FlamePRO®

FIRE RETARDANT TREATED WOOD

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FlamePRO® brand fire retardant treated wood (FRTW) is lumber and plywood pressure impregnated with FlamePRO Interior Type A High Temperature (HT) fire retardant chemicals. FlamePRO brand fire retardant is a proven successful formulation based on the American Wood Protection Association P50 Standard for Fire Retardants. FlamePro fire retardant 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 chemical has 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: Consumer Affairs, P. O. Drawer O, Griffin, Georgia 30224-0249 or visit www.kopperspc.com*

FlamePRO brand fire retardant treated wood 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 brand fire retardant treated wood 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 treated with FlamePro fire retardant 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 Fire Retardant 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 Fire Retardant 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's FlamePRO Treated Lumber products. Koppers FlamePRO Fire Retardant Treated Wood products meet all the necessary requirements to be certified Indoor Advantage™ Gold.

CAL FIRE LISTED

FlamePRO Fire Retardant 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 brand fire retardant treated wood is typically permitted for interior, above ground applications such as: roof systems, studs, flooring, joists, sill plates (when not in direct contact with the ground), blocking and furring, and other interior applications. The specifier and/or end user is responsible to review the test data on FlamePRO brand fire retardant treated wood 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 brand fire retardant treated lumber and plywood has been verified by the certified engineers according to the latest and most stringent versions of ASTM strength durability standards. FlamePRO brand fire retardant treated 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 Subfloor
		SPAN (INCHES)	CLIMATE ZONE			SPAN (INCHES)
			1A	1B	2	
15/32, 1/2	32/16	24	31	47	68	16
19/32, 5/8	40/20	24 32	48 27	74 42	107 60	20 20
23/32, 3/4	48/24	32 48	34 15	52 23	76 34	24 24
7/8		32 48	43 19	66 29	95 42	24 24
1		32 48	58 26	88 39	127 57	24 24
1-1/8		32 48	73 32	111 49	161 71	24 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 brand fire retardant treated 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 fire retardant treated plywood is available in Southern Pine and Douglas-Fir.

CORROSIVITY

The corrosivity of FlamePRO brand fire retardant treated wood 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 brand 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 brand fire retardant treated wood: 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 brand fire retardant treated wood does not pick up excessive moisture under ASTM D3201 test conditions.

INSTALLATION

Structural systems, which include FlamePRO brand fire retardant treated 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 brand fire retardant treated wood 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.

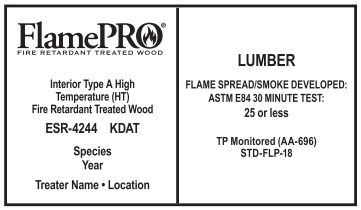
FINISHING AND WORKABILITY

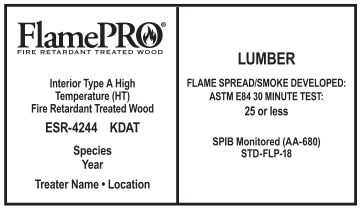
Under normal temperature and humidity conditions, latex and oil-based paints, as well as water- and solvent-based stains, can be used with FlamePRO brand fire retardant treated wood. If prolonged exposure to high humidity conditions is expected, special surface preparation procedures including the use 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.

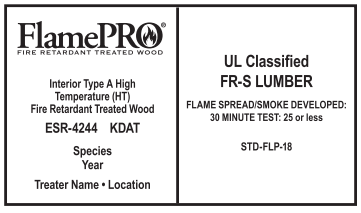
Typical joining cuts, end cuts, and drilled holes will not adversely affect the fire performance of FlamePRO brand fire retardant treated wood and no field treatment is required to maintain flame spread ratings. However, ripping or milling of FlamePRO FRT lumber is not permitted, as these operations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

IDENTIFICATION

Lumber and plywood treated with FlamePRO fire retardant formulation 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).







