

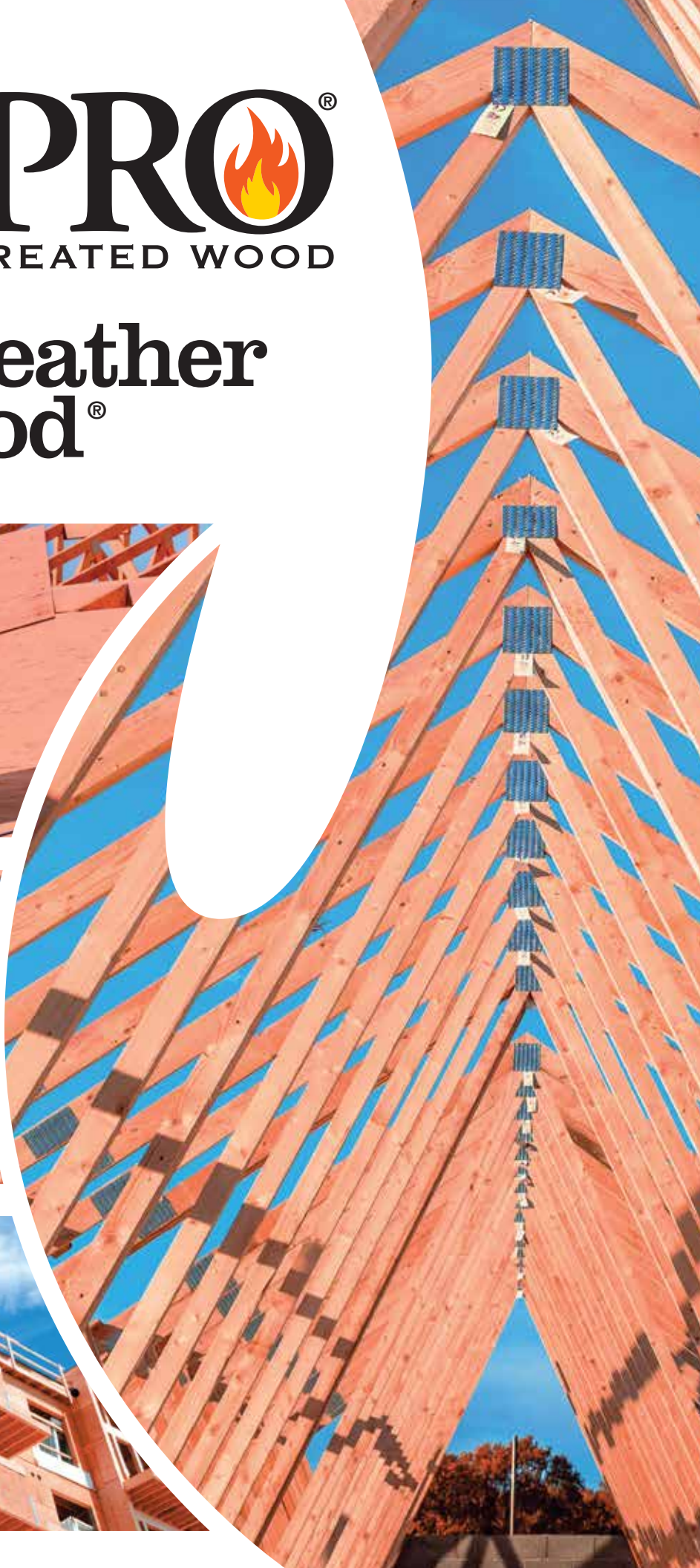
FlamePRO[®]

FIRE RETARDANT TREATED WOOD

from



Allweather Wood[®]





FlamePRO® fire retardant treated wood (FRTW) is lumber and plywood pressure impregnated with FlamePRO Interior Type A High Temperature (HT) fire retardant chemicals. FlamePRO fire retardant is a proven successful formulation based on the American Wood Protection Association P50 Standard for Fire Retardants. FlamePro FRTW lumber and plywood meets the requirements for FRTW listed in the International Code Council Acceptance Criteria ICC AC66 conforming with the International Residential and the International Building Codes (IRC & IBC).

FlamePRO FRTW products comply with AWPA UC-1 and UCFA use category systems, FlamePro treatment process meets the AWPA T1 standard and FlamePRO fire retardant chemicals have been analyzed to confirm the formulation meets AWPA P50 standard.

