

How to Specify D-Blaze FRT Lumber and Plywood

To assure structural integrity in roof areas of high temperature and humidity, D-Blaze span and strength design adjustment factors have been determined by independent third parties in accordance with ASTM D 5516 for plywood and ASTM D 5664 for lumber. Extended specifications can be found at treatedwood.com and ARCAT.com.

All D-Blaze FRT lumber and plywood:

- Shall be pressure-treated with D-Blaze fire retardant to meet Underwriters Laboratories FR-S rating or a flame spread and smoke index rating denoting a surfaceburning characteristic rating of 25 or less for flame spread and smoke developed.
- Shall bear the Underwriters Laboratories label or stamp attesting to the FR-S rating or flame spread and smoke index rating, and to the fact that it also meets the American Wood Protection Association (AWPA) P50, U1, UCFA for interior Type A (HT) use.
- Shall be kiln-dried to a maximum moisture content of 19% for lumber and 15% for plywood.
- Shall be kept dry at all times during transit, job site storage and construction. All structural design calculations shall be based on the D-Blaze Strength Design Factor Tables as published in the D-Blaze Technical Specifications Brochure.

Underwriters Laboratories

The model building codes require that every piece of FRTW wood bear the identification mark of an approved inspection agency. Each piece of D-Blaze lumber and plywood is stamped with an ink stamp bearing the classification mark of Underwriters Laboratories, Inc. (UL), describing its surface burning characteristics, and substantiating third party confirmation of flame spread and smoke developed index. The mark further identifies the name and location of the treating plant and will show that the material complies with AWPA standards, has been dried after treatment, and qualifies as an Interior Type A, (High Temperature (HT), low hygroscopic product. Companies may only use the UL mark on or in connection with products that have been investigated by UL and found to be in compliance with UL's requirements. The UL Building Materials Directory has listed over a dozen species of lumber and several species of plywood for fire retardant treatment with D-Blaze.

Shown below are examples of typical Plywood and Lumber Stamps used in the United States.

TREATING FACILITY CITY, STATE	
23 D-BLAZE® 24 "IN ACCORDANCE WITH AWPA STANDARD U1, UCFA INTERIOR TYPE A," TP MONITORED STD DB-90 I.A.S. AA696	FR-S LUMBER CONTROL NO. 14P8 R10647 KDAT
TREATING FACILITY CITY, STATE	
23 D-BLAZE® 24 "IN ACCORDANCE WITH AWPA STANDARD U1, UCFA INTERIOR TYPE A," TP MONITORED STD DB-90 I.A.S. AA696	FR-S PLYWOOD CONTROL NO. 14P9 R10950 KDAT

Chemical Formulation And Application

D-Blaze is formulated and then applied by means of pressure treatment in treating plants. Unlike field applied surface coatings, D-Blaze fire retardant treated wood is produced under a quality control program with inspections by Underwriters Laboratories, Inc (UL), Timber Products Inspection (TP), and Southern Pine Inspection Bureau (SPIB)

Tips On Use

Proper handling procedures should be followed when using D-Blaze lumber and plywood.

- D-Blaze wood should not be installed where it will be exposed to precipitation, direct wetting, or in contact with the ground.
- When storing D-Blaze wood, the material should be kept off the ground and covered to shield it from precipitation.
- When installing D-Blaze FRT lumber and plywood it is important to utilize the design value adjustments on our technical guide.
- D-Blaze plywood should be spaced and fastened as recommended in "APA Engineered Wood Construction Guide" (Form E30), published by APA-The Engineered Wood Association.
- Do not burn treated wood.
- Do not use pressure-treated chips or sawdust as mulch.
- Dispose of treated wood in accordance with local, state and federal regulations.
- Cutting to length, drilling, and diagonal cuts as well as light sanding are permitted. Exposed areas are not required to be field coated. Ripping dimensional lumber is not allowed.
- Cutting of lumber to length (cross-cutting and end cuts) are allowed. Holes and joints such as tongue and groove, bevel, scarf and lap are also allowed.
- Ripping of lumber along the length, such as ripping a 2x4 into 2x2's is not permitted. Similarly, cutting of stair stringers after treatment should not be done because the effect is similar to ripping.
- Milling (resurfacing) of lumber is not allowed. If special shapes or thickness are required, milling should be done prior to treatment.
- Cutting of plywood in any direction is allowed without restriction.
- Light sanding of lumber or plywood is permitted to remove raised grain or to prepare for finishing. Resurfacing or shaping or should be done before treatment.
- End coating is not required.