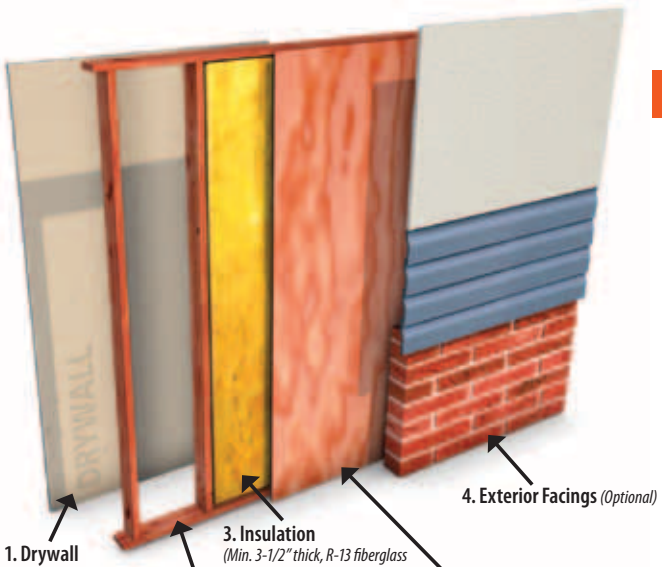
TESTING AND STANDARDS

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

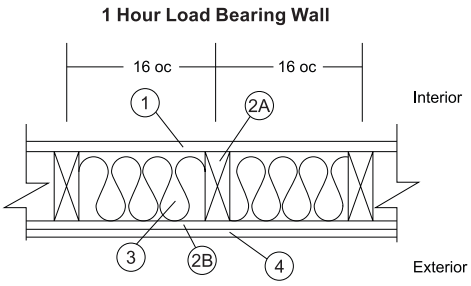
WARRANTY

FlamePRO Fire Retardant pressure 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 fire retardant chemical. See Warranty for details. Available at Koppers Performance Chemicals Inc., Attn: Consumer Affairs, P. O. Drawer O, Griffin, Georgia 30224-0249 or visit www.kopperspc.com

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



1 Hour Tested Interior Wall Assembly (60-02)

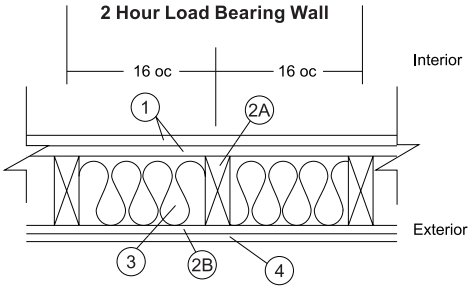


1. Drywall *(1 hr from interior face)*
2A. FlamePRO Lumber
2B. FlamePRO Plywood
3. Insulation
4. Exterior Facings *(Optional)*

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.

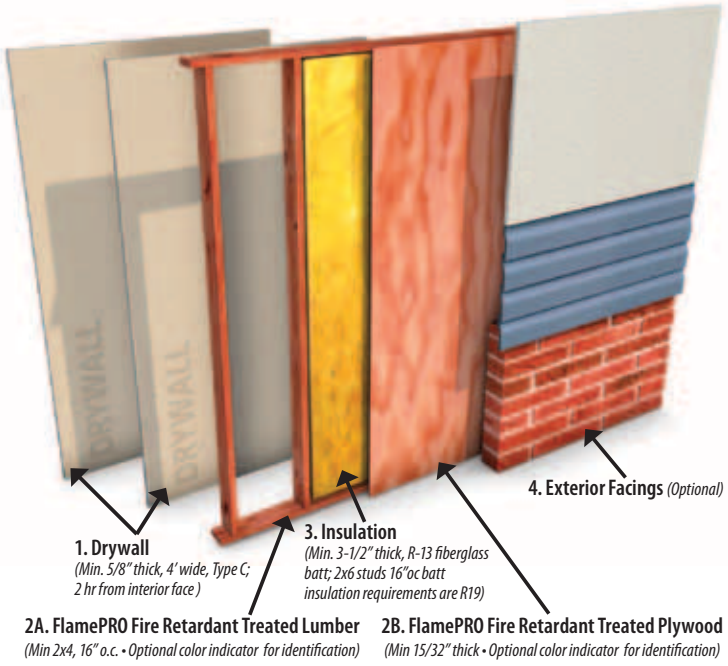
2 Hour Tested Interior Wall Assembly (120-01)



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

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.



