Voluntary Product Standard PS 20-15
April 2015

# American Softwood Lumber Standard

Supersedes Voluntary Product Standard PS 20-10

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

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April 2015

**U.S. Department of Commerce**
*Penny Pritzker, Secretary*

National Institute of Standards and Technology
*Willie E. May, Acting Under Secretary of Commerce for Standards and Technology and Director*

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# VOLUNTARY PRODUCT STANDARDS

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Voluntary Product Standard
PS 20-15
(Supersedes Voluntary Product Standard PS 20-10)

# AMERICAN SOFTWOOD LUMBER STANDARD

## PREFACE

The American Softwood Lumber Standard was developed by the American Lumber Standard Committee (ALSC) in accordance with the *Procedures for the Development of Voluntary Product Standards* of the U.S. Department of Commerce. The ALSC membership is appointed by the Secretary of Commerce to constitute a proper balance among producers, distributors, and consumers of softwood lumber. Pursuant to a U.S. District Court order, the ALSC and its Board of Review (Board) operate as independent bodies with defined functions with regard to establishing, maintaining, implementing and enforcing this Standard. Through a consensus process, the ALSC maintains the Standard and establishes policies and adopts other standards by which the Board certifies grading rules, approves design values, accredits agencies to grade and inspect under those rules and monitors the agencies' performance. The purpose of this standardization program for manufacturers, distributors, users and consumers is to provide for the correct grade mark labeling of lumber by mills using the service of an accredited agency. This Standard provides for the grading of structural lumber by both visual and mechanical means. A separate consensus body, the National Grading Rule Committee (NGRC) is established to develop and maintain nomenclature and descriptions of grades for dimension lumber that conform to this Standard.

This Standard is applies to domestic production consumed in and exported from the United States, and for lumber imported into the United States.

**ABSTRACT**

This Standard pertains to softwood lumber. It establishes standard sizes and requirements for development and coordination of the lumber grades of the various species, the assignment of design values when called for, and the preparation of grading rules applicable to each species. It provides for implementation of the Standard through an accreditation and certification program to assure uniform industry-wide marking and inspection.

It establishes principal trade classifications and lumber sizes for yard, structural, factory and shop use and provides for the classification, measurement, grade marking of rough and dressed sizes of lumber items. Terms and procedures are defined to provide a basis for the use of uniform methods in the grading, inspection, measurement and description of softwood lumber. It includes the organization and functions of the American Lumber Standard Committee, the Board of Review, and the National Grading Rule Committee. Commercial names of the principal softwood species, definitions of terms used in describing standard grades of lumber and commonly used industry abbreviations are also provided.

The Standard was developed by the American Lumber Standard Committee in accordance with procedures of the U. S. Department of Commerce.

KEY WORDS

Accreditation; ALSC Board of Review; certification of grading rule; DOC PS 20-15; lumber inspection; lumber sizes; moisture content of lumber; National Grading Rule; softwood lumber standard

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# AMERICAN SOFTWOOD LUMBER STANDARD

Effective April, 2015

[This Standard which was initiated by the American Lumber Standard Committee, has been developed under the *Procedures for the Development of Voluntary Product Standards* of the U.S. Department of Commerce to supersede PS 20-10 "American Softwood Lumber Standard."]

## 1. SCOPE

### 1.1 General

**1.1.1** This Voluntary Product Standard establishes and maintains, through a consensus process and in the public interest, standard sizes (both in metric[1] and conventional units) and general requirements for developing grades of softwood lumber. It is implemented through an internationally recognized accreditation and certification program, the purpose of which is to provide for uniform, industry-wide grade marking and inspection of softwood lumber.

**1.1.2** This Standard also provides a basis for the coordination of the grades of the various species of softwood lumber, the assignment of design values to lumber when called for, and the preparation of grading rules applicable to each species. The provisions of this Standard apply to structural lumber manufactured from hardwood species or lumber manufactured from foreign species when the species is included in rules certified by the Board of Review. It is not intended to be used either as grading rules or as purchase specifications. Italicized notes in this Standard are nonmandatory.

[1] Metric units are provided initially followed by conventional units.