Safety

D-Blaze pressure-treated products do not contain any EPA-listed hazardous chemicals and are easy to work with, requiring no special precautions other than routine wood working safety procedures. When working with or machining pressure-treated wood, the following safety precautions should be followed with all treated wood products:

- Wear gloves to protect against splinters.
- Wear a dust mask to reduce the inhalation of wood dusts.
- Wear appropriate eye protection.
- Wash thoroughly with mild soap and water.



Refer to the latest D-Blaze Safety Data Sheet (SDS) at treatedwood.com.

Standardized 3-part specifications are available at treatedwood.com and ARCAT.com.

D-BLAZE

FIRE RETARDANT TREATED WOOD

D-Blaze® fire retardant treated wood (FRTW) is designed for interior applications where fire retardant construction materials are specified or required by building codes.

D-Blaze is highly effective at slowing the spread of flame and reducing smoke development as a result of fire.

Officially distributed by

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VIANCE D-BLAZE
TREATEDWOOD.COM FIRE RETARDANT TREATED WOOD



D-Blaze treated lumber and plywood is highly effective in slowing down the spread of flame and smoke development caused by fire. D-Blaze treated products show no evidence of significant progressive combustion after 30 minutes exposure to flame. In most applications, D-Blaze treated products offer a lower in-place cost than noncombustible-classified materials.

Common Applications

- Roofs and Attics: trusses, plywood sheathing, decks and rafters
- Walls: load-bearing & partition, plywood sheathing and studs
- Flooring: subfloors, joists, plywood sheathing, studs and trusses
- Other structural uses: stairways, steps, beams, blocking and paneling



Product Features

- UL® Class A (Class 1) with FR-S rating
- Building code compliant
- GREENGUARD GOLD certified
- AWPA UCFA Interior Type A High-Temperature (HT) FRTW
- 50-Year Limited Warranty
- Very low smoke rating
- Workable with common wood-working tools
- Low-corrosivity
- Low-hygroscopicity
- No VOC's or formaldehyde
- Non-blooming

D-Blaze Treated Products:

- Complies with International Building Code® (IBC) 2021, 2018, 2015, 2012, 2009, and 2006 and International Residential Code® (IRC) 2021/2018, 2015, 2012, 2009, and 2006.
- Tested and classified by Underwriters Laboratories® (UL) with an FR-S rating.
- For the species listed in Table 5, D-Blaze FRTW exhibited a flame spread and smoke developed index of 25 or less under ASTM E 84 flame tunnel testing for a 30-minute duration without showing evidence of significant progression combustion. D-Blaze has a very low smoke rating.
- Tested for hygroscopicity in accordance with ASTM D 3201, resulting in classification of D-Blaze as an interior Type A (HT) fire-retardant wood as defined in AWPA Standards (UCFA).
- Tested by third-party inspection agencies: Underwriter's Laboratories (UL), Timber Products Inspection (TP) and Southern Pine Inspection Bureau (SPIB) to ensure quality control.
- Protected by a 50-Year Limited Warranty. Visit www.treatedwood.com for warranty details.

Structural Properties

D-Blaze FRT wood has been tested by independent laboratories following industry standards ASTM D 5516 & ASTM D 5664 to develop strength reduction factors for various use conditions, including roof temperatures of up to 150° F for lumber and 170° F for plywood. Consult Table 1 (D-Blaze Lumber Strength Design Adjustment Factors) and Table 2, 3 and 4 (D-Blaze Plywood Span Rating Adjustments) for specific adjustment factors.

