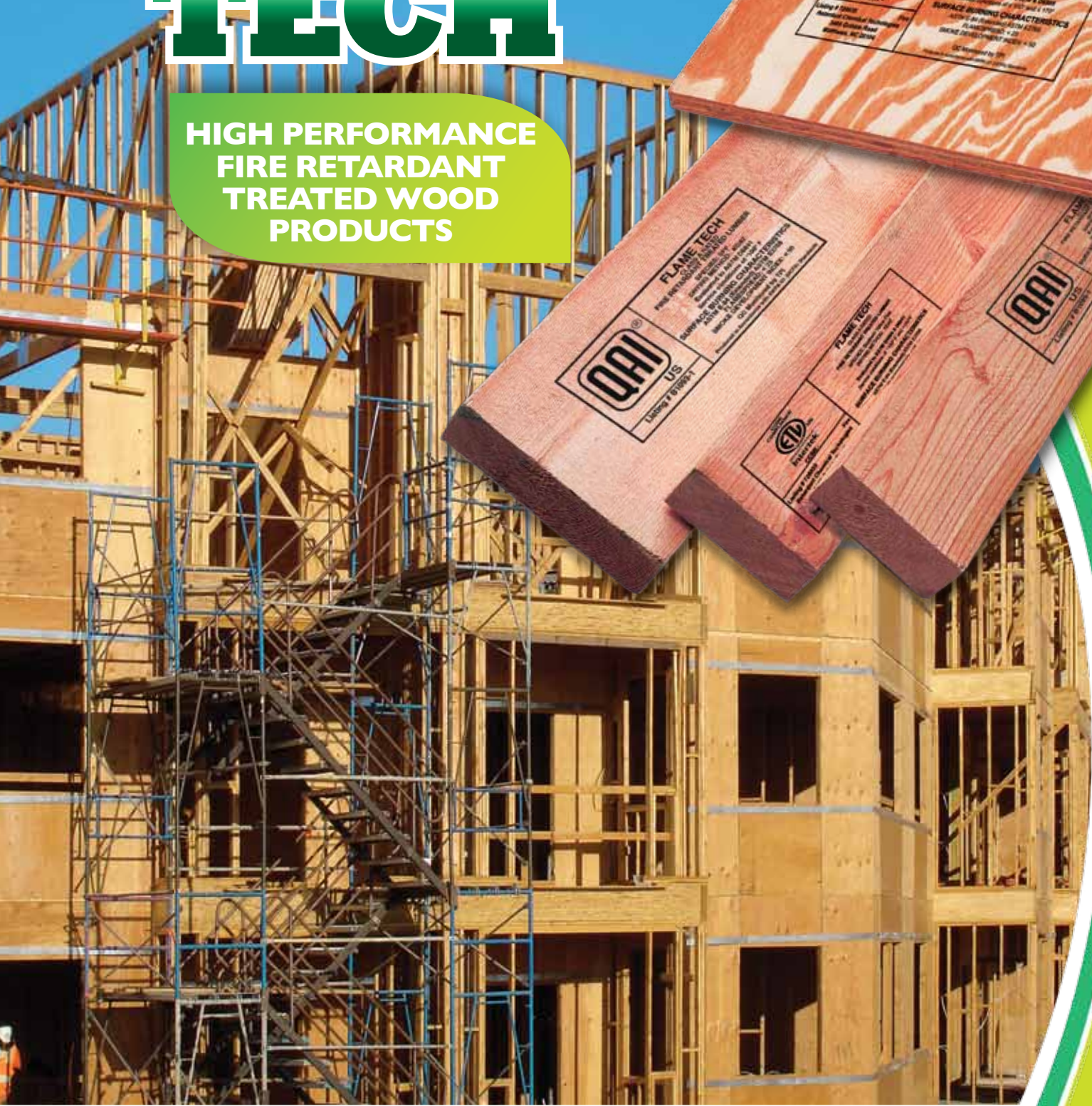


FLAME TECH™

HIGH PERFORMANCE
FIRE RETARDANT
TREATED WOOD
PRODUCTS



PACIFIC FLAMEPROOF



& Wood Specialties



FLAME TECH™ Class A Rated Fire Retardant Treated Wood Products

Certified and Listed with Accredited Testing Agencies

FlameTech™ fire retardant lumber and plywood products have been tested, certified and listed with QAI Laboratories (Listing B-1093-I) and Intertek Laboratories (Listing 720035), both of which are prominent, internationally accredited testing agencies.

