 inches (41 mm) long Type S or W screws, spaced maximum 6 inches (152 mm) o.c.
2. CERTIFIED MANUFACTURER:
 Koppers Performance Chemicals
 CERTIFIED PRODUCT: FlamePRO®
 - 2A. CERTIFIED MODEL: FlamePRO® Lumber
 FlamePRO® Lumber is minimum 2 x 4 inches nominal wood studs, spaced maximum 16 inches (406 mm) o.c., double top plates and single bottom plate fastened together with 16d common nails.
 - 2B. CERTIFIED MODEL (Exterior): Flame PRO® Plywood
 FlamePRO® Plywood, min. 19/32-inch-thick (11.9 mm), applied vertically over the specified framing with minimum 2 3/8-inch-long (60.3 mm), 0.113-inch (2.9 mm) diameter nails, spaced maximum 8 inches (203 mm) o.c. around the perimeter and maximum 12 inches (305 mm) o.c. in the field. Horizontal joints must be blocked.
3. INSULATION: Class A Fiberglass batt insulation minimum 3 1/2-inch-thick (89 mm) R-13 friction fit between the studs. If 2 x 6 inches nominal wood studs are used, fiberglass batt insulation shall be min. 5 1/2-inch-thick (140 mm) R-19.
4. EXTERIOR FACINGS (Optional): Materials installed in accordance with manufacturer's installation instructions:
 - Masonry brick veneer or concrete
 - Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat
 - Hardboard, wood structural panel, plywood, or fiber-cement siding
 - Metal siding
 - Vinyl siding - exterior plastic

FIGURE 2—ONE-HOUR FIRE RESISTANCE ASSEMBLY

Fire Retardant Wood FlamePRO® Lumber and Plywood
ASTM E119 Rating: Two-Hour Load Bearing (2015 NDS – F 0.96 for FRWT)
Rated from One Side (Interior Side Only)