**1.1.3** It establishes the principal trade classifications and sizes of softwood lumber for yard, structural, factory and shop use. It provides for the classification, measurement, grading and grade marking of rough and dressed sizes of various items of lumber including finish, boards, dimension and timbers. Terms and procedures are defined and discussed to provide a basis for the use of uniform methods in the grading, inspection, measurement and description of softwood lumber.

*Note: The provisions of this Standard do not apply to the myriad of products of remanufacture (for example: turned balusters, peeler cores, etc.) or manufactured components (for example: trusses, lattice panels, I-joists, etc.) that use "American Lumber Standard" (ALS) program lumber as a raw material.*

1.1.4 This Standard applies to lumber that is to be identified as a manufactured product from a softwood log in a sawmill, or in a sawmill and planing mill. Such lumber, when rough, shall show saw or other primary manufacturing marks in the wood on the four longitudinal surfaces of each piece for its over-all length and shall not have been further manufactured other than by crosscutting, ripping, resawing, joining by fingerjointing, face-gluing and/or edge-gluing, sur-

facing with or without end matching, and working.

**1.1.5** In this Standard, lumber conforming to the basic minimum size and grade provisions herein is designated "American Lumber Standard" (ALS) program lumber only when graded under rules certified by the Board of Review (Board).

**1.2 This Standard also includes the following:**

(a) Organization and functions of the American Lumber Standard Committee (ALSC), the Board, and the National Grading Rule Committee (NGRC) [2];
(b) Commercial names of the principal softwood species (Appendix A);
(c) Definitions of terms used in describing standard grades of lumber (Appendix B);
(d) Commonly used lumber industry abbreviations (Appendix C); and
(e) Information on implementation, and history of the Standard (Appendix D).

## 2. TERMINOLOGY

**2.1 Accreditation--**Procedure by which an authoritative body gives formal recognition that a body or person is competent to carry out specific tasks.

**2.2 Board measure--**The term used to indicate that a board foot is the unit of measurement of lumber. The number of board feet in a piece of lumber is obtained by multiplying the nominal thickness in inches or fraction of an inch by the nominal width in feet by the length in feet. For metric measurement, [see 2.5]

[2] The American Lumber Standard Committee, Inc., its Board of Review, and its National Grading Rule Committee disclaim any liability for damages, including consequential damages, in connection with the use or performance in use of products produced.

**2.3 Certification--**Procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements.

**2.4 Characteristics--**Distinguishing features which by their extent, location, and number determine the quality of a piece of lumber. The limiting characteristics of any grade of lumber described in certified grading rules shall be expressed within the terms of the definitions in Appendix B.

**2.5 Cubic measurement--**The term used to indicate that a cubic meter is the metric unit of measurement of lumber. The number of cubic meters in a piece of lumber is obtained by multiplying the dressed thickness in millimeters by the dressed width in millimeters by the length in meters, and dividing the product by 1,000,000. [see Appendix B1]

**2.6 Design values--** Published design data that are representative of the strength and stiffness of specific grades and species/species groups of lumber.

**2.7 Dry lumber--**Lumber of less than nominal 5-inch thickness which has been seasoned or dried to a maximum moisture content of 19 percent.

*Note: Lumber of nominal 5-inch or greater thickness (timbers) is often manufactured and sold without drying.*

When the maximum moisture content is specified for lumber of nominal 5-inch or greater thickness, it shall be in accordance with the provisions of the applicable lumber grading rules certified by the Board, which for some species defines dry lumber as having a maximum moisture content higher than 19 percent.[see 6.2.6]

**2.8 Grade marked (grade stamped)--** Lumber that displays the official grading mark of

an agency that is made by rubber stamps, ink jet sprayers, tags and/or other methods when found acceptable by that agency. A grade mark is owned by the grading agency and is applied to lumber that conforms to the requirements of a designated grading rule. Except for marks used in connection with Certificates of Inspection or Reinspection, all grade marks shall indicate the following: 1) the mill number, name, or abbreviation; 2) the agency symbol; 3) the species or combination of species of the lumber; 4) whether the lumber was dry or green when manufactured; and 5) the appropriate grade. Where required by the grading rules, grade marks shall also denote rule paragraphs under which the lumber was graded or other similar information.