Ongoing Independent Third Party Inspections

Timber Product Inspection (TPI) provides ongoing random follow-up inspections to assure compliance with AWPAs standards for fire retardant treatment and the required quality control metrics for fire retardant chemical, physical treating parameters and kiln drying. This monitoring program is in addition to the QAI and Intertek follow up requirements for listing.

Building Code Compliant

All FlameTech fire retardant lumber and plywood meets the requirements for FRTW listed in ICC AC66 and as such are compliant with major building codes. FlameTech treated wood products are compliant with 2015, 2012 and 2009 International Building Code® (IBC).

Always check with applicable building codes to determine what specific criteria are required for any given locality or job.

American Wood Protection Association (AWPA) Compliance

FlameTech Fire Retardant wood products comply with AWPAs UC-I and UCFA use category system. FlameTech treatment process meets the AWPAs T1 standard and FlameTech chemical has been analyzed by Timber Products Inspection (TPI) to determine that the chemical components meet AWPAs P-50 protocol.

Strength Testing

FlameTech Fire Retardant lumber products have been tested for strength using the ASTM D-5664 standard. FlameTech Fire Retardant plywood products have been tested for strength using ASTM D-5516 standard. These test results provided by Timber Products Inspection (TPI). The results of these tests have been reviewed by QAI Laboratories and Intertek Laboratories. The resulting strength reduction factors were determined by ASTM D-6841 for the lumber and ASTM D-6305 for the plywood.

Treatment Adjustment Factor per Testing to ASTM D-5516 and Calculated to ASTM D-6305

Test Standard	Performance Category	Untreated Span Rating	FlameTech® Treated Plywood Roof Sheathing				Subfloor Span ⁽⁴⁾ (in.)
			Maximum Span (in.)	Total Allowable Loads ^(1, 2, 3) (psf)			
				Climate Zone			
				1A	1B	2	
ASTM D5516	15/32, 1/2	32/16	24	29	43	60	16
	19/32, 5/8	40/20	24	49	73	103	20
			32	28	42	88	
	23/32, 3/4	48/24	32	40	60	84	24
			48	18	26	37	
	7/8	60/32	48	30	44	63	-
	1-1/8	60/48	48	30	44	63	-

- (1) Load and span ratings developed in accordance with ASTM D5516 and calculated in accordance with ASTM D6305.
- (2) All loads are based on two-span condition with strength axis perpendicular to supports.
- (3) Panel edge support shall be required for roof sheathing. Panel edge clips when used shall be installed as follows: one midway between supports for 24-inch and 32-inch spans, two at 1/3-points between supports for 48-inch span. Clips must be manufactured for the plywood thickness used.
- (4) Fastener size and spacing shall be as required in the applicable building code for untreated plywood of the same thickness.
- (5) For low-sloped or flat roofs with membrane or built-up roofing having a perm rating of less than 0.2: use rigid insulation having a minimum R-value of 4.0 between the sheathing and the roofing, or use the next thicker panel than the tabulated for the span and load. (i.e. 19/32" for 24"; 23/32" for 32"); and use a continuous ceiling air barrier and vapor retarder with a perm rating less than 0.2 on the bottom of the roof framing above the ceiling finish.
- (6) Flame Tech treated plywood must not be used as roof sheathing if a radiant shield is used beneath the roof sheathing.
- (7) The total allowable load is the sum of the live and dead loads at maximum span.
- (8) 15/32" and 1/2" plywood limited to 4-ply. 19/32" and 5/8" plywood is limited to 4-ply and 5-ply. 23/32" and 3/4" plywood is limited to 5-ply and 7-ply.
- (9) Uniform load deflection limitations 1/180 of span under live load plus dead load, 1/240 under live load only.
- (10) Subfloor is limited to 100 psf. maximum live load.
- (11) Climate Zone Definition
 - a. Zone 1- Minimum design load or maximum ground snow load up to 20 psf.
 - b. Zone 1A – South West Arizona, South East Nevada (area bounded by Las Vegas-Yuma-Phoenix-Tucson).
 - c. Zone 1B – All other qualifying areas of the Continental United States.
 - d. Zone 2 – Minimum ground snow load over 20psf.