2 Hour Load Bearing Wall

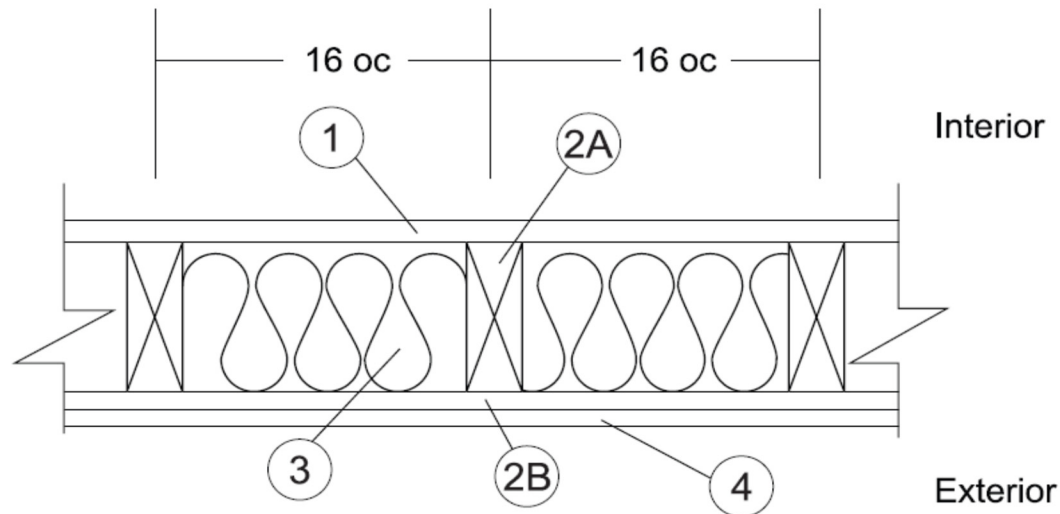


1. GYPSUM BOARD [Interior]: Two layers Type C USG Firecode® C Core complying with ASTM C1396, minimum $\frac{5}{8}$ -inch-thick (16 mm), 4 feet (1.2 mm) wide applied vertically, fastened to framing. Face layer joints staggered with base layer and covered with paper tape and joint compound.
 FASTENERS (Not Shown):
 - A. FACE LAYER- Minimum No. 6 x 2 inches (51 mm) long Type S or W screws spaced maximum 8 inches (203 mm) on center (o.c.) and heads covered with joint compound.
 - B. BASE LAYER – Minimum No. 6 x $1\frac{5}{8}$ inches (41 mm) long Type S or W screws, spaced maximum 6 inches (152 mm) o.c.
2. CERTIFIED MANUFACTURER: Koppers Performance Chemicals
 CERTIFIED PRODUCT: FlamePRO®
 - 2A. CERTIFIED MODEL: FlamePRO® Lumber
 FlamePRO® Lumber is minimum 2 x 4 inches nominal wood studs, spaced max. 16 inches (406 mm) o.c., double top plates and single bottom plate fastened together with 16d common nails.
 - 2B. CERTIFIED MODEL (Exterior): FlamePRO® Plywood
 FlamePRO® Plywood, minimum $\frac{15}{32}$ -inch-thick (11.9 mm), applied vertically over the specified framing with min. $2\frac{3}{8}$ -inches-long (60 mm), 0.113-inch (2.9 mm) diameter nails, spaced maximum 8 inches (203 mm) o.c. around the perimeter and maximum 12 inches (305 mm) o.c. in the field. Horizontal joints must be blocked.
3. INSULATION: Class A Fiberglass batt insulation minimum $3\frac{1}{2}$ -inches-thick (89 mm) R-13 friction fit between the studs. If 2 x 6 inches nominal wood studs are used, fiberglass batt insulation shall be min. $5\frac{1}{2}$ -inch-thick (140 mm) R-19.
4. EXTERIOR FACINGS (Optional): Materials installed in accordance with manufacturer's installation instructions:
 - Masonry brick veneer or concrete
 - Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat
 - Hardboard, wood structural panel, plywood, or fiber-cement siding
 - Metal siding
 - Vinyl siding - exterior plastic

FIGURE 3—TWO-HOUR FIRE RESISTANCE ASSEMBLY

Fire Retardant Wood FlamePRO® Lumber and Plywood
ASTM E119 Rating: One-Hour Load Bearing (2015 NDS – F 0.96 for FRWT)
(Rated from Interior and Exterior Side)