FlamePRO FRTW is available nationwide through a network of independently owned and operated wood treatment facilities licensed by Koppers Performance Chemicals Inc. A 50-Year Limited Warranty against structural failure due to heat or humidity is available. See the FlamePRO 50-Year Limited Warranty for details. Available at Koppers Performance Chemicals Inc., Attn: Warranty Claims Dept., 635 Hwy 74 S., Peachtree City, Georgia 30269 or visit www.kopperspc.com.

FlamePRO FRTW is typically specified for use in interior areas not exposed to the weather or wetting and where the adopted building code permits the use of wood or fire retardant treated wood.

KEY PRODUCT VALUES

- Independently Tested
- Highly Cost Effective
- Quality Monitored by Independent Inspection Agency
- Limited Warranty
- Pressure Treated (Not a Paint or Coating)
- Low Corrosion to Metal, Hardware and Fasteners
- Low Hygroscopicity
- Low Smoke Development Values
- Low Flamespread Index Values
- UL GREENGUARD GOLD, Low VOC
- ICC-ESR Report-4244
- Superior Strength Durability
- ASTM E84 Extended 30-minute Test
- ASTM E119 1 & 2 Hour Wall Assemblies
- Optional Color Indicator for Building Site Recognition

FIRE PERFORMANCE

All FlamePRO FRTW has been tested at Underwriters Laboratories resulting in flame spread and smoke development ratings of 25 or less when subjected to ASTM E84 surface burning characteristics in tests of 30 minute duration without evidence of significant progressive combustion. Consequently, wood pressure impregnated with FlamePRO fire retardant chemicals has qualified for the UL “FR-S”, Class A, “Class 1” classification for surface burning characteristics.

UL CLASSIFIED

UL Classified with an FR-S Rating for flame spread and smoke development values of 25 or less.

UL GREENGUARD GOLD CERTIFICATION

The FlamePRO FRTW has undergone rigorous testing and met stringent standards for low volatile organic compound (VOC) emissions. Products certified to this criteria are suitable for use in schools, offices, and other sensitive environments.

ESR REPORT

FlamePRO FRTW products, as described in the ICC Evaluation Services, Inc. ESR-4244, meet all major model building code requirements.

SCS INDOOR ADVANTAGE™ GOLD CERTIFIED

SCS Global Services has completed the evaluation of Koppers FlamePRO FRTW lumber products. Koppers FlamePRO FRTW products meet all the necessary requirements to be certified Indoor Advantage Gold.

CAL FIRE LISTED

FlamePRO FRTW products are CAL FIRE listed. CAL FIRE is responsible for providing wildland fire protection and resource management on over 31 million acres of State Responsibility Area (SRA) lands throughout California.

BSD SPECLINK LISTED

Master Specification Content for Architectures, Engineers, and Construction Markets.

APPLICATIONS

FlamePRO FRTW is typically permitted for interior, above ground applications such as: roof systems, studs, flooring, joists, sill plates, blocking and furring, and other interior applications. The specifier and/or end user is responsible to review the test data on FlamePRO FRTW to determine if it is acceptable for the intended end use.*

Typical applications include:

- Roof Trusses
- Rafters
- Plywood Roof Sheathing
- Floor & Roof Joists
- Mezzanines
- Sill Plates
- Steps
- Stairways
- Studs
- Interior Partitions (Non-load)
- Floor Sheathing
- Plywood
- Subflooring
- Partition Walls
- Beams & Purlins
- Blocking & Furring
- Platforms
- Stages
- Wall Sheathing & Paneling
- Architectural
- Millwork & Trim
- Backing for Electrical Panels
- 1 & 2 Hour Wall Assemblies



* When designing any structure it is the responsibility of the design professional to take into account environmental, duration of load and other factors as set forth in the NDS and all other applicable design standards, codes, etc. This brochure should be regarded as an adjunct to, and not a substitute for these mandatory and historical references.

STRUCTURAL DURABILITY

The structural durability of FlamePRO FRTW lumber and plywood has been verified by the certified engineers according to the latest and most stringent versions of ASTM strength durability standards. FlamePRO FRTW lumber and plywood has been tested by independent accredited laboratories, following industry standards ASTM D5564 & ASTM D5516 to develop strength design factors for various use conditions.