Lumber Treatment Adjustment Factors for Temperatures up to 100°F (38°C)

Structural Property	SPF	SYP	Doug Fir	Other Species
Bending MOR	0.96	0.82	1.00	0.82
Bending MOE	0.93	0.87	0.99	0.87
Tension Parallel to Grain	1.00	0.98	1.00	0.98
Shear Parallel to Grain	1.00	0.95	1.00	0.95
Compression Parallel to Grain	0.96	0.96	0.96	0.96
Compression Perpendicular to Grain	0.95	0.95	0.95	0.95
Fastener / Connectors	0.90	0.90	0.90	0.90

Test Standard	Property	Treatment adjustment factors for service temperatures < 150°F								
		SPF			Southern Pine			Douglas Fir		
		1A	1B	2	1A	1B	2	1A	1B	2
ASTM D5664 Proc	Bending MOR	0.91	0.93	0.95	0.81	0.81	0.81	1.00	1.00	1.00
	Bending MOE	0.96	0.96	0.96	0.88	0.88	0.88	1.00	1.00	1.00
	Tension Parallel to Grain	0.93	0.96	0.99	0.93	0.96	0.99	1.00	1.00	1.00
	Shear Parallel to Grain	0.93	0.96	0.99	0.88	0.91	0.94	1.00	1.00	1.00
	Compression Parallel to	0.88	0.91	0.94	0.89	0.92	0.95	0.96	0.96	0.96
	Grain Compression Perp to	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
	Grain Fastener/connectors	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

- (1) Treatment adjustment factors for test data developed in accordance with ASTM D5664 and calculated in accordance with ASTM D6841
- (2) Climate Zone Definition
- Zone 1 – Minimum design load or maximum ground snow load up to 20 psf.
 - Zone 1A – South West Arizona, South East Nevada (area bounded by Las Vegas-Yuma-Phoenix-Tucson).
 - Zone 1B – All other qualifying areas of the Continental United States.
 - Zone 2 – Minimum ground snow load over 20psf.

Applications for Use

Fire Blocking
Plywood Roof Sheathing
Interior Roof Trusses
Interior Scaffold Plank
Wall Sheathing

Flat Roof Blocking
Lumber Roof Decking
Interior Floor Trusses
Underlayment
Interior Millwork

Mezzanine Floors
Wall Framing
Store Fixtures
Subfloors
Interior Wall Blocking

Testing and Approvals

ASTM International (ASTM):

ASTM D3201 – Standard Test Method for Hydrosopic Properties of Fire-Retardant Wood and Wood-Base Products

ASTM D5516 – Standard Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures

ASTM D5664 – Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber

ASTM D6305 – Standard Practice for Calculating Bending Strength Design Adjustment Factors for Fire Retardant Treat Plywood Roof Sheathing

ASTM D6841 – Standard Practice for Calculating Treatment Adjustment Factors for Fire Retardant Treated Lumber

ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM 2768 – Extended Duration Surface Burning Characteristics of Building Materials

ASTM E119 – Fire Tests of Building Construction and Materials

American Wood-Protection Association (AWPA):

AWPA E12 – Standard Method of Determining the Corrosion of Metal in contact with wood

AWPA M4 – Standard for Care of Preservative Treated Wood Products

AWPA P50 – Standard for Fire Retardant FR-2 (FR-2)

AWPA T1 – Use Category System: Processing and Treatment Standard

AWPA U1 – Use Category System: User Specifications for Treated Wood

CCRR – FlameTech Fire Retardant Treatment – Intertek

Intertek – ASTM E84/ASTM E2768 - Standard Test Method for Surface Burning Characteristics of Building Materials

Intertek – ASTM E119 – Standard Test Method for Fire Testing of Building Construction and Materials

QAI – ASTM E84/ASTM E2768 - Standard Test Method for Surface Burning Characteristics of Building Materials

Use and Handling

FlameTech treated FRTW products have the same workability as untreated lumber products, requiring only the same tools and precautions used with regular wood products.

