

## *Studs*

**All Species  
2" to 4" Thick  
2" to 6"  
Wide 10' and Shorter**

The National Grading Rule for Dimension Lumber contains one stud grade. It is graded full length. Knots appearing on narrow faces are limited to the same displacement as knots specified at edges of wide faces. Studs may be manufactured to the full basic length and double-end trimmed or may be precision-end trimmed to exact length. Trimming tolerances are shown in Section 748.00

### *Standard Sizes for Studs*

#### Thicknesses and Widths

Nominal	Surface	Surfaced
	Dry	Unseasoned
1-9/16"	2"	1-1/2"
2-9/16"	3"	2-1/2"
3-9/16"	4"	3-1/2"
4-5/8"	5"	4-1/2"
5-5/8"	6"	5-1/2"

Stain - Stained sapwood. Firm heart stain or firm red heart.

Unsound wood - In spots or streaks limited to 1/3 the cross section at any point along the length. Must not destroy nailing edge.

Wane - 1/2 the width and 1/3 the thickness without length limit, or equivalent more for 2' if not exceeding 3/4 the width and 1/2 the thickness.

Warp - 1/2 medium. See Section 752.00

White speck and honeycomb - Firm.

## *Stud*

**2" to 4" Thick  
2" to 6" Wide  
10' and Shorter**

Lumber of this grade is limited to characteristics that affect strength and stiffness values so that the grade is suitable for all stud uses, including use in load-bearing walls. The grade has a fiber stress in bending value of 26% of that allowed for clear, straight-grained wood and a design value for modulus of elasticity of 80% of that allowed for clear wood average.

Characteristics permitted and limiting provisions are:

Checks - Seasoning checks not limited. Through checks at ends are limited as splits.

Knots - Not limited as to quality but are well spaced and are permitted in the following sizes or their equivalent displacement:

Nominal Width	At Edge Wide Face	Centerline Wide Face	Holes
2"	3/4"	3/4"	3/4"
3"	1-1/4"	1-1/4"	1-1/4"
*4"	1-3/4"	2-1/2"	1-1/2"
5"	2-1/4"	3"	1-3/4"
6"	2-3/4"	3-3/4"	2"

\*In 3 x 4 and 4 x 4, knot size shown for centerline of wide face is permitted anywhere on 4" face.

Manufacture - Standard "F." See Section 722.00(f)

Pitch and pitch streaks - Not limited.

Pockets - Pitch or bark - Not limited.

Shake - If through at ends, limited as splits. Elsewhere, through shakes 1/3 the length.

Skips - Hit or miss on any face. In addition, 10% of the pieces may have heavy skips on the wide faces only. See Section 720.00(e) and (g)

Slope of grain - 1 in 4.

Splits - Equal in length to twice the width of the piece.

### *Economy Stud*

This grade is designed to permit all lumber characteristics, providing each piece can be used as a stud full length. Knots that occupy no more than 3/4 of the cross section are permitted in this grade. Splits are limited to 1/4 the length. Wane may be equivalent to 3/4 of any face or may be 1/4 the thickness full width, full length. Occasional pieces may have 18" to 2' of wane, not to exceed 1/2 the thickness, full width. Crook and twist are restricted to 1" in an 8' stud, but characteristics such as shake, stain, pitch, pitch pockets, honeycomb, or equivalent characteristics are not limited. Skips are permitted, providing pieces are no more than 1/4" scant of standard dressed sizes.

### *Premium Studs*

Stringent minimum wane requirements provide customer appeal.

An all-log stud (no peeler cores), consistently straight, with minimum end splits and reduced checks.

The quality of this stud minimizes fall down at the yard and returns from the job sites.

## Basic Selection Factors



Adherence to the following basic important factors makes the correct selection and specification of WWPA lumber both easy and accurate.

**Product Classification:** Identify product names for clarity. Examples: paneling, structural decking, joists, rafters, studding, beams, and siding, etc.

**Species.** Include ALL species suited to the job. This broadens availability which can lower costs. Verify with your local supplier.

Where wood color, grain, durability or other special characteristics are important to the use intended, select and specify the proper species accordingly.

**Grade:** Specify standard grades as described in the official Western Wood Products Association Grading Rules Book. Consider all grades suitable for the intended use. For economy in construction, it is recommended that the lowest grade suited to a job be specified.

**Stress Rating.** When strength is a factor, specify the stress rating requirements WITHOUT reference to grades or species. However, species are important for design loads for fasteners. Both “visually graded” and “machine rated” lumber may be assigned design values.

**Grade Stamps.** Specify WWPA grade stamped framing lumber, sheathing and other construction items. Finish lumber and decking may also be grade stamped on ends or backs where the stamp will not be visible in use and may be so specified if desired. Some WWPA mills, located in areas where WCLIB Rules may be applicable, also may have the notation (WCLB Rules) on the stamp. This notation indicates that the lumber was graded under WCLIB rules.

**Size.** For standard products such as boards and framing, specify the nominal size by thickness and width in full inches. Example: 1x6, 1x8, 2x4, 2x6.

**Surface Texture.** Indicate whether lumber is to be smooth surfaced (surfaced) or, rough surfaced (rough).

**Patterns.** List WP Pattern number for profiled material, and provide detail profiles for non-standard (special) profiles. Where needed, identify whether tongue and groove (T&G), shiplap (S/L), surfaced on all four sides (S4S), or other patterns or workings. See “Standard Patterns” (G-16).

**Seasoning.** Specify “DRY” lumber to assure long range product stability, increased nail-holding power, improved paintability and workability. “DRY” covers both major methods of drying lumber, air dried and kiln dried.

### S-DRY o MC 15 o S-GRN

Any one of the above marks found in a grade stamp denotes the moisture content of lumber at time of surfacing. “S-DRY” indicates a moisture content not exceeding 19%. “MC-15” indicates a moisture content not exceeding 15%. “S-GRN” indicates that the moisture content exceeded 19%.