The National Design Specifications (NDS), Wood Handbook, and other publications have cautioned against the use of any wood product in environments exceeding 150°F. Based on the strength data generated when tested per industry protocol at an accredited third party laboratory, professional engineers have calculated design values and span adjustments to modify the untreated design values for lumber and span ratings for plywood. These design values are applicable at temperatures up to 150°F for lumber (see Tables 1 and 2) and 170°F for plywood (see Table 3).

TABLE 1—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)	0.82	1.00	0.95	0.82
Modulus of Elasticity (MOE)	0.87	1.00	0.94	0.87
Work to Maximum Load (WML)	0.72	0.93	0.90	0.72
Ultimate Tensile Strength (UTS)	0.99	1.00	0.98	0.98
Maximum Compressive Strength (MCS)	0.96	0.96	1.00	0.96
Ultimate Shear Strength (USS)	0.95	1.00	0.99	0.95
Fasteners/Connectors	0.90	0.90	0.90	0.90



TABLE 2—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)	0.82	0.82	0.82	0.88	0.93	0.96	0.81	0.87	0.93	0.81	0.82	0.82
Modulus of Elasticity (MOE)	0.87	0.87	0.87	1.00	1.00	1.00	0.94	0.94	0.94	0.87	0.87	0.87
Work to Maximum Load (WML)	0.69	0.70	0.71	0.92	0.93	0.93	0.69	0.77	0.87	0.69	0.70	0.71
Ultimate Tensile Strength (UTS)	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)	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)	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 definition:

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

TABLE 3— 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 Sub-floor SPAN (INCHES)
		SPAN (INCHES)	CLIMATE ZONE			
			1A	1B	2	
15/32, 1/2	32/16	24	31	47	68	16
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	48/24	32	43	66	95	24
		48	19	29	42	24
1	48/24	32	58	88	127	24
		48	26	39	57	24
1-1/8	48/24	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 (Fb=1650 psi), one-and-two span conditions.
- 3 For allowable live loads, subtract dead load (assumed to be 8 psf) from total loads listed above.
- 4 Climate Zone definition:
 - 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.

AVAILABLE SPECIES

FlamePRO FRTW lumber is available in a wide range of softwood species including:

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

FlamePRO FRTW plywood is available in Southern Pine and Douglas-Fir.

CORROSIVITY

The corrosivity of FlamePRO FRTW has been evaluated in accordance with AWPA Standard E12 for a variety of metals. The corrosion rates for carbon steel, galvanized steel, aluminum, red brass, and copper are not significantly increased by FlamePRO fire retardant chemicals when the treated wood products are used as recommended by the manufacturer and properly sized for the materials selected.

The following metal fasteners are recommended for use in contact with FlamePRO FRTW: 2024-T3 aluminum, SAE 1010 steel, hot-dip zinc galvanized steel, copper, or red brass.

HYGROSCOPICITY

Hygroscopicity testing conducted by a third party independent laboratory has confirmed that compared to untreated wood, FlamePro FRTW does not pick up excessive moisture under ASTM D3201 test conditions.

INSTALLATION

Structural systems, which include FlamePRO FRTW lumber or plywood, should be designed and installed in accordance with the adopted building code using the appropriate lumber design adjustment factors and plywood spans from Tables 1 and 2. Ventilation should be provided in compliance with the applicable codes in force at time of construction.

FlamePRO FRTW is not permitted for applications where the material may be exposed to precipitation, direct wetting, regular condensation, and should never be used in contact with the ground.

If the wood is to be used in an interior application and becomes wet during construction, it should be allowed to dry before being covered or enclosed.

FINISHING AND WORKABILITY

Under normal temperature and humidity conditions, latex and oil-based paints, as well as water- and solvent-based stains, can be used with FlamePRO FRTW. If prolonged exposure to high humidity conditions is expected, special surface preparation procedures including the use of an appropriate primer are recommended. Before application of any finish, the wood surface should be lightly sanded, cleaned and dry. For best results, always follow the coating manufacturer's label instructions.

Typical joining cuts, end cuts, and drilled holes will not adversely affect the fire performance of FlamePRO fire retardant treated wood and no field treatment is required to maintain flame spread ratings. However, ripping or milling of FlamePRO FRTW lumber is not permitted, as these operations could adversely affect the surface burning characteristics. FlamePRO FRTW plywood can be ripped as required.

