

D-BLAZE

FIRE RETARDANT TREATED WOOD

TECHNICAL SPECIFICATIONS

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



treatedwood.com

Viance Treated Wood Solutions

Proud Sponsor



AWPA U1
P50, UCFA



ESR 2645
Pressure Treated FRTW



UL® FR-S Classified
Plywood & Lumber



CANADA CAN/ULC® S102
CANADA CAN/ULC® S102.2

D-Blaze® treated lumber and plywood is highly effective in controlling 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 & 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

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Product Features

- **UL® Classified with FR-S Rating**
- **Code Compliant under ESR 2645**
- **Very Low Smoke Rating**
- **50-Year Limited Warranty**
- AWP Standardized P50, U1, UCFA
- Low-corrosivity
- Low-hygroscopicity
- No VOC's or Formaldehyde
- Non-blooming

D-Blaze® Treated Products are:

- Compliant with national model building codes (2009 IBC & IRC).
 - AWP Standardized (P50, U1, UCFA)
 - ICC ESR-2645
- 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 AWP Standards (UCFA).
- Tested by third-party inspection agencies such as TP, SPIB and UL® 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 | Approvals |
|--|--|
| <ul style="list-style-type: none"> ▪ ASTM E 84 ▪ ASTM D 3201 ▪ ASTM D 5516 ▪ ASTM D 5664 | <ul style="list-style-type: none"> ▪ ICC-ES ESR 2645 ▪ Underwriters Laboratories® Classified
UL® Class A (Class 1) with FR-S Rating
CAN/ULC S102 & S102.2 ▪ National Fire Protection Association (NFPA 255) ▪ City of Los Angeles Research Report: RR 24502 ▪ 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 |

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® 1,2,3,4,5,8,9,10,11,12,13 Plywood Roof Sheatings 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	16
15/32" (0.469)	20	20
1/2" (0.500)	20	20
19/32" (0.594)	24	24
5/8" (0.625)	24	24
23/32" (0.719)	32	32
3/4" (0.750)	32	32
7/8" (0.875)	40	32
1 (1.000)	40	40
1 - 1/8" (1.125)	48	40

Table 5

The following species of Plywood and Lumber are UL® and ULC® Classified and building code compliant when treated according to ESR 2645. The Plywood and Lumber species noted below carry a UL® FR-S Classification in the United States.

D-Blaze® Lumber and Plywood Approved Species			
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

¹Climate 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)

²Duration 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

³All loads are based on two-span condition with panels 24 inches wide or wider, strength axis perpendicular to supports.

⁴Fastener size and spacing must be as required in the applicable building code for untreated plywood of the same thickness.

⁵Roof 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.

⁶For 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.

⁷For 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.

⁸Tabulated 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.

⁷Climate 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)

⁸Duration of load adjustments for snow loads, 7-day (construction) loads, and wind loads as given in the National Design Specifications for Wood Construction apply.

⁹D-Blaze treated plywood must not be used as roof sheathing if a radiant shield is used beneath the roof sheathing.

¹⁰The 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.

¹¹Deflection 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.

¹²Staples 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.

¹³Placement of insulation and airflow should be designed to maintain acceptable wood temperatures. Good ventilation is essential in fire retardant wood construction to minimize excessive relative humidity and condensation. At relative humidity conditions when FRW moisture content levels are expected to exceed 15%, appropriate design value adjustments for high moisture content should be made.

Table 4

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

¹Uniform live load = 100 psf and Dead load = 10 psf, LL deflection L/360, LL+ DL deflection L/240

²Fastener size and spacing must be as required in the applicable building code for untreated plywood of the same thickness.

Proper roof system ventilation shall be used to provide a uniform flow of air over all interior surfaces of the plywood to prevent heat build-up and sufficient to effectively remove moisture where the roof is warmed by solar radiation.



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:

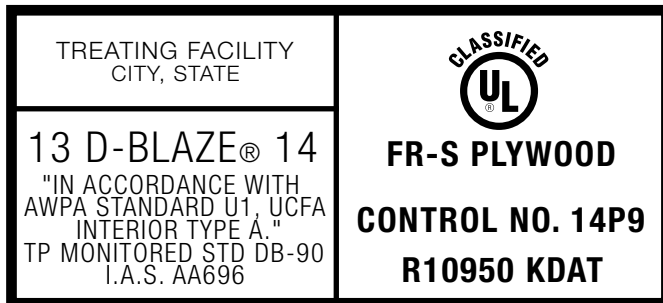
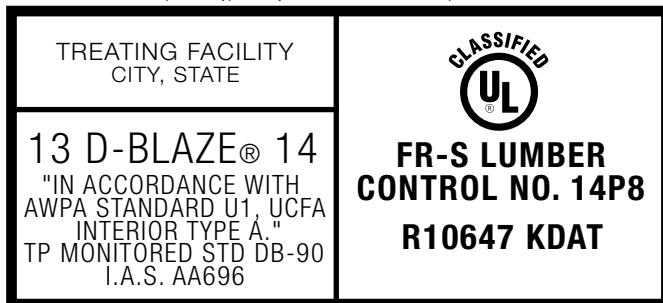
- Shall be pressure-treated with D-Blaze® fire retardant to meet Underwriters Laboratories FR-S rating or a flame spread and smoke index rating denoting a surface-burning characteristic rating of 25 or less for flame spread and smoke developed.
- Shall bear the Underwriters Laboratories label or stamp attesting to the FR-S rating or flame spread and smoke index rating, or the ESR 2645 Building Code Approval, 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 ICC ESR 2645.

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.



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) and Timber Products Inspection (TP).

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 And Handling

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 Material Safety Data Sheet (MSDS) at www.Treatedwood.com.



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



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