## Floor Joist Spans (Feet and Inches)

40# Live Load 10# Dead		Design Criteria: Strength - 10 lbs. per sq. ft. dead load plus 40 lbs. per sq. ft. live load. Deflection - Limited to span in inches divided by 360 for live load only										L/360		
Load	Species or Group	Grade*	Span (feet and inches)											
			2 x 4			2 x 6			2 x 8			2 x 12		
			12" oc	16" oc	24" oc	12" oc	16" oc	24" oc	12" oc	16" oc	24" oc	12" oc	16" oc	24" oc
	Douglas Fir-Larch	2 3	10-11 9-3	9-11 8-0	6-6 6-6	14-4 12-2	13-1 10-7	11-3 8-8	18-4 15-7	16-9 13-6	14-5 11-0	22-4 18-11	20-4 16-5	17-6 13-5

\* Spans were computed for commonly marketed grades. Spans for other grades can be computed utilizing the WWPA Span Computer.

## Ceiling Joist Spans (Feet and Inches)

40# Live Load (No Storage) 10# Dead Load		Design Criteria: Strength - 5 lbs. per sq. ft. dead load plus 10 lbs. per sq. ft. live load. No storage above. Deflection - Limited to span in inches divided by 240 for live load only								L/240	
Species or Group	Grade*	Span (feet and inches)									
		2 x 4		Grade*	2 x 6		2 x 8				
		16" oc	24" oc		16" oc	24" oc	16" oc	24" oc			
Douglas Fir-Larch	STD	8-3	6-9	2 3	18-1 14-8	15-7 11-11	23-10 19-4	20-7 15-9			

\* Spans were computed for commonly marketed grades. Spans for other grades can be computed utilizing the WWPA Span Computer.

## ***TIMBERS***

### **BEAMS and STRINGERS**

**All Species**

**5" and Thicker**

**Width More Than 2" Greater Than Thickness**

Grades of Beams and Stringers are designed for construction uses where material larger than Joists and Planks is required. The various grades are used in all types of building - home, industrial, farm, and in special engineered construction such as bridges, auditoriums, stadiums, and the like. Some grades are selected for appearance and strength. Other grades are designed for serviceability with strength and appearance qualities available in graduated increments to provide reliable and economical construction. There are four grade choices: SELECT STRUCTURAL NO. 1, NO. 2 (NO. 1 MINING) and NO. 3 (NO. 2 MINING). All are graded full length. The Select Structural and No. 1 grades are assigned design values and may be specified where high strength and fine appearance are desired for exposed applications.

## ***POSTS and TIMBERS***

**All Species**

**5" x 5" and Larger**

**Width Not More Than 2" Greater Than Thickness**

Grades of Posts and Timbers are designed for construction uses where material larger than Joists, Planks, and Studs is required. The various grades are used in all types of building home, industrial, farm, and in special engineered construction, such as bridges, auditoriums, stadiums, and the like. Some grades are selected for appearance and strength. Other grades are designed for serviceability with strength and appearance qualities available in graduated increments to provide reliable but economical construction.

There are four grade choices: SELECT STRUCTURAL NO. 1, NO. 2, and NO. 3. All are graded full length. The Select Structural and No. 1 grades are assigned design values and may be specified where high strength and fine appearance are desired for exposed applications. These grades are designed to provide high compression values. If the higher fiber stress in bending values applicable to Beams and Stringers are desired, the Select Structural and No. 1 grades may be graded under Sections 70.10 or 70.11, if all faces of square pieces are considered as narrow faces. If so graded and grade stamped, the grade stamps must show the appropriate section number (70.10 or 70.11).

## Basic Selection Factors



Adherence to the following basic important factors makes the correct selection and specification of WWPA lumber both easy and accurate.

**Product Classification:** Identify product names for clarity. Examples: paneling, structural decking, joists, rafters, studding, beams, and siding, etc.

**Species.** Include ALL species suited to the job. This broadens availability which can lower costs. Verify with your local supplier.

Where wood color, grain, durability or other special characteristics are important to the use intended, select and specify the proper species accordingly.

**Grade:** Specify standard grades as described in the official Western Wood Products Association Grading Rules Book. Consider all grades suitable for the intended use. For economy in construction, it is recommended that the lowest grade suited to a job be specified.

**Stress Rating.** When strength is a factor, specify the stress rating requirements WITHOUT reference to grades or species. However, species are important for design loads for fasteners. Both “visually graded” and “machine rated” lumber may be assigned design values.A

**Grade Stamps.** Specify WWPA grade stamped framing lumber, sheathing and other construction items. Finish lumber and decking may also be grade stamped on ends or backs where the stamp will not be visible in use and may be so specified if desired. Some WWPA mills, located in areas where WCLIB Rules may be applicable, also may have the notation (WCLB Rules) on the stamp. This notation indicates that the lumber was graded under WCLIB rules.

**Size.** For standard products such as boards and framing, specify the nominal size by thickness and width in full inches. Example: 1x6, 1x8, 2x4, 2x6.

**Surface Texture.** Indicate whether lumber is to be smooth surfaced (surfaced) or, rough surfaced (rough).

**Patterns.** List WP Pattern number for profiled material, and provide detail profiles for non-standard (special) profiles. Where needed, identify whether tongue and groove (T&G), shiplap (S/L), surfaced on all four sides (S4S), or other patterns or workings. See “Standard Patterns” (G-16).

**Seasoning.** Specify “DRY” lumber to assure long range product stability, increased nail-holding power, improved paintability and workability. “DRY” covers both major methods of drying lumber, air dried and kiln dried.

### S-DRY o MC 15 o S-GRN

Any one of the above marks found in a grade stamp denotes the moisture content of lumber at time of surfacing. “S-DRY” indicates a moisture content not exceeding 19%. “MC-15” indicates a moisture content not exceeding 15%. “S-GRN” indicates that the moisture content exceeded 19%.