Keep the following guide lines in mind when using and handling FlameTech FRTW products.

- 1) FlameTech wood should not be installed where it will be exposed to precipitation, direct moisture, or regular condensation.
- 2) FlameTech wood must never be installed or used in contact with the ground
- 3) When Storing FlameTech products, the material must be kept off the ground and covered to protect it from moisture and precipitation.
- 4) The use of galvanized fasteners is required with FlameTech treated wood products.
- 5) When painting or staining follow the paint or stain manufacture's recommendations. Make sure the surface is clean and dry before application.
- 6) When using FlameTech FRTW products it is important to utilize the design vane adjustments listed in the guide.

Cutting to length, drilling and diagonal cuts, as well as light sanding are allowed. Exposed areas are not required to be field coated. Ripping dimensional lumber is not allowed.

- 1) Cutting of Lumber to length (cross-cutting and end cuts) are allowed. Holes and joints are also allowed.
- 2) Ripping of lumber along the length, such as ripping a 2x4 in to a 2x2 is not allowed. The cutting of a stair stringer is not allowed to be done after the lumber is treated as the effect is similar to ripping.
- 3) Milling of the lumber is not allowed. All milling and planing must be done before treatment.
- 4) Cutting of plywood is allowed in any direction without restriction.
- 5) Light sanding of lumber and plywood is allowed to remove raised grain or to prepare for finishing.
- 6) Shaping or resurfacing must be done before treatment.
- 7) End Coating of any approved cut is not required.

Personal Health and Safety

- 1) Wear gloves to protect against splinters
- 2) Wear a dust mask to reduce the inhalation of wood dust
- 3) Wear appropriate eye protection
- 4) Wash hands with mild soap and water after working with Flame Tech FRTW

Warranty: FlameTech Fire Retardant plywood is covered by a limited 20 Year Warranty made available upon request.

Certified Wall Assemblies

2 hr Exterior Bearing Wall

(Design No. FRCT/FRWT 120-02)

Max. Tested Load:

100% of Design Load

Fire Ratings:

- 2 hr from interior
- 1 hr from exterior



(Required only for rating from Exterior)
Brick Veneer or
3/4 inch Cement
Plaster (stucco)

Flame Tech™
Pressure-impregnated fire-retardant
treated plywood (min. 15/32 in. thick)
(Tinted **RED** for quality control)

Fiberglass Batt
(Insulation)

Flame Tech™
Pressure-impregnated
fire-retardant treated lumber
(min. 2x4 studs @ 16 in. o.c.)
(Tinted **RED** for quality control)

2 Layers of Firecode®
C Core, or equivalent
(2 hr. from interior face)

1 hr Exterior Bearing Wall

(Design No. FRCT/FRWT 60-02)

Max. Tested Load:

100% of Design Load

Fire Ratings:

- 1 hr from interior
- 1 hr from exterior



(Required only for rating from Exterior)
Brick Veneer or
3/4 inch Cement
Plaster (stucco)
(1 hr from exterior face)

Flame Tech™
Pressure-impregnated fire-retardant
treated plywood (min. 15/32 in. thick)
(Tinted **RED** for quality control)

Fiberglass Batt
(Insulation)

Flame Tech™
Pressure-impregnated
fire-retardant treated lumber
(min. 2x4 studs @ 16 in. o.c.)
(Tinted **RED** for quality control)