IDENTIFICATION

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 stamps must list name of the inspection agency Underwriters Laboratories (FR-S); Timber Products Inspection, Inc. (AC-66); Southern Pine Inspection Bureau (AA-680); the production plant identification; labeling information in accordance with Section 2303.2.4 of the 2018, 2015, 2012 and 2009 IBC and Section 2303.2.1 of the 2006 IBC or Section R802.1.5.4 of the 2018 and 2015 IRC or Section R802.1.3.4 of the 2012 and 2009 IRC or Section R802.1.3.1 of the 2006 IRC; and the evaluation report number (ESR-4244).


TESTING AND STANDARDS


UL 723 - Surface Burning Characteristics	ASTM D6305 - Strength Design
ASTM E84 - Surface Burning Characteristics	ASTM D6841 - Treatment Adjustment Factors
ASTM 2768 – Extended 30-minute Test	AWPA E12 – Determining Corrosion of Metal
ASTM E119 - Fire Tests of Building Construction	AWPA M4 – Care of Treated Wood
ASTM D3201 - Hygroscopic Properties	AWPA P50 – Standard for Fire Retardants
ASTM D5516 - Flexural Properties Plywood	AWPA T1 – Treatment Standard
ASTMM D5664 – Flexural Properties Lumber	


WARRANTY

FlamePRO brand fire retardant treated wood products are backed by a 50 Year Limited Warranty Program from Koppers Performance Chemicals Inc. (KPC). The Limited Warranty provides protection against a reduction in strength below the strength properties published in ESR-4244 caused by the FlamePRO brand fire retardant chemical. See Warranty for details. Available at Koppers Performance Chemicals Inc., Attn: Warranty Claims Dept., 635 Hwy 74 S., Peachtree City, Georgia 30269 or visit www.kopperspc.com.

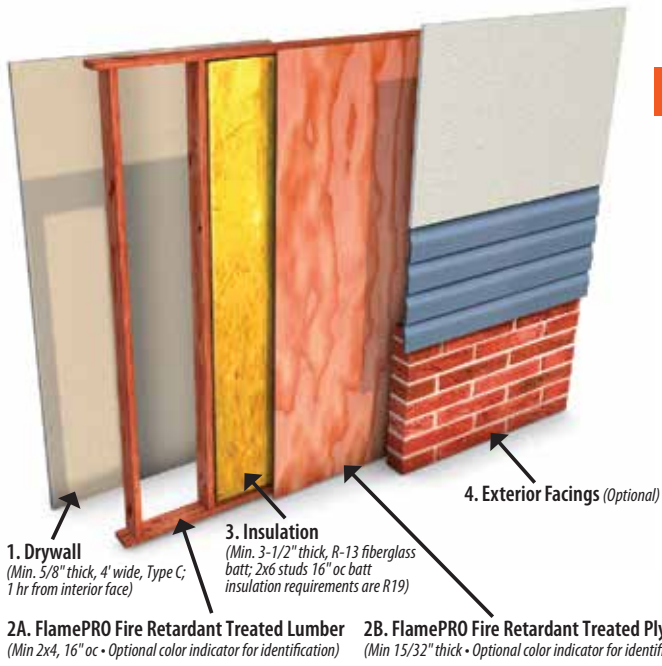


 <small>FIRE RETARDANT TREATED WOOD</small>	LUMBER FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less TP Monitored (AA-696) STD-FLP-18
Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT Species Year Treater Name • Location	

 <small>FIRE RETARDANT TREATED WOOD</small>	LUMBER FLAME SPREAD/SMOKE DEVELOPED: ASTM E84 30 MINUTE TEST: 25 or less SPIB Monitored (AA-680) STD-FLP-18
Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT Species Year Treater Name • Location	

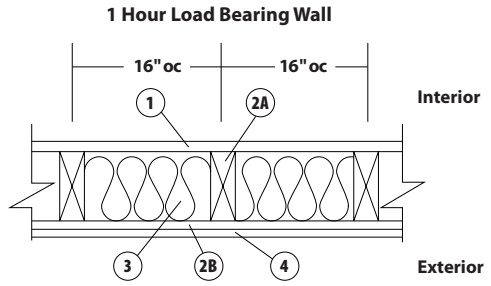
 <small>FIRE RETARDANT TREATED WOOD</small>	UL Classified FR-S LUMBER FLAME SPREAD/SMOKE DEVELOPED: 30 MINUTE TEST: 25 or less STD-FLP-18
Interior Type A High Temperature (HT) Fire Retardant Treated Wood ESR-4244 KDAT Species Year Treater Name • Location	