## Floor Joist Spans (Feet and Inches)

40# Live Load 10# Dead Load		Design Criteria: Strength - 10 lbs. per sq. ft. dead load plus 40 lbs. per sq. ft. live load. Deflection - Limited to span in inches divided by 360 for live load only										L/360	
Species or Group	Grade*	Span (feet and inches)											
		2 x 4			2 x 6			2 x 8			2 x 12		
		12" oc	16" oc	24" oc	12" oc	16" oc	24" oc	12" oc	16" oc	24" oc	12" oc	16" oc	24" oc
Engelmann Spruce Lodgepole Pine (Engelmann Spruce- Alpine Fir)	2 3	9-5 7-5	8-7 6-5	6-11 5-3	12-5 9-9	11-2 8-6	9-1 6-11	15-11 12-6	14-3 10-10	11-7 8-10	19-4 15-3	17-3 13-2	14-2 10-9
White Woods (Western Woods)	2 3	9-2 7-5	8-4 6-5	6-10 5-3	12-0 9-9	11-0 8-6	9-0 6-11	15-5 12-6	14-0 10-10	11-6 8-10	18-9 15-3	17-0 13-2	14-0 10-9

\* Spans were computed for commonly marketed grades. Spans for other grades can be computed utilizing the WWPA Span Computer.

## Ceiling Joist Spans (Feet and Inches)

40# Live Load (No Storage) 10# Dead Load		Design Criteria: Strength - 5 lbs. per sq. ft. dead load plus 10 lbs. per sq. ft. live load. No storage above. Deflection - Limited to span in inches divided by 240 for live load only						L/240	
Species or Group	Grade*	Span (feet and inches)							
		2 x 4		Grade*	2 x 6		2 x 8		
		16" oc	24" oc		16" oc	24" oc	16" oc	24" oc	
Engelman Spruce Lodgepole Pine (Engelman Spruce- Alpine Fir)	STD	6-9	5-6	2 3	15-6 11-9	12-8 9-7	20-7 15-6	16-8 12-8	
White Woods (Western Woods)	STD	6-7	5-4	2 3	15-1 11-9	12-6 9-8	20-2 15-6	16-5 12-8	

\* Spans were computed for commonly marketed grades. Spans for other grades can be computed utilizing the WWPA Span Computer.

## ***C Select***

Lumber of this grade is recommended for all finishing uses where fine appearance is essential. Because its appearance and usability ranks only slightly less than B & Btr.- 1 & 2 Clear, it is one of the most sought after products from the clear portion of the log. It is widely used for high quality interior trim and cabinet work with natural, stain or enamel finishes.

Characteristics and limiting provisions are:

Checks - Small, well-scattered seasoning checks on the surface.

Skip - Light skip on one edge, one medium or two light skips on the back.

Stain - Medium stained wood in an occasional piece covering 1/3 the face, or a greater area of lighter stain when not in combination with other characteristics.

Torn or Raised Grain - Very light.

Wane - On reverse side 1/2 the thickness, 1/8 the width, 1/4 the length in an occasional piece.

Warp-

Crook - As shown in Section 752.00.

Cup - Very light.

Twist - 7/4 and thinner, 1/2 of very light.

8/4 and thicker, 1/4 of very light.

See Section 752.00.

Any one of the following characteristics:

Knots - Two small, sound, tight knots.

Pitch - Light pitch over not more than 1/2 the face.

Pitch Streak - One small pitch streak.

Pockets - Two very small pockets.

Equivalent characteristics no more damaging than any of the above.

## ***D Select***

Lumber of this grade has many of the fine appearance features of C Select grade. Although generally less restrictive than C Select, D Select is suitable where the requirements for finishing are less exacting. The grade is between the higher finishing grades and the Board grades as many pieces have a finish appearance on one side, the reverse side showing larger or more numerous characteristics.

Characteristics and limiting provisions are:

Checks - Small, scattered seasoning checks, medium checks on back.

Skip - One very light skip on face. hit and miss on back; one edge may have 1/16" skip for 1/2 the length in an occasional piece.

Split - Short split on one end or equivalent.

Stain - Medium stained wood over entire face if otherwise high quality.

Torn or Raised Grain - Light, in scattered spots.

Wane - On reverse side, 3/4 the thickness, 1/4 the width, 1/4 the length.

Warp -

Crook - shown in Section 752.00

Cup - Very light.

Twist - 7/8 and thinner, very light.

Twist - 8/4 and thicker, 1/2 of very light.

See Section 752.00.

Any one of the following characteristics:

Knots - Four small, fixed knots.

Pitch - Medium pitch over not more than 2/3 of fa less if heavy.

Pitch Streak - One medium pitch streak.

Pockets - Four small pockets.

Equivalent characteristics no more damaging th any of the above.

One 4" cutout is permitted in pieces of otherwise high appearance. Cutting must be directly on an end or more than 2' from an end. Cutouts are restricted to pieces 12' and longer and 10% of an item.



# Redwood

## Lumber Grades And Uses

There are over thirty different grades of redwood lumber including general purpose grades and specialized grades for a single use. There is a grade of redwood for almost any application suitable for wood. Redwood is graded by appearance and durability, with criteria defined by the Redwood Inspection Service.

**Excellence of appearance** is a major factor in the grading of redwood. Clearness (freedom from knots) is the determinant for the highest grades. Other grades are categorized by number, size and nature of knots and the presence of other characteristics such as stains, crook or manufacturing defects that may occur.

**For durability**, resistance against insects and decay-redwood is graded by its color. Reddish-brown heartwood from the inner portion of the tree contains extractives that render it resistant to decay.

The cream-colored sapwood that develops in the outer growth layer of the tree does not possess the heartwood's resistance to decay and insects.

As a rule of thumb, *all-heartwood* grades of redwood will have the word "Heart" in the grade name.