Testing and Approvals

D-Blaze FRT wood meets or exceeds the guidelines for testing construction materials as set forth and/or established by the following authorities and specifications:

Testing

- ASTM E 84
- ASTM D 3201
- ASTM D 5516
- ASTM D 5664

Approvals

- Underwriters Laboratories Classified UL Class A (Class 1) with FR-S Rating
- GREENGUARD GOLD Certified
- National Fire Protection Association (NFPA 255)
- City of Los Angeles Research Report: RR 24502 in accordance with ICC-ES ESR 2645
- New York City Building Code (MEA Numbers 406-87 and 407-87)
- National Building Code of Canada
- AWPA Standardized (P50, U1, UCFA) Interior Type A High-Temperature (HT) FRTW
- California Department of Forestry and Fire Protection CSFM BML Listings for D-Blaze Plywood and Lumber
- ICC-ESR 2645

Table 1

Strength Design Adjustment Factors for D-Blaze Fire Retardant Lumber compared to Untreated Lumber

Property	Service Temperature < 100° F (38° C)	D-Blaze Lumber Roof Framing Climate Zone ^{1,2}		
		1A	1B	2
Compression Parallel, Fc	0.935	0.935	0.935	0.935
Horizontal Shear	0.985	0.838	0.894	0.964
Tension Parallel	0.874	0.625	0.775	0.905
Bending: Modulus of Elasticity, E	1.000	0.977	0.986	0.997
Bending: Extreme Fiber Stress, Fb	0.972	0.740	0.828	0.939
Fasteners/Connectors	0.900	0.900	0.900	0.900

Table 2

Span Ratings for D-Blaze Fire Retardant Southern Pine Plywood for Roof Sheathing Applicable at a Temperature up to 170° F (77° C) Based on Uniform Loading, Two Span Construction and L/180 Deflection Limit

Plywood Thickness (Inches)	D-Blaze ^{1,2,3,4,5,8,9,10,11,12,13} Plywood Roof Sheathings Span Ratings Used at Temperatures > 100° F and < 170° F		
	Climate Zone ^{6,7}		
	1A	1B	2
3/8" (0.375)	20	20	20
15/32" (0.469)	24	24	24
1/2" (0.500)	24	24	24
19/32" (0.594)	32	32	32
5/8" (0.625)	32	32	32
23/32" (0.719)	40	32	40
3/4" (0.750)	40	32	40
7/8" (0.875)	40	40	48
1 (1.000)	48	48	48
1 - 1/8" (1.125)	48	48	48

Table 3

Span Ratings for D-Blaze Fire Retardant Douglas Fir and other species Plywood for Roof Sheathing Applicable at a Temperature up to 170° F (77° C) Based on Uniform Loading, Two Span Construction and L/180 Deflection Limit

Plywood Thickness (Inches)	D-Blaze ^{1,2,3,4,5,8,9,10,11} Plywood Roof Sheathings Span Ratings Used at Temperatures > 100° F and < 170° F		
	Climate Zone ^{6,7}		
	1A	1B	2
3/8" (0.375)	16	16	20
15/32" (0.469)	20	20	24
1/2" (0.500)	20	20	24
19/32" (0.594)	24	24	32
5/8" (0.625)	24	24	32
23/32" (0.719)	32	32	32
3/4" (0.750)	32	32	32
7/8" (0.875)	40	32	40
1 (1.000)	40	40	48
1 - 1/8" (1.125)	48	40	48

Table 4

D-Blaze Treated Plywood Subfloor Allowable Spans (Inches) used at Temperatures < 100° F (38° C)

Plywood Thickness (Inches)	Southern Pine	Douglas Fir
	Allowable Span (Inches) ^{1,2}	Allowable Span (Inches) ^{1,2}
3/8" (0.375)	16	12
15/32" (0.469)	16	16
1/2" (0.500)	16	16
19/32" (0.594)	19.2	19.2
5/8" (0.625)	19.2	19.2
23/32" (0.719)	24	24
3/4" (0.750)	24	24
7/8" (0.875)	24	24
1 (1.000)	32	32
1 - 1/8" (1.125)	32	32

Table 5

D-Blaze Lumber and Plywood Approved Species

The following species of Plywood and Lumber are UL Classified and building code compliant when treated according to specifications. The Plywood and Lumber species noted below carry a UL FR-S Classification in the United States.