IMPORTANT INFORMATION

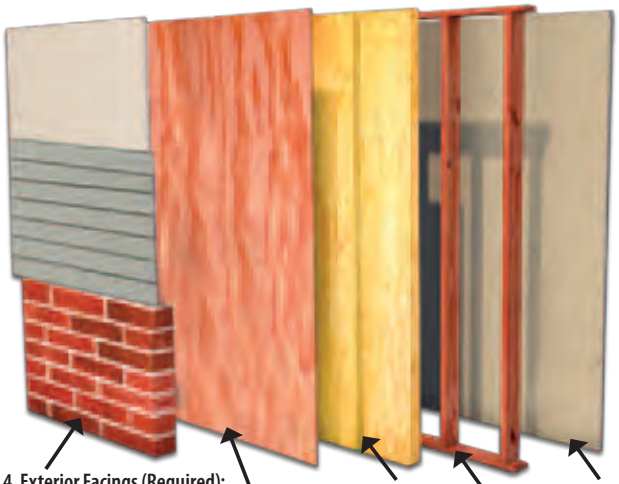
• Do not burn fire retardant treated wood. • Wear NIOSH N95 dust mask and goggles when cutting or sanding wood. • Wear gloves when working with wood. • Some fire retardant treated wood chemicals may migrate from the treated wood into soil/water or may dislodge from the treated wood surface upon contact with skin. Wash exposed skin areas thoroughly. • All sawdust and construction debris should be cleaned up and disposed of after construction. • Wash work clothes separately from other household clothing before reuse. • Fire retardant treated wood should not be used where it may come into direct or indirect contact with drinking water. • Do not use fire retardant treated wood under circumstances where it may become a component of food, animal feed, or beehives. • Do not use fire retardant treated wood as mulch. • Only fire retardant treated wood that is visibly clean and free of surface residue should be used. • 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. • Disposal Recommendations - Fire retardant treated wood may be disposed of in landfills or burned in commercial or industrial incinerators or boilers in accordance with federal, state, and local regulations. • If you desire to apply a paint, stain, clear water repellent, or other finish to your fire retardant treated wood, we recommend following the manufacturer's instructions and label of the finishing product. Before you start, we recommend you apply the finishing product to a small exposed test area before completing the entire project to insure it provides the intended result before proceeding. • Projects should be designed and installed in accordance with federal, state, and local building codes and ordinances governing construction in your area and in accordance with the National Design Specifications (NDS) and the Wood Handbook. • Mold growth can and does occur on the surface of many products, including untreated and fire retardant treated wood, during prolonged surface exposure to excessive moisture conditions. To remove mold from the treated wood surface, wood should be allowed to dry. Typically, mild soap and water can be used to remove remaining surface mold. For more information visit www.epa.gov. • Use fire retardant treated wood safely. Always read the label and product information before use.

For a complete specification call Koppers Performance Chemicals at 800-585-5161.

This is not a stand alone document and must be read in conjunction with other FlamePRO brand fire retardant treated wood literature and test data cited in the literature. **For example, refer to the FlamePRO Specifications and the FlamePRO Limited Warranty Agreement. The only warranties made by Koppers Performance Chemicals are as set forth in the "FlamePRO Limited Warranty Agreement".**

FlamePRO treated wood products are produced by independently owned and operated wood treating facilities. FlamePRO® is a registered trademark of Koppers Performance Chemicals Inc. © 6/2021

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



4. Exterior Facings (Required): Brick Veneer, 3/4" Cement Plaster (Stucco), Cement Fiber Siding ***(1 hr from exterior face)***

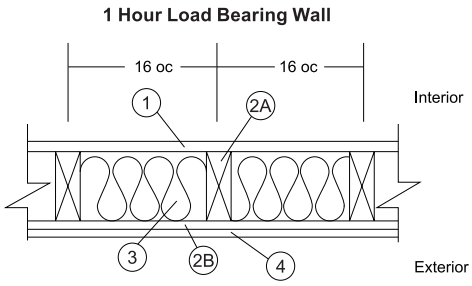
3. Insulation
(Min. 3-1/2" thick, R-13 fiberglass batt; 2x6 studs 16"oc batt insulation requirements are R19)

1. Drywall
(Min. 5/8" thick, 4' wide, Type C; 1 hr from interior face)

2B. FlamePRO Fire Retardant Treated Plywood
(Min 15/32" thick • Optional color indicator for identification)

2A. FlamePRO Fire Retardant Treated Lumber
(Min 2x4, 16" o.c. • Optional color indicator for identification)

1 Hour Tested Exterior Wall Assembly (60-01)

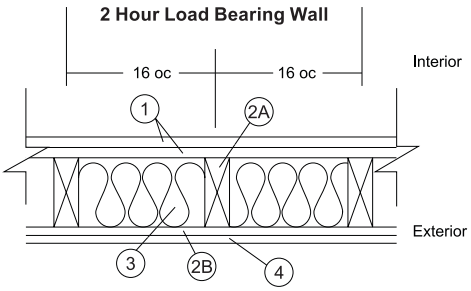


1. Drywall *(1 hr from interior face)*
2A. FlamePRO Lumber
2B. FlamePRO Plywood
3. Insulation
4. Exterior Facings (Required): *Brick Veneer, 3/4" Cement Plaster (Stucco), Cement Fiber Siding (1 hr from exterior face)*

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.