**Architectural grades**, Clear All Heart, Clear and B Grade, are normally sold kiln dried (pre-shrunk and stress free) for the finest exterior and interior architectural uses.

No other wood equals these finish grades in beauty and dimensional stability. They are the choice grades for siding, paneling, trim and cabinetry where attractiveness and tight joinery are desired.

**Garden grades**, Construction Heart, Construction Common, Merchantable Heart and Merchantable are offered seasoned or unseasoned and are frequently specified for decks, fences and garden uses where knots or other characteristics have little or no effect.

For constructions where the wood will be on or near soil such as posts, bulkheads or patio grids, it's essential to use one of the durable, heartwood grades-Clear All Heart, Select Heart, Construction Heart or Merchantable Heart.

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### Construction Common

Same general characteristics as Construction Heart, but permits sapwood in varying amounts. Unseasoned or seasoned, it can be surfaced or rough. Also available saw textured.

**Uses** Seasoned or unseasoned - Decking, fence boards and other above-ground garden uses that do not require heartwood's insect and decay resistance. Seasoned - Rustic sidings.

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For construction above ground where there is little danger of insect or decay problems, one of the sapwood-containing grades-Clear, B Grade, Select, Construction Common or Merchantable-will serve handsomely.

## Redwood Grademarks

Standard grademarks include grade name and symbol of authorized grading agency. Grademarks may be on seasoned or unseasoned lumber on face, edge or end of piece, "Certified Kiln Dried" marks lumber kiln dried to accepted standards.



## Western Red Cedar

In addition to having a naturally durable heartwood, western red cedar is a highly versatile species. It permits tremendous design flexibility because it is widely available in many different paneling and siding patterns. It resists splitting and its beautiful grain allows many finishes. It may be painted, stained or left to weather naturally.

Many people prefer the naturally weathered appearance of western cedar and choose not to apply a finish treatment. However, in harsh climates, without protection, particularly at joints and fastenings, cedar, like other wood is susceptible to damage from the sun, freezing and other environmental conditions.

In certain moist, interior areas (such as in saunas and around or over hot tubs and pools), cedar should be sealed against moisture to prevent extractive staining and discoloration. The weathering to a soft gray, which occurs naturally outdoors, may never occur on interior surfaces.

Outdoors, as wood weathers, it gradually changes in color. In wetter climates, the first stage is darkening of the wood as water-soluble extractives are drawn to the surface. In time this trend reverses, as the extractives are eliminated, and the wood gradually bleaches to a soft gray. In drier climates, unfinished western cedar will gradually turn tan and then pass through progressively lighter shades of tan.

**Natural weathering will not be uniform.** It will vary from board to board and on different sides and different parts of a building, depending upon the amount of light and moisture to which the wood is exposed; i.e., areas under overhangs and projections will weather more slowly than areas on the side exposed to harsh weather

Bleaching agents or an occasional hosing with water can accelerate the natural process when the gray, weathered look is wanted (see Bleaching Oils). However, caution should be taken in the placement of lawn sprinklers when cedar is to be left untreated. Cedar exposed to excessive moisture will assume a color different from the color of protected wood.

At any stage in the natural weathering process, a clear, water-repellent preservative or semi-transparent stain can be applied to retard further color change.

## Lattice

**Remember:** There are no industry grading standards in the wood lattice industry. Every producer is free to grade as he pleases and to call his products by whatever grade name he fancies. **Only WOODWAY uses and publishes clear, forthright grade definitions based on WWPA Lath Grade Rules.** And only WOODWAY puts its label on every sheet of its better quality lattice

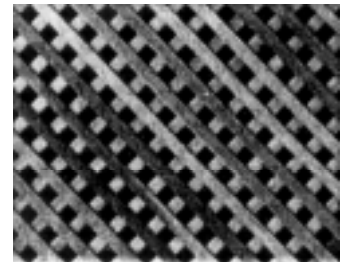
### Lattice Patterns and Spacing

# 70%\*

Shade

#### Diagonal Privacy Spacing:

- 1-3/4" Opening\*
- 3.4" Centering of Lath
- 4.8" Pattern Repeat

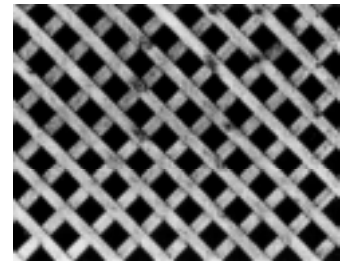


# 50%\*

Shade

#### Diagonal Open Spacing:

- 2-5/8" Opening\*
- 4-1/4" Centering of Lath
- 6" Pattern Repeat



### Lattice Thickness

**Regular:** For most applications in decorative or utilitarian use.

- Nominal 1/2" total thickness at lath intersections.

**Heavy:** For situations where impact resistance, safety and scale dictate.

- Nominal 1" total thickness at lath intersections.

## Treated Timbers

Pole construction makes building on difficult sites economically feasible. Pressure-treated poles can help provide dramatic design solutions to building problems on hillsides, and anywhere there is a desire to maintain the natural setting and reduce building costs.

The performance and extended service life of pole frame buildings have been widely documented by farmers across the land. In the past fifty years, pole structures have been used extensively in agricultural construction. Uses include warehouses, bulk storage buildings, barns and equipment storage, as well as residential construction.

Wood pole structures are resilient and provide resistance to high wind loads, earthquakes and hurricanes. Building costs are reduced as less site preparation is required.

### Guide Specification

#### Pressure-Treating Standards

- A. AWPA C1: All Timber Products, Preservative Treatment by Pressure Process.
- B. AWPA C16: Wood Used on Farms-Pressure Treatment.
- C. AWPA C23: Pole Building Construction-Pressure Treatment.

#### Materials

- A. Poles or posts in building construction (See Note 1): Poles or posts to meet the physical requirements of ANSI Standard 05.1 and the supplemental requirements of AWPA C23. Poles or posts to be Douglas fir or Ponderosa

pine and are to be treated in accordance with AWPA C23. Treatment type to be (see Section 8) with retention of (see Section 8).