1 & 2 HOUR TESTED INTERIOR WALL ASSEMBLIES (ASTM-E119, ANSI/UL 263)



- 1. Drywall**
(Min. 5/8" thick, 4' wide, Type C; 1 hr from interior face)
- 2A. FlamePRO Fire Retardant Treated Lumber**
(Min 2x4, 16" oc - Optional color indicator for identification)
- 2B. FlamePRO Fire Retardant Treated Plywood**
(Min 15/32" thick - Optional color indicator for identification)
- 3. Insulation**
(Min. 3-1/2" thick, R-13 fiberglass batt; 2x6 studs 16" oc batt insulation requirements are R19)
- 4. Exterior Facings (Optional)**

1 Hour Tested Interior Wall Assembly (60-02)



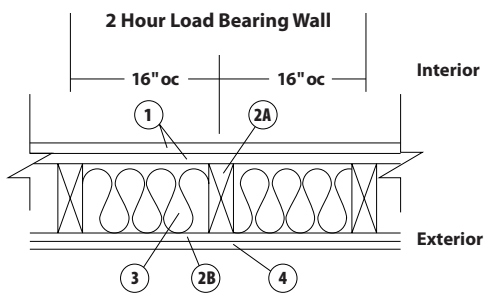
1 Hour Load Bearing Wall

Max. Tested Load: 100% of Design Load

Fire Ratings: 1 hour load bearing rated from one side (interior side only). For details refer to ESR Report 4244.

- 1.** Drywall (1 hr from interior face)
- 2A.** FlamePRO Lumber
- 2B.** FlamePRO Plywood
- 3.** Insulation
- 4.** Exterior Facings (Optional)

2 Hour Tested Interior Wall Assembly (120-01)

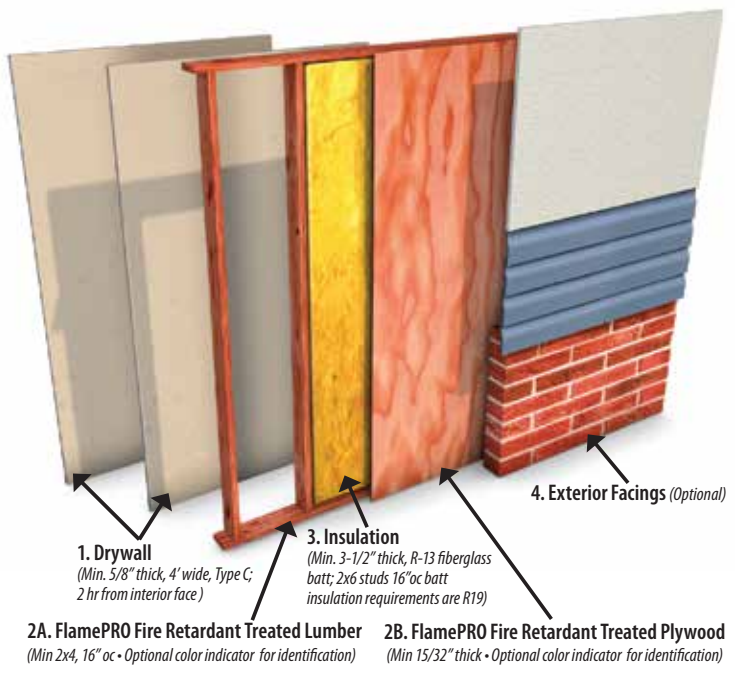


2 Hour Load Bearing Wall

Max. Tested Load: 100% of Design Load

Fire Ratings: 2 hour load bearing rated from one side (interior side only). For details refer to ESR Report 4244.

- 1.** Drywall (2 hr from interior face)
- 2A.** FlamePRO Lumber
- 2B.** FlamePRO Plywood
- 3.** Insulation
- 4.** Exterior Facings (Optional)



- 1. Drywall**
(Min. 5/8" thick, 4' wide, Type C; 2 hr from interior face)
- 2A. FlamePRO Fire Retardant Treated Lumber**
(Min 2x4, 16" oc - Optional color indicator for identification)
- 2B. FlamePRO Fire Retardant Treated Plywood**
(Min 15/32" thick - Optional color indicator for identification)
- 3. Insulation**
(Min. 3-1/2" thick, R-13 fiberglass batt; 2x6 studs 16" oc batt insulation requirements are R19)
- 4. Exterior Facings (Optional)**

This is not a standalone document. Read in conjunction with other FlamePRO literature.