1 Hour Load Bearing Wall

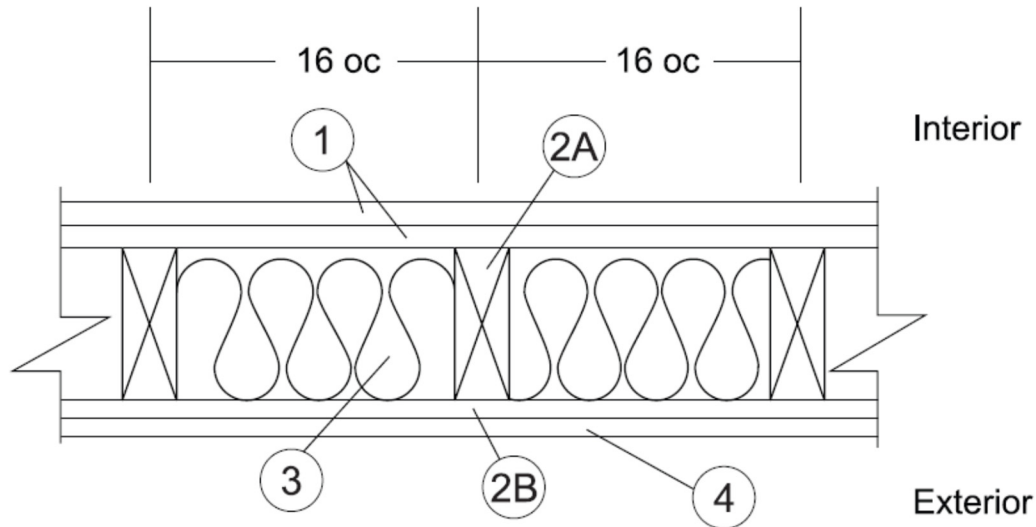


1. GYPSUM BOARD (Interior): One-layer Type X complying with ASTM C1396, minimum $\frac{5}{8}$ -inch-thick (16 mm), 4 feet (1.2 m) wide applied vertically, fastened to framing. Joints covered with paper tape and joint compound. Fasteners covered with joint compound. Minimum No. 6 x $\frac{15}{8}$ -inch-long (41 mm) Type S or W screws, spaced maximum 6 inches (152 mm) on center o.c.
2. CERTIFIED MANUFACTURER: Koppers Performance Chemicals
 CERTIFIED PRODUCT: FlamePRO®
 2A. CERTIFIED MODEL: FlamePRO® Lumber
 FlamePRO® Lumber is minimum 2 x 4 inches nominal wood studs, spaced maximum 16 inches (406 mm) o.c., or 2 x 6 inches nominal wood studs spaced 24 inches (610 mm) o.c, double top plates and single bottom plate fastened together with 16d common nails [3½ inches x 0.162 inch (89 mm x 3.4 mm)], 16d box nails [3½ inches x 0.135 inch (89 mm x 3.4 mm)], or 12d ring nails [3¼ inches x 0.135 inch (83 mm x 3.4 mm)].
 2B. CERTIFIED MODEL (Exterior): FlamePRO® Plywood
 FlamePRO® Plywood, minimum $\frac{15}{32}$ -inch-thick (11.9 mm), applied vertically over the specified framing with min. $2\frac{3}{8}$ -inch-long (60 mm), 0.113-inch (2.9 mm) diameter nails, spaced maximum 8 inches (203 mm) o.c. around the perimeter and maximum 12 inches (305 mm) o.c. in the field. Horizontal joints must be blocked.
3. INSULATION: Fiberglass Class A batt insulation min. 3½-inch-thick (89 mm) R-13 friction fit between the studs. If 2 x 6 inches nominal wood studs are used, fiberglass batt insulation shall be min. 5½-inch-thick (1400 mm) R-19.
4. EXTERIOR FACINGS: Materials installed in accordance with manufacturer's installation instructions:
 - $\frac{3}{4}$ -inch-thick (19.1 mm) cement plaster (1:4 ratio of cement to sand for scratch coat and 1:5 ratio for brown coat)
 - Nominal 2.7 inch (68.5 mm) thick solid brick fastened using min. 22 GA ties.
 - Nominal 2.3 inch (58.4 mm) thick hollow brick fastened using min. 22 GA wall ties.

FIGURE 4—ONE-HOUR FIRE RESISTANCE ASSEMBLY

Fire Retardant Wood FlamePRO® Lumber and Plywood
ASTM E119 Rating: Two-Hour Load Bearing (2015 NDS – F 0.96 for FRWT)
(Rated Two-Hour from Interior and Rated One-Hour from Exterior Side)

2 Hour Load Bearing Wall



1. GYPSUM BOARD (Interior): Two-layers USG Firecode® C Core, complying with ASTM C1396, or equivalent, minimum $\frac{5}{8}$ -inch-thick (15.69 mm), 4 feet (1.2 m) wide applied vertically, fastened to framing. Face layer joints staggered with base layer and covered with paper tape and joint compound.

FASTENERS (Not Shown)

FACE LAYER- Minimum No. 6 x 2 inches (51 mm) long Type S or W screws spaced maximum 8 inches (203 mm) on center (o.c.) and heads covered with joint compound.

BASE LAYER - Minimum No. 6 x $1\frac{5}{8}$ -inch (51 mm) long Type S or W screws, spaced maximum 6 inches (152 mm) o.c.