- B. Poles or posts for less restrictive uses (See Note 2): Poles or posts to meet the physical requirements of ANSI Standard 05.1 and supplemental requirements of AWPA C23. Poles and posts to be Douglas fir, Ponderosa pine or Lodgepole pine. They are to be treated in accordance with AWPA C 1 6. Treatment type to be (see Section 8) with retention of (see Section 8).
- C. Poles or posts to bear AWPB quality mark and meet AWPB quality control procedure CP

### Notes to Specifiers

1. In construction, where replacement would be difficult or impossible, or anticipated use of the building requires exceptional durability
2. For less restrictive applications refer to AWPA Standard C1 6.
3. Building pole sizes are classified by top diameter and length. Top diameters shall be specified in 1' increments, lengths in 2' increments in poles up to 30' with 5' increments in poles over 30'.
4. Butts and tips will be cut square unless otherwise specified..When measured at their extreme ends, poles will not be shorter than specified, but may be up to 3' longer
5. Poles treated with creosote or pentachlorophenol and used inside structures where they may come into contact with people, domestic animals, or livestock require two coats of appropriate sealers. .See Section 9.
6. Handling, fabrication, field treating and disposal of cut-offs should be as outlined in Section 9.

### Standard Retentions

Retention*	Applications	Typical Uses
<b>0.25</b>	Above Ground Uses	Decking, Fencing, Sills, Railings & Joists
<b>0.40</b>	Soil or Fresh Contact (Non-Structural)	Posts, Landscape Timbers, Grape Stakes, Retaining Walls
<b>0.60</b>	Soil or Fresh Contact (Structural)	Wood Foundations, Building Poles
<b>0.80</b>	Piles - Soil or Fresh Water Contact (Structural)	Foundation Piles
<b>2.50</b>	Salt Water Contact	Timbers, Pilings, Bulkheads, Groins

\* Pounds per cubic foot. Minimum retentions conform to standards of the American Wood Preservers Association.

## **DRICON**

### ***Fire Retardant Treated Wood***

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### ***Features***

- Code compliance report recognition.
  - National Evaluation Report NER-303 (UBC, SBCCI & BOCA)
  - City of Los Angeles Report #RR 25122
  - HUD (Materials Release No. 1261)
- Conforms with UBC Section 207.
  - UBC Standard No. 23-5 Low hygroscopic Interior -Type. A
  - UBC Standard 23-6 Strength
  - UBC Standard 8-1 Flame Spread
- Underwriters Laboratories listed and inspected.
  - FR-S stamp - 25 or less flamespread/smoke developed per UBC 8-1, ASTM E-84, NFPA-255 and UL-723 in extended 30-minute test
- Patented formulation (US Patent 4373010)
- AWWA
  - C20 (Lumber)
  - C27 (Plywood)
- Navy QPL listed
  - Conforms with MIL-L-1914OE
- Third party recognized preservative qualities
  - EPA registration #62190-9
- No more corrosive than untreated wood
- Kiln dried after treatment
- High temperature tested: ASTM D5516
- Insurance- recognition ISO rate schedule
- 40-year warranty against heat degradation

## ***OBC Section 207 - Definition***

Fire-Retardant Treated Wood is any wood product impregnated with chemicals by a pressure process or other means during manufacture, and which, when tested in accordance with UBC Standard No.8-1 for a period of 30 minutes, shall have a flame spread of not over 25 and show no evidence of progressive combustion. In addition, the flame front shall not progress more than 10-1/2 feet beyond the centerline of the burner at any time during the test. Materials which may be exposed to the weather shall pass the accelerated weathering test and be identified as Exterior Type, in accordance with UBC Standard No. 23-5. Where material is not directly exposed to rain fall but exposed to high humidity conditions, it shall be subjected to the hygroscopic test and identified as Interior Type A. in accordance with UBC Standard No. 23-5

All materials shall bear identification showing the fire performance rating thereof. Such identifications shall be issued by an approved agency having a service for inspection of materials at the factory.

## ***Section 2303.3 - Dried Fire-Retardant-Treated Wood***

Approved fire-retardant-treated wood shall be dried, following treatment, to a maximum moisture content as follows: solid-sawn lumber 2 inches (51 mm) in thickness or less to 19 percent, and plywood to 15 percent.

## ***Advantages***

- Proven performance since 1981
- Fire-retardancy
- Structural durability
- Extensive independent high temperature testing of lumber and plywood
- Backed by a 40-year builder warranty against heat degradation.
- Clean, dry and safe handling
- Full range of lumber and plywood products available
- Recognized by a code compliance report
- Paintable and stainable

# Permanent Wood Foundations

Wood foundations save time and money and permit construction in cold weather. The system is simple with foundation stud and plywood walls made from pressure-treated wood supported on gravel.

Even if it is freezing, foundation construction can continue without delays. Some installers have reported construction cost savings as high as 25% over concrete or masonry foundations.

This engineered system has been extensively tested and proven over two decades of research and use. It is recognized by all of the major model building codes. Some 80,000 structures around the country are now anchored on Permanent Wood Foundations.

## Guide Specification

### PRESSURE-TREATING STANDARDS

- A. AWPB FDN.
- B. AWPB C1, C9, and C15.