IMPORTANT INFORMATION

Access the link below or QR code to read before handling treated wood.

Guidelines for use, handling and disposal of treated wood products. These guidelines contain compliance information required by the California Department of Toxic Substances Control.

kopperspc.com/flamepro/important-information.html

Access the link below or QR code for information on how to safely dispose of treated wood waste in California.

twwdisposal.org



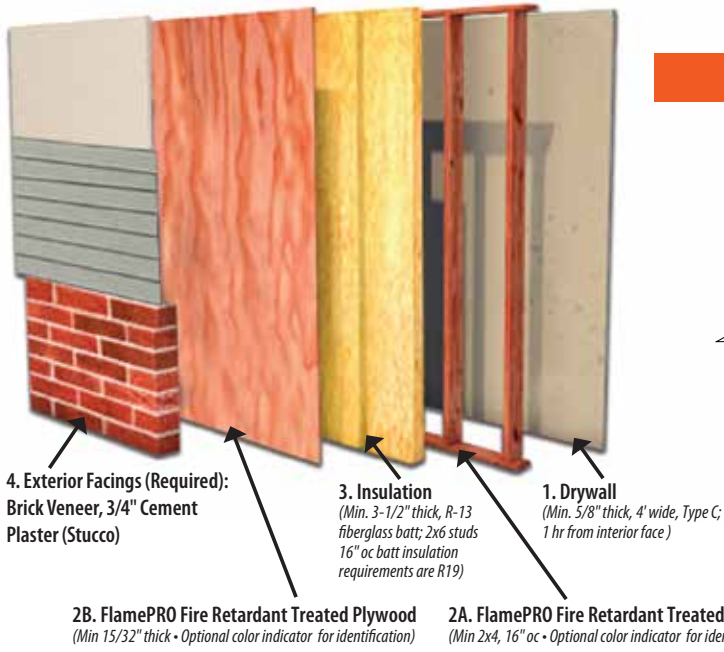
50-YEAR WARRANTY

Access the link below or QR code or the FlamePro 50-Year Warranty

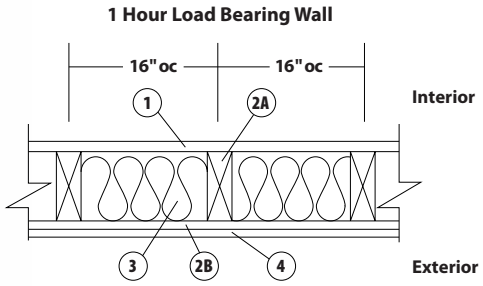
kopperspc.com/flamepro/flamepro-warranty.html



1 & 2 HOUR TESTED EXTERIOR WALL ASSEMBLIES (ASTM-E119, ANSI/UL 263)



1 Hour Tested Exterior Wall Assembly (60-01)

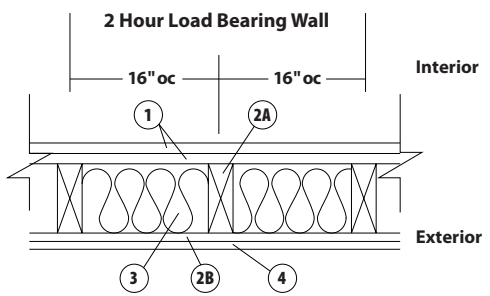


- 1. Drywall (1 hr from interior face)
- 2A. FlamePRO Lumber
- 2B. FlamePRO Plywood
- 3. Insulation
- 4. Exterior Facings (Required):
Brick Veneer, 3/4" Cement Plaster (Stucco)

Max. Tested Load: 100% of Design Load

Fire Ratings: 1 hour load bearing rated from interior and exterior. For details refer to ESR Report 4244.