1 Layers of Firecode®
C Core, or equivalent
(1 hr. from interior face)

Fire Retardant Chemical Technologies, LLC

Design No. FRCT/FRWT 120-01

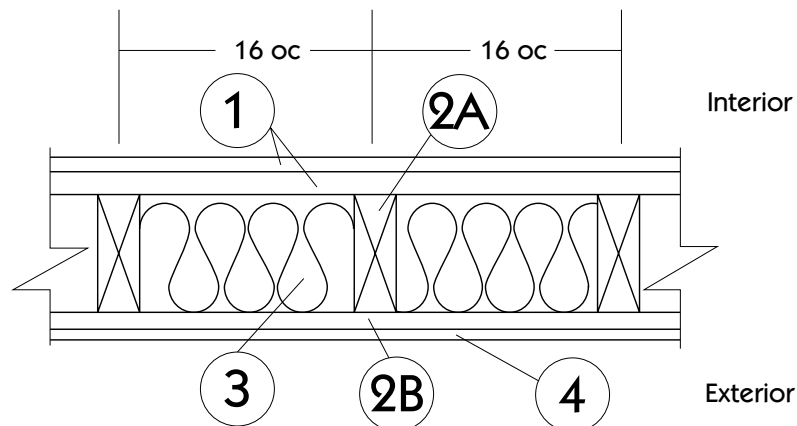
Fire Retardant Wood

FlameTech™ Lumber and Plywood

ASTM E119

Rating: 2 Hour, Load Bearing (2015 NDS - F_c 0.96 for FRWT)

Rated from one side (Interior Side Only)



1. GYPSUM BOARD (Interior):

Two layers USG Firecode® C Core complying with ASTM C1396, or equivalent, min. 5/8 in. thick, 4 ft. 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 – Min. #6 x 2 in. long Type S or W screws spaced max. 8 in. oc and heads covered with joint compound.
- B. BASE LAYER – Min. #6 x 1-5/8 in. long Type S or W screws, spaced max. 6 in. oc.

2. CERTIFIED MANUFACTURER: Fire Retardant Chemical Technologies, LLC

CERTIFIED PRODUCT: FlameTech™

2A. CERTIFIED MODEL: FlameTech™ Lumber

FlameTech Lumber is min. 2x4 in. nominal wood studs, spaced max. 16 in. oc, or 2x6 in. nominal wood studs spaced 24 in. oc, double top plates and single bottom plate fastened together with 16d common nails (3-1/2 in. x 0.162 in.), 16d box nails (3-1/2 in. x 0.135 in.), or 12d ring nails (3-1/4 in. x 0.135 in.).

2B. CERTIFIED MODEL (Exterior):

FlameTech Plywood

FlameTech Plywood, min. 15/32 in. thick, is applied vertically over the specified framing with min. 2-3/8 in. long, 0.113 in. diameter nails, spaced max 8 in. oc around the perimeter and max. 12 in. oc in the field. Horizontal joints must be blocked.

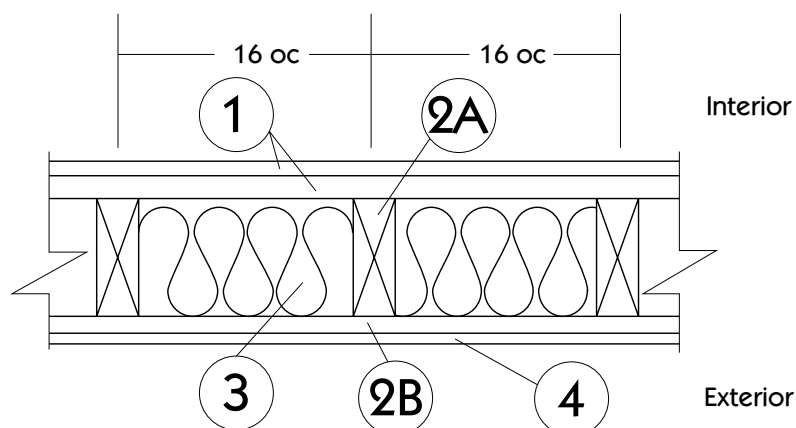
3. INSULATION: Fiberglass batt insulation min. 3-1/2 in. thick R-13 friction fit between the studs. If 2x6 in. nominal wood studs are used, fiberglass batt insulation shall be min. 5-1/2 in. thick.

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

Fire Retardant Chemical Technologies, LLC
Design No. FRCT/FRWT 120-02
Fire Retardant Wood
FlameTech™ Lumber and Plywood
ASTM E119

Rating: 2 Hour Load Bearing from the Interior and 1 Hour Load Bearing from the Exterior
(2015 NDS - F_c 0.96 for FRWT)



1. GYPSUM BOARD (Interior):

Two layers USG Firecode® C Core, complying with ASTM C1396, or equivalent, min. 5/8 in. thick, 4 ft. 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 – Min. #6 x 2 in. long Type S or W screws spaced max. 8 in. on center (oc) and heads covered with joint compound.
- B. BASE LAYER – Min. #6 x 1-5/8 in. long Type S or W screws, spaced max. 6 in. oc.