### MATERIALS

- A. Plywood: Exterior- or interior-type bonded with exterior glue. Each piece to bear an inspection grademark showing manufacturing compliance with U.S. Product Standard PS 1.
- B. Lumber: Specify species and grade. All lumber to bear an inspection agency grademark showing species and grade. All lumber species except Ponderosa pine 2' or greater in thickness to be incised.
- C. Pressure Treatment: Use only ammoniacal copper arsenate (ACA or ACZA) and chromated copper arsenate (CCA) for treatment. Treatment with these preservatives to meet requirements of AWPB Standard C1 5. Treatment type to be (see Section 8) with retention of 0.60 lbs/ft<sup>3</sup> in assay zone. Kiln-drying after treatment is required to moisture content of 19% for each piece of lumber and 18% for plywood. All lumber and plywood to be free of visible surface deposits, except that small isolated and infrequent spots of chemical on otherwise clean wood shall be allowed.
- D. Each piece of lumber and plywood to bear the AWPB "FDN" Quality Mark. In addition, each piece shall be legibly marked with an identification of the treating company, month and year of treatment, and preservative type.

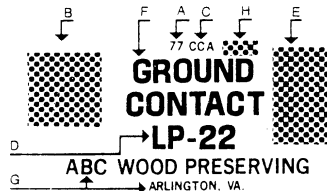
## Notes to Specifiers

1. Lumber species that may be used are the following: Douglas fir, Western hemlock, Ponderosa pine, Lodgepole pine.
2. Additional information on the PWF including design, fabrication, installation, preservative treatment, quality assurance, and code acceptance may be found in the following publications:
  - APA Design/Construction Guide
  - NFA Design Fabrication Installation (DFI) Manual
  - NFA Technical Bulletin #7
  - AWPA Book of Standards
  - AWPB Standard FDN
  - UBC Standard 29-3
3. Copies of Housing and Community Development, State of California approved PWF plans for factory-built housing are available from the Western Wood Preservers Institute.

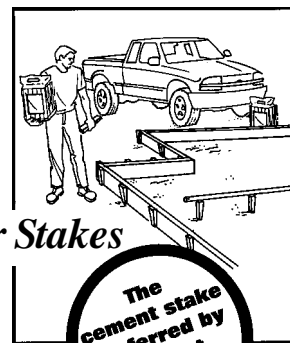
## Quality Control Mark:

All pressure-treated material should include a quality control mark from an approved agency (approved under the major model building codes), which assures compliance with AWPB Standards.

The following information should be included in the quality mark:



- A. Year of treatment
- B. Trade mark of building-code approved quality control agency
- C. The preservative used for treatment
- D. Preservative retention level and (or) the quality control agency procedure indication
- E. Trademark of agency supervising the treating plant
- F. Proper exposure conditions
- G. Treating company and plant location
- H. DRY or KDAT procedures, if applicable

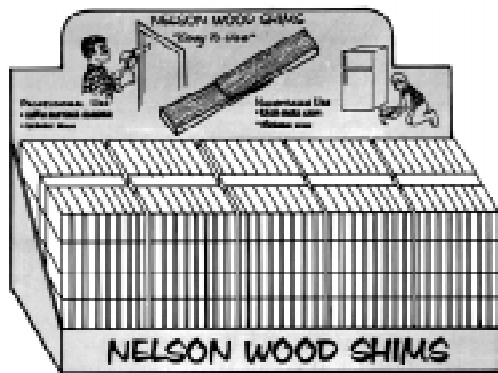
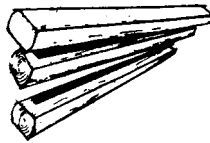


## Power Stakes

## Nelson Wood Shims

### Northern White Wood Shims

- 14 Shims/bndl
- 30 bndl/CTN
- 52 CTN/Pallet

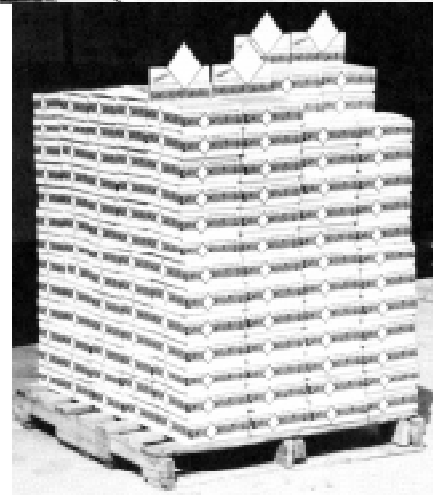


- ➡ The shim size is 3/8" x 1-1/2" x 9" tapered to 1/16" or less.
- ➡ Come to you in a new display box.

### PRO-LINE

### Quality Western Red Cedar Shims

- 84 Shims/CTN
- 260 CTN/Pallet



### Nelson Features

- ➡ Western Red Cedar Shims, highly resistant to rotting, excellent snap.
- ➡ Bulk pack boxes (contractors can use what they need and keep the rest in the box).
- ➡ Clean consistent quality with every shim having feathered ends.
- ➡ The right size, little or no waste with little or no money thrown away. Fits in your tool belt.
- ➡ Attractive display, the carton reminds contractors to buy shims.
- ➡ The shim size is 3/8" x 1 1/2" x 3/8" x 8" tapered to 1/16" or less.

# Hem-Fir

## FLOOR JOISTS

**40# LIVE LOAD 25# DEAD LOAD L/360**

Table FJ-5

**Design Criteria:** Strength - 40 lbs. per sq. ft. live load, plus 25 lbs. per sq. ft. dead load.  
Deflection - Limited in span in inches divided by 360 for live load only.