Softwood Lumber			
Jack Pine	Red Pine	Hem-Fir	Black Spruce
Lodgepole Pine	Alpine Fir	Spruce-Pine-Fir (SPF)	Englemann Spruce
Ponderosa Pine	Balsam Fir	White Fir	Red Spruce
Southern Pine	Douglas Fir	Western Hemlock	White Spruce
Plywood		Hardwood lumber	
Douglas Fir		Basswood	
Lauan		Red Oak	
Southern Pine			
Red Pine			

NOTE: From time to time, additional species will be tested. Check with your supplier if the species desired is not shown.

Notes Table 1

- Climate Zone definition:
Zone 1 — Minimum design roof live load or maximum ground snow load ≤ 20 psf (960 Pa)
Zone 1A — SouthWest Arizona, South East 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)
- Duration of load adjustments for snow loads, 7-day (construction) loads, and wind loads as given in the National Design Specifications for Wood Construction apply.

Tables 2 and 3

SI Units Conversion: 1 inch = 25.4 mm, 1 psf = 48 N/m²

- All loads are based on two-span condition with panels 24 inches wide or wider, strength axis perpendicular to supports.
- Fastener size and spacing must be as required in the applicable building code for untreated plywood of the same thickness.
- Roof spans and loads apply to roof systems having the minimum ventilation areas required by the applicable building code. Fifty percent of required vent area must be located on upper portion of sloped roofs to provide natural air flow.
- For low-sloped or flat roofs with membrane or built-up roofing having a perm rating less than 0.2, use rigid insulation having a minimum R value of 4.0 between sheathing and roofing, or use next thicker panel than tabulated for the span and load (e.g., 19/32 for 24 inches, 23/32 for 32 inches); 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.
- For unblocked roof diaphragms panel edge clips are required for roof sheathing: 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 specifically manufactured for the plywood thickness used.
- Tabulated loads for Zone 1A are based on a duration of load adjustment for 7-day (construction) loads of 1.25. Tabulated loads for Zone 1B and Zone 2 are based on a duration of load adjustment for snow of 1.15. All values within the table are based on a dead load (DL) of 8 psf. If the DL is less than or greater than 8 psf, the tabulated live load may be increased or decreased by the difference. Applicable material weights, psf: asphalt shingles - 2.0, 1/2-inch plywood - 1.5, 5/8-inch plywood - 1.8, 3/4-inch plywood - 2.2.
- Climate Zone definition:
ZONE 1 — Minimum design roof live load or maximum ground snow load ≤ 20 psf (960 Pa)
ZONE 1A - SouthWest Arizona, South East 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)
- D-Blaze treated plywood must not be used as roof sheathing if a radiant shield is used beneath the roof sheathing.
- The 19/32-inch and 5/8-inch thickness are limited to performance rated 4-ply or 5-ply, 23/32- and 3/4-inch thicknesses are limited to performance rated 5-ply or 7-ply.
- Deflection of roof sheathing at tabulated maximum live load is less than 1/240 of the span, and under maximum live load plus dead load is less than 1/180 of the span.
- Staples used to attach asphalt shingles must be minimum 15/16-inch crown and minimum 1-inch leg, or otherwise comply with the applicable code, with the quantity of fasteners adjusted in accordance with Table 1 of this report.

Table 4

SI Units Conversion: 1 inch = 25.4 mm, 1 psf = 48 N/m²

- Uniform live load = 100 psf and Dead load = 10 psf, LL deflection ≤ L/360, LL+DL deflection ≤ L/240
- Fastener size and spacing must be as required in the applicable building code for untreated plywood of the same thickness.