2. CERTIFIED MANUFACTURER: Fire Retardant Chemical Technologies, LLC

CERTIFIED PRODUCT: FlameTech™

2A. CERTIFIED MODEL: FlameTech™ Lumber

FlameTech Lumber is min. 2x4 in. nominal wood studs, spaced max. 16 in. oc, double top plates and single bottom plate fastened together with 16d common nails (3-1/2 in. x 0.162 in.), 16d box nails (3-1/2 in. x 0.135 in.), or 12d ring nails (3-1/4 in. x 0.135 in.).

2B. CERTIFIED MODEL (Exterior):

FlameTech Plywood

FlameTech Plywood, min. 15/32 in. thick, is applied vertically over the specified framing with min. 2-3/8 in. long, 0.113 in. diameter nails, spaced max 8 in. oc around the perimeter and max. 12 in. oc in the field. Horizontal joints must be blocked.

3. INSULATION: Fiberglass batt insulation min. 3-1/2 in. thick R-13 friction fit between the studs. If 2x6 in. nominal wood studs are used, fiberglass batt insulation shall be minimum 5-1/2 in. thick.

4. EXTERIOR FACINGS: Materials installed in accordance with manufacturer's installation instructions:

- 3/4 in. thick cement plaster (1:4 ratio of cement to sand for scratch coat and 1:5 ratio for brown coat)
- Nominal 2.7 in. thick solid brick fastened using min. 22 GA wall ties
- Nominal 2.3 in. thick hollow brick fastened using min. 22 GA wall tiles

Fire Retardant Chemical Technologies, LLC

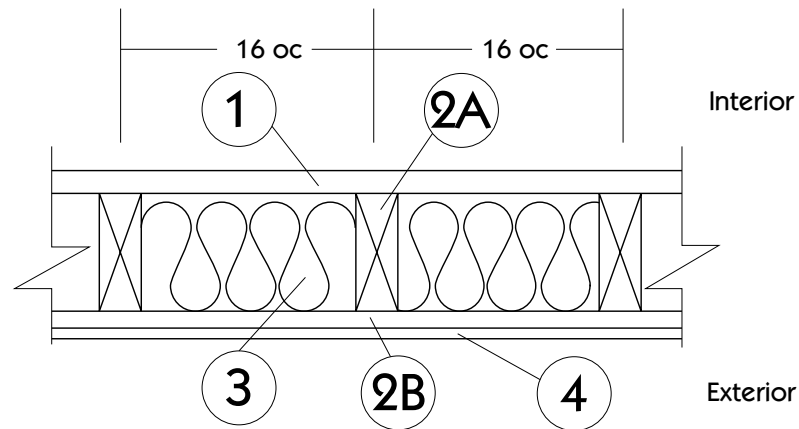
Design No. FRCT/FRWT 60-01

Fire Retardant Wood

FlameTech™ Lumber and Plywood

ASTM E119

Rating: 1 Hour Load Bearing (Interior Only, 2015 NDS - F_c 0.96 for FRWT)



1. **GYPSUM BOARD (Interior):** One layer Firecode® C Core, complying with ASTM C1396 or equivalent, min. 5/8 in. thick, 4 ft. wide applied vertically, fastened to framing. Joints covered with paper tape and joint compound. Fasteners covered with joint compound. Min. #6 x1-5/8 in. long Type S or W screws, spaced max. 6 in. on center (oc).

2. **CERTIFIED MANUFACTURER:** Fire Retardant Chemical Technologies, LLC

CERTIFIED PRODUCT: FlameTech™

2A. CERTIFIED MODEL: FlameTech™ Lumber

FlameTech Lumber is min. 2x4 in. nominal wood studs, spaced max. 16 in. oc, or 2x6 in. nominal wood studs spaced 24 in. oc, double top plates and single bottom plate fastened together with 16d common nails (3-1/2 in. x 0.162 in.), 16d box nails (3-1/2 in. x 0.135 in.), or 12d ring nails (3-1/4 in. x 0.135 in.).