Species or Group		Grade		Span (feet and inches)															
				2 x 6				2 x 8				2 x 10				2 x 12			
				spacing on center															
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"		
Hem-Fir	Sel. Struc.	10-9	9-9	9-2	8-6	14-2	12-10	12-1	11-3	18-0	16-5	15-5	13-11	21-11	19-10	18-1	16-2		
	No.1 & Btr.	10-6	9-6	8-11	8-0	13-10	12-5	11-4	10-1	17-6	15-2	13-10	12-4	20-3	17-7	16-0	14-4		
	No.1	10-6	9-3	8-5	7-6	13-6	11-8	10-8	9-6	16-5	14-3	13-0	11-8	19-1	16-6	15-1	13-6		
	No.2	9-11	8-7	7-10	7-0	12-7	10-11	9-11	8-11	15-4	13-4	12-2	10-10	17-10	15-5	14-1	12-7		
	No.3	7-7	6-7	6-0	5-5	9-8	8-4	7-7	6-10	11-9	10-2	9-4	8-4	13-8	11-10	10-10	9-8		

## Characteristics & best uses

In its unique way, Hem-Fir is a perfect combination of strength and extraordinary beauty and is quite literally one of the most handsome, elegant and versatile softwood species combinations on the market today. Hem-Fir lumber is light and bright in color, varying from a creamy, nearly-white to a light, straw-brown color. It can be as light or lighter in color than some of the Western pines and is often considered, by those seeking a strong wood with a very light color, as the most desirable of the Western softwoods. Sometimes Western Hemlock may have a slight lavender cast, especially around the knots and in the transition area between the spring and summerwood growth rings. Attractive, delicate, dark grey or black streaks may be apparent in the wood. There is little variation in color between the heartwood and sapwood. Hem-Fir lumber products are available in structural, appearance and remanufacturing grades. In strength properties, Western Hem-Fir is slightly below the Douglas Fir-Larch species combination, and above both the Douglas Fir-South and Spruce-Pine-Fir (South) species combinations. Hem-Fir is useful for a multitude of general-purpose framing applications and is capable of meeting the span requirements of many installations. In the clear and nearly clear appearance grades, Hem-Fir "Finish & Select" products are fine grained and even textured, lending formality to wood paneling, cabinets and trim. Hem-Fir

"Factory & Shop" grade products are remanufactured into handsome solid wood doors, louvers, shutters, moulding, case goods, furniture and more. Limited volumes of knotty, board products are available in Hem-Fir and these are graded primarily to the West Coast Lumber Inspection Bureau's "Alternate Board" grade rules, and to some extent to WWP's rules for the "Common" grades. Lower-grade knotty products are useful for those utilitarian applications in construction where economy governs. Preservative pressure-treated Hem-Fir products are both visually appealing and strong, and in comparison to the naturally durable Western cedars and redwoods, among the more economical species considerations for decks and other outdoor amenities. Among the Western species, Hem-Fir is a preferred species group for preservative pressure treating.

### BASE VALUES FOR WESTERN DIMENSION LUMBER<sup>1</sup>

Nominal Sizes: 2" to 4" thick by 2" and wider

Grades described in *Western Lumber Grading Rules*, Sections 40.00, 41.00, 42.00 and 62.00.

Species or Group	Grade	Extreme Fiber Stress in Bending <sup>2</sup>	Modulus of Elasticity E
		Single Member $F_b$	
Hem-Fir	Select Structural	1400	1,600,000
	No. 1 & Btr.	1100	1,500,000
	No. 1	975	1,500,000
	No. 2	850	1,300,000
	No. 3	500	1,200,000

## ROOF RAFTERS

**30# SNOW LOAD 10# DEAD LOAD L/240**

Table RR-10

**Design Criteria:** Strength - 30 lbs. per sq. ft. snow load, plus 10 lbs. per sq. ft. dead load.  
Deflection - Limited in span in inches divided by 240 for live load only.

Species or Group		Grade		Span (feet and inches)															
				2 x 6				2 x 8				2 x 10				2 x 12			
				spacing on center															
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"		
Hem-Fir	Sel. Struc.	13-6	12-3	11-7	10-9	17-10	16-2	15-3	14-2	22-9	20-8	19-5	18-0	27-8	25-1	23-7	21-11		
	No.1 & Btr.	13-3	12-0	11-4	10-6	17-5	15-10	14-11	13-10	22-3	20-2	18-11	16-11	27-1	24-0	21-11	19-7		
	No.1	13-3	12-0	11-4	10-3	17-5	15-10	14-7	13-0	22-3	19-6	17-9	15-11	26-1	22-7	20-7	18-5		
	No.2	12-7	11-5	10-9	9-7	16-7	14-11	13-7	12-2	21-0	18-2	16-7	14-10	24-4	21-1	19-3	17-3		
	No.3	10-5	9-0	8-3	7-4	13-2	11-5	10-5	9-4	16-1	13-11	12-9	11-5	18-8	16-2	14-9	13-2		

## Framing products

Since Hem-Fir framing lumber products are nearly as strong as Douglas Fir-Larch, they can meet many of the structural load-bearing and load-carrying requirements of residential, light commercial and heavy construction. With their good strength and stiffness properties, S-DRY and KD Hem-Fir structural-grade products are well suited to framing systems where solid-sawn, structural lumber is needed for immediate use in an assembly of other dry framing products (e.g. I-beams, structural-glued finger-jointed lumber, stress-rated boards, etc.). Dry Hem-Fir framing products are subject to minimal shrinkage and checking, and thus perform extremely well in hot, dry climates, or in cold, low-humidity climates, and in multi-story framing.

Recently, in some regions of the U.S., end users have experienced “bouncy” floors when imported species have been used to their maximum allowable published spans. In contrast, published design values for all U.S. species combinations have proven reliable in end use and U.S. species perform well to published allowable maximum spans. Hem-Fir’s modulus of elasticity (MOE or E) value, a stiffness factor in floor systems, exceeds all other Western species combinations except Douglas Fir-Larch, the species combination which is held as the standard against which all other framing lumber is measured, worldwide. It is the combination of stiffness (MOE value) and strength (Fb value) that yields a satisfactory floor system.

Hem-Fir is additionally preferred by many builders because of its: resistance to splitting in nailing and screwing; ability to hold nails and screws securely; ease of sawing without splintering; ability to hold a variety of glues and adhesives; and moderate lightness in weight. It is straight grained, stiff, strong, easy to work, and relatively free from pitch.