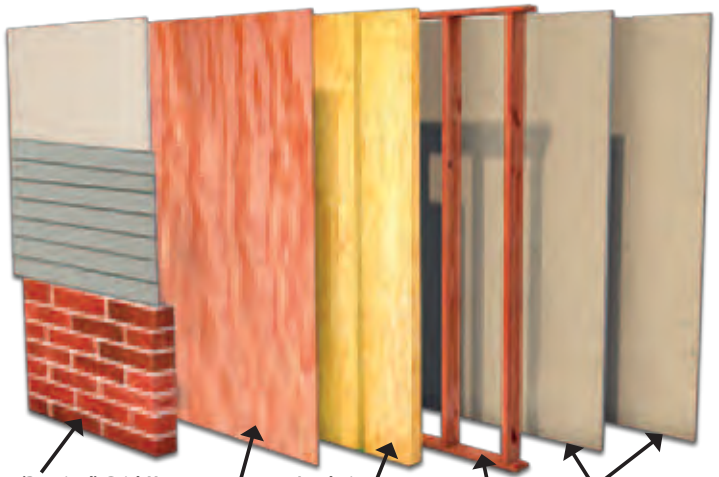
2 Hour Tested Exterior Wall Assembly (120-02)



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), Cement Fiber Siding (1 hr from exterior face)*

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.



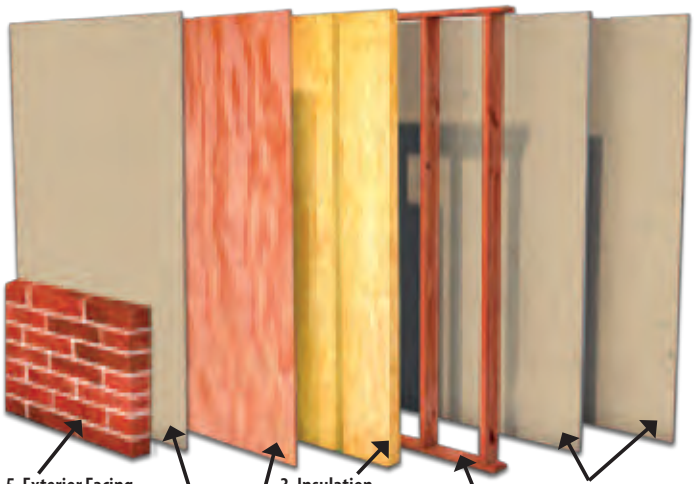
4. Exterior Facings (Required): Brick Veneer, 3/4" Cement Plaster (Stucco), Cement Fiber Siding ***(1 hr from exterior face)***

3. Insulation
(Min. 3-1/2" thick, R-13 fiberglass batt; 2x6 studs 16"oc batt insulation requirements are R19)

1. Drywall
(Min. 5/8" thick, 4' wide, Type C; 2 hr from interior face)

2B. FlamePRO Fire Retardant Treated Plywood
(Min 15/32" thick • Optional color indicator for identification)

2A. FlamePRO Fire Retardant Treated Lumber
(Min 2x4, 16" o.c. • Optional color indicator for identification)



5. Exterior Facing (Required): Brick Veneer

4. Drywall
(Min. 5/8" thick, 4' wide, Type C; 2 hr from interior face)

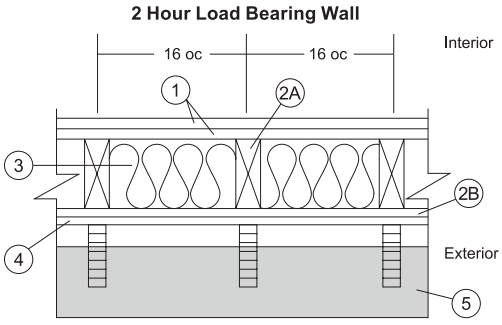
3. Insulation
(Min. 3-1/2" thick, R-13 fiberglass batt; 2x6 studs 16"oc batt insulation requirements are R19)

1. Drywall
(Min. 5/8" thick, 4' wide, Type C; 2 hr from interior face)

2A. FlamePRO Fire Retardant Treated Lumber
(Min 2x4, 16" o.c. • Optional color indicator for identification)

2B. FlamePRO Fire Retardant Treated Plywood
(Min 15/32" thick • Optional color indicator for identification)

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.

FlamePRO®
FIRE RETARDANT TREATED WOOD

For more information, call 800-585-5161 or visit www.kopperspc.com