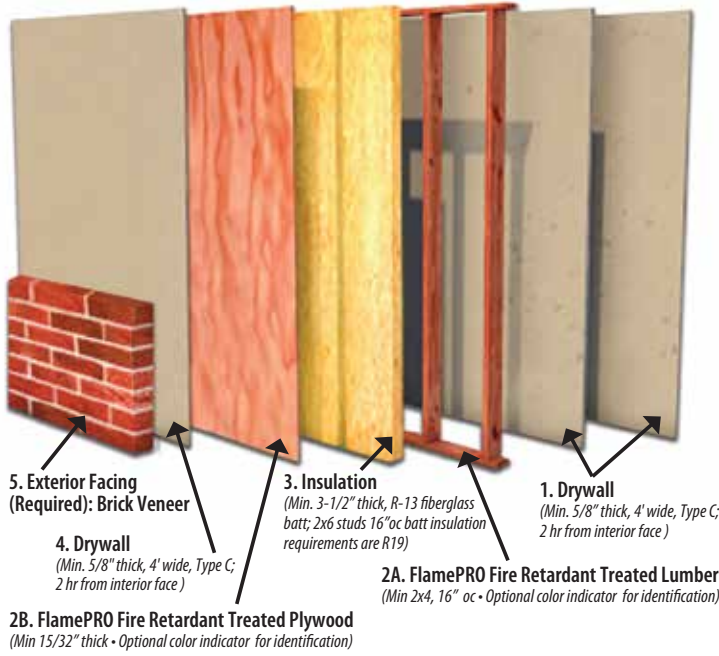
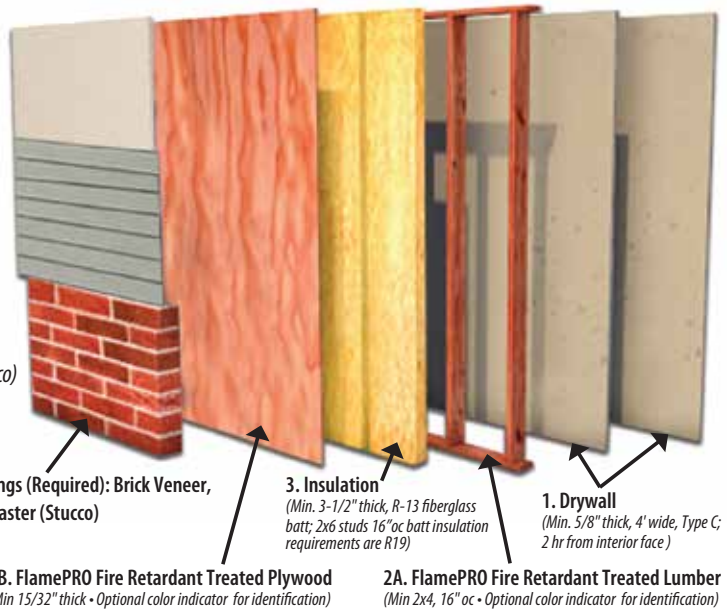
2 Hour Tested Exterior Wall Assembly (120-02)



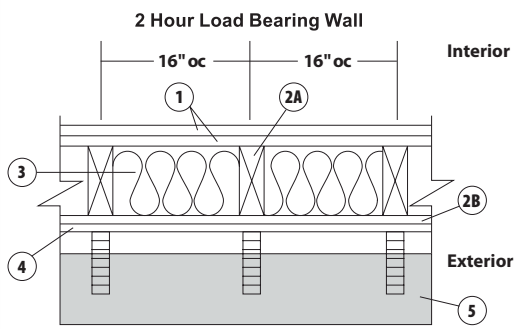
- 1. Drywall (2 hr from interior face)
- 2A. FlamePRO Lumber
- 2B. FlamePRO Plywood
- 3. Insulation
- 4. Exterior Facings (Required):
Brick Veneer, 3/4" Cement Plaster (Stucco)

Max. Tested Load: 100% of Design Load

Fire Ratings: 2 hour load bearing rated from interior and 1 hour load bearing exterior. For details refer to ESR Report 4244.



2 Hour Tested Exterior Wall Assembly (120-03)



- 1. Drywall (2 hr from interior face)
- 2A. FlamePRO Lumber
- 2B. FlamePRO Plywood
- 3. Insulation
- 4. Drywall
- 5. Exterior Facings (Required):
Brick Veneer

Max. Tested Load: 100% of Design Load

Fire Ratings: 2 hour load bearing.



Performance
Chemicals

www.allweatherwood.com

www.kopperspc.com