**Dimension Lumber:** The bulk of S-DRY and KD Hem-Fir is produced in the Dimension Lumber sizes (2" to 4" thick by 2" and wider). Dimension Lumber Hem-Fir products include: Structural Light Framing grades fit applications where high design values are needed in light-framing sizes for engineered applications, trusses, laminated products and multi-story projects. (grades include SELECT STRUCTURAL, NO.1&BTR, NO.1, NO.2, and NO.3.) These grades may be a special order for some retail lumber suppliers.

Light Framing grades are intended for general framing applications such as wall framing, plates, sills, cripples, blocking, etc. (CONSTRUCTION, STANDARD, and UTILITY).

STUD grade is intended for vertical installations in wall systems and other applications including blocking and furring. Structural Joists & Planks, in 2x5 through 4x18 sizes (with the majority of production in 2x6 through 4x12), are available in SELECT STRUCTURAL, NO.1&BTR J&P, NO.1, NO.2 and NO.3 to fit engineered applications where larger-sized members are required.

**Special Dimension:** Hem-Fir products in this category include Machine Stress-Rated (MSR) lumber for components manufacturing and engineered applications, and structural-glued (end- or fingerjointed) products which are recognized by all U.S. model building codes as interchangeable with solid-sawn lumber products of the same grade, species and intended end use.

One quarter of the lumber used in components and truss manufacturing is MSR lumber. Hem-Fir MSR products are commonly available in several stress levels, occasionally up to 2400 Fb-2.0E. These MSR products offer good strength-to-weight properties, recognized plate-holding ability, exceptional stiffness and consistent availability in a variety of lengths, widths and grades.

Hem-Fir is ideally suited for structural-glued products. The [USDA Forest Products Laboratory](#) rates Hem-Fir in the top group of softwoods for ease of gluing, based on glueability under varying conditions and with different types of adhesives. This, along with Hem-Fir’s inherent strength properties, make the species combination a natural for end- or finger-jointed, edge- and face-glued structural products. And because of its beauty, it’s a natural for finger-jointed millwork and mouldings, edge- and face-glued boards, and laminated stock. These products make excellent use of short lengths, thus increasing utilization of available timber resources. WWPA provides testing and quality control for glued products, currently certifying the manufacture of Hem-Fir structural-glued Dimension Lumber and Board products under the following classifications: Light Framing and Studs, Structural Light Framing, Structural Decking, Stress-Rated Boards, and Structural Joists and Planks.

**Larger sizes:** The bulk of production in the larger sizes is manufactured and shipped S-GRN. Hem-Fir products in the 5" & thicker and 5x5 & larger sizes of “Beams & Stringers” and “Posts & Timbers” are unique products well suited to meet specific design criteria.

*(Refer to WWPA’s [Western Lumber Product Use Manual](#) for additional design information, to the [Structural-Glued](#) and [MSR Technical Information Product Sheets](#) for information on these products, and to WWPA’s *Vol. 1 Species Book: Dimension Lumber* for color photographs of structural grades.)*

## Appearance products

In products graded for appearance, wood-savvy architects and designers often choose Hem-Fir for trim, fascia, paneling, moulding and millwork, as well as for exposed wood ceilings. Substantial volumes are available in the clear and nearly-clear appearance grades and whether used extensively, such as for paneling, or in small decorative elements, Hem-Fir boasts remarkable versatility and usefulness. It compliments many architectural styles and design themes.

When acclimated prior to installation, MC15 or KD15 Hem-Fir products retain their shape and size without shrinking, swelling, cupping, warping, bowing, or twisting. Adding to its aesthetic qualities, Hem-Fir, like all wood, is a very good insulating material. It has a coefficient of heat transmission, or K value, of .89 BTU per inch of net thickness at 12% moisture content, which puts it among the best species for insulating properties.

Interior designers often like Hem-Fir for two primary reasons: its color and natural resistance to darkening from exposure to light. While all wood darkens over time with exposure to sunlight, Hem-Fir often remains true to its original, freshly-milled pastel color.

Finish carpenters, remanufacturers and woodworkers like Hem-Fir for other reasons. The straight grain and fine texture sands to a silky, reflective smoothness with virtually no tendency to split. Hem-Fir yields clean, straight edges and accurate contours with either machine or hand tools, and can be worked easily by either. The wood grips fasteners securely and accepts adhesives without a problem. It readily accepts finishes, ranging from clear coatings, transparent lacquer, varnishes, oils, or wax to a full selection of stains and bright or subdued tints or paints.

The clear and nearly-clear products dominate the appearance grades in Hem-Fir. The highest grade categories, "Finish & Selects," may be specified in either vertical or flat grain. If grain pattern is not specified, these grades will be shipped as a combination of vertical and flat grain. These high-appearance Western Lumber products include "Selects" (B&BTR SELECT, C SELECT, and D SELECT) and "Finish" (SUPERIOR, PRIME, E). Such products are recommended for interior wall and ceiling paneling, trim and cabinet work with either natural, stain, or enamel finishes that respect their fine appearance. These products may be wrapped at the mill for protection in shipping and handling.

Most of the knotty fiber in Hem-Fir is generally manufactured into structural products whenever possible. However, some knotty, appearance-grade products are manufactured in Hem-Fir. These products are manufactured and shipped about half and half in S-GRN and S-DRY and are intended more for general construction applications than fine interior installations.

For the most part, the general-purpose, knotty-appearance grades in Hem-Fir are manufactured, by tradition, in the "Alternate Board" grades of the West Coast Lumber Inspection Bureau's (WCLIB) grading rules. These grades include SELECT MERCHANTABLE (used primarily in housing and light construction for soffits and fascia, and occasionally for shelving where sound, tight knots are acceptable), CONSTRUCTION and STANDARD (for general construction purposes and serviceability in sub-floors, roof, wall sheathing, and let-in bracing), and UTILITY and ECONOMY (for use in applications where economy is the basic requirement).

*(Refer to WWPA's Vol. 2 Species Book: Boards and Commons for additional information and color photographs of appearance grades in a variety of Western softwood species.)*