2. CERTIFIED MANUFACTURER: Koppers Performance Chemicals

CERTIFIED PRODUCT: FlamePRO®

2A. CERTIFIED MODEL: FlamePRO® Lumber

FlamePRO® Lumber is minimum 2 x 4 inches nominal wood studs, spaced maximum 16 inches (406 mm) o.c., or 2 x 6 inches nominal wood studs spaced 24 inches (610 mm) o.c, double top plates and single bottom plate fastened together with 16d common nails [$3\frac{1}{2}$ inches x 0.162 inch (89 mm x 4.1 mm)], 16d box nails [$3\frac{1}{2}$ inches x 0.135 inch (89 mm x 3.4 mm)], or 12d ring nails [$3\frac{1}{4}$ inches. x 0.135 inch (83 mm x 3.4 mm)].

- 2B. CERTIFIED MODEL (Exterior): FlamePRO® Plywood
 FlamePRO® Plywood, minimum $\frac{15}{32}$ -inch-thick (11.9 mm), applied vertically over the specified framing with minimum $2\frac{3}{8}$ -inches-long (60.3 mm), 0.113-inch (2.9 mm) diameter nails, spaced maximum 8 inches (203 mm) o.c. around the perimeter and maximum 12 inches (305 mm) o.c. in the field. Horizontal joints must be blocked.

3. INSULATION: Fiberglass Class A batt insulation min. $3\frac{1}{2}$ - inch-thick (89 mm) R-13 friction fit between the studs. If 2 x 6 inches nominal wood studs are used, fiberglass batt insulation shall be min. $5\frac{1}{2}$ -inch-thick (140 mm) R-19.
4. EXTERIOR FACINGS: Materials installed in accordance with manufacturer's installation instructions:
- $\frac{3}{4}$ -inch-thick (19.1 mm) cement plaster (1:4 ratio of cement to sand for scratch coat and 1:5 ratio for brown coat)
 - Nominal 2.7 inch (68.5 mm) thick solid brick fastened using min. 22 GA ties.
 - Nominal 2.3 inch (58.4 mm) thick hollow brick fastened using min. 22 GA wall ties.

FIGURE 5—TWO-HOUR FIRE RESISTANCE ASSEMBLY

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 73.13—Fire-Retardant Wood Treatment

REPORT HOLDER:

KOPPERS PERFORMANCE CHEMICALS, INC.

EVALUATION SUBJECT:

FLAMEPRO® FIRE-RETARDANT-TREATED WOOD

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that FlamePRO® fire-retardant-treated wood, described in ICC-ES evaluation report [ESR-4244](#), has also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The FlamePRO® fire-retardant-treated wood, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4244](#), complies with the LABC Chapter 23, and the LARC Chapter 8, and is subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The FlamePRO® fire-retardant-treated wood described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4244](#).
- The design, installation, conditions of use and identification of the FlamePRO® fire-retardant-treated wood are in accordance with the 2021 *International Building Code*® (IBC) and the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report [ESR-4244](#) as applicable.
- The design and installation are in accordance with additional requirements of LABC Chapters 16 and 23, as applicable.

Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued August 2023 and revised May 2024.

DIVISION: 06 00 00—WOOD, PLASTICS, AND COMPOSITES
Section: 06 05 73.13—Fire-Retardant Wood Treatment

REPORT HOLDER:**KOPPERS PERFORMANCE CHEMICALS****EVALUATION SUBJECT:****FLAMEPRO® FIRE-RETARDANT-TREATED WOOD****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that FlamePRO® fire-retardant-treated wood, described in ICC-ES evaluation report ESR-4244, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2022 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The FlamePRO® fire-retardant-treated wood, described in Sections 2.0 through 7.0 of the evaluation report ESR-4244, complies with CBC Chapter 23, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report.

The products have not been evaluated under Chapter 7A for use in the exterior design and construction of new buildings located in a Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The FlamePRO® fire-retardant-treated wood, described in Sections 2.0 through 7.0 of the evaluation report ESR-4244, complies with CRC Chapter 8, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report.

The products have not been evaluated under CRC Section R337 for use in the exterior design and construction of new buildings located in a Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area.

The products described in this supplement have not been evaluated for compliance with the *International Wildland-Urban Interface Code*®.

This supplement expires concurrently with the evaluation report, reissued August 2023 and revised May 2024.