- 2B. **CERTIFIED MODEL (Exterior):** FlameTech Plywood,

FlameTech Plywood, min. 15/32 in. thick, is applied vertically over the specified framing with min. 2-3/8 in. long, 0.113 in. diameter nails, spaced max 8 in. oc around the perimeter and max. 12 in. oc in the field. Horizontal joints must be blocked.

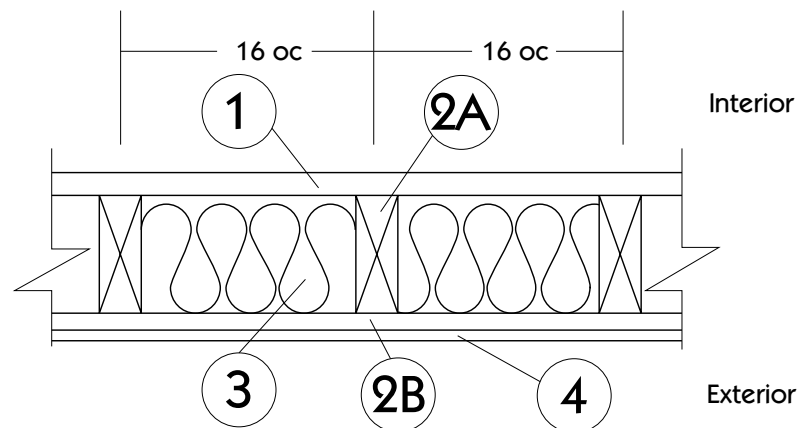
3. **INSULATION:** Fiberglass batt insulation min. 3-1/2 in. thick R-13 friction fit between the studs. If 2x6 in. nominal wood studs are used, fiberglass batt insulation shall be minimum 5-1/2 in. thick.

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
- Hardwood, wood structural panel, plywood or fiber-cement siding
- Metal siding
- Vinyl siding – exterior plastic

Fire Retardant Chemical Technologies, LLC
Design No. FRCT/FRWT 60-02
Fire Retardant Wood
FlameTech™ Lumber and Plywood
ASTM E119

Rating: 1 Hour Load Bearing (Rated from Interior and Exterior, 2015 NDS - F_c 0.96 for FRWT)



- 1. GYPSUM BOARD (Interior):** One layer Firecode® C Core, complying with ASTM C1396 or equivalent, min. 5/8 in. thick, 4 ft. wide applied vertically, fastened to framing. Joints covered with paper tape and joint compound. Fasteners covered with paper tape and joint compound. Min. #6 x1-5/8 in. long Type S or W screws, spaced max. 6 in. on center (oc).

- 2. CERTIFIED MANUFACTURER:** Fire Retardant Chemical Technologies, LLC

CERTIFIED PRODUCT: FlameTech™

2A. CERTIFIED MODEL: FlameTech™ Lumber

FlameTech Lumber is min. 2x4 in. nominal wood studs, spaced max. 16 in. oc, or 2x6 in. nominal wood studs spaced 24 in. oc, double top plates and single bottom plate fastened together with 16d common nails (3-1/2 in. x 0.162 in.), 16d box nails (3-1/2 in. x 0.135 in.), or 12d ring nails (3-1/4 in. x 0.135 in.).

- 2B. CERTIFIED MODEL (Exterior):** FlameTech Plywood,

FlameTech Plywood, min. 15/32 in. thick, is applied vertically over the specified framing with min. 2-3/8 in. long, 0.113 in. diameter nails, spaced max 8 in. oc around the perimeter and max. 12 in. oc in the field. Horizontal joints must be blocked.

- 3. INSULATION:** Fiberglass batt insulation min. 3-1/2 in. thick R-13 friction fit between the studs. If 2x6 in. nominal wood studs are used, fiberglass batt insulation shall be minimum 5-1/2 in. thick.
- 4. EXTERIOR FACINGS (Optional):** Materials installed in accordance with manufacturer's installation instructions:
- 3/4 in. thick cement plaster (1:4 ratio of cement to sand for scratch coat and 1:5 ratio for brown coat)
 - Nominal 2.7 in. thick solid brick fastened using min. 22 GA wall ties
 - Nominal 2.3 in. thick hollow brick fastened using min. 22 GA wall tiles

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intertek

ARCAT



PACIFIC FLAMEPROOF



& Wood Specialties

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Standardized 3-part specification is available at ARCAT.com