**2.9 Grading agency--**An organization accredited by the Board that engages in the grading of lumber or that licenses and supervises facilities that employ graders to grade and/or to place grade marks upon lumber products.

**2.10 Grading rules--**Requirements and specifications for the manufacture, inspection and grading of designated species of lumber. Lumber manufactured and graded according to the provisions of this Standard and the grading rules for the species in question shall be regarded as ALS program lumber.

**2.11 Green lumber--**Lumber of less than nominal 5-inch thickness which has a moisture content in excess of 19 percent. For lumber of nominal 5-inch or greater thickness (timbers), green shall be defined in accordance with the provisions of the applicable lumber grading rules certified by the Board.

**2.12 Heat treated (HT)--**lumber or other wood products that have been heated in a closed chamber, with or without moisture content reduction, until it achieves a minimum core temperature of 56 ˚C for a minimum of 30 minutes.

**2.13 Kiln dried (KD)--**Lumber that has been seasoned in a chamber to a predetermined moisture content by applying heat.

**2.14 Lumber--**Lumber is defined as a manufactured product derived from a log through sawing or planing. [see 3.3]

**2.15 Lumber grades--**Manufacturing categories of lumber that provide the extent and limitations of the characteristics permitted in the particular grade.

**2.16 Nominal size--**The label designation for lumber size categories that does not reflect the dressed size. The nominal size is greater than the dressed size i.e., a dry "2 by 4" is surfaced to 38 mm by 89 mm (1 1/2 by 3 1/2 inches).

**2.17 Species--**The commercial names contained in Appendix A for lumber cut from the principal botanical species of softwood shall be used in the formulation of lumber grading rules and in the terms of purchase and sale of ALS program lumber.

**2.18 Worked lumber (working)--**Dressed lumber that has also been matched, shiplapped or patterned.

## 3. CLASSIFICATION

**3.1 General**—ALS program lumber shall be classified according to the use, extent-of-manufacture and nominal size.

**3.2 Use**

**3.2.1 Yard lumber--**Lumber of those grades, sizes, and patterns intended for ordinary construction and building purposes. [see 6.3.1]

**3.2.2 Structural lumber--**Lumber for use where design values are required. [see 6.3.2]

**3.2.3 Factory and shop lumber--**Lumber that is produced or selected for remanufacturing purposes and intended for non-structural applications. [see 6.3.3].

**3.3 Extent-of-manufacture**

**3.3.1 Rough lumber--**Lumber which has not been dressed (surfaced) but which has been sawed, edged and trimmed at least to the extent of showing saw or other primary manufacturing marks in the wood on the four longitudinal surfaces of each piece for its over-all length. Lumber surfaced on one edge (S1E), two edges (S2E), one side (S1S), or two sides (S2S) is classified as rough lumber in the unsurfaced width or thickness.

**3.3.1.1 Saw-sized lumber** – Lumber uniformly sawn to the dressed size for surfaced lumber, and not planed on the faces, for uses requiring a rough texture. When saw sized lumber is grade marked it shall be labeled as such.

**3.3.1.2 Sized lumber** – Lumber uniformly manufactured to dressed surfaced sizes. Sized lumber may be rough, surfaced or partially surfaced on one or more faces. When sized lumber is grade marked it shall be labeled as such.

**3.3.2 Dressed (surfaced) lumber--**Lumber that has been surfaced by a machine (to attain smoothness of surface and uniformity of size) on one side (S1S), two sides (S2S), one edge (S1E), two edges (S2E), or a combination of sides and edges (S1S1E, S1S2E, S2S1E, S4S). Lumber surfaced S1E, S2E, S1S, S2S, S1S1E, S1S2E, S2S1E, S4S is classified as dressed (surfaced) lumber in the surfaced width or thickness.

**3.3.3 Worked lumber--**Dressed lumber that has also been matched, shiplapped or patterned.

**3.3.3.1 Matched (tongue-and-grooved, centermatch) lumber--**Lumber worked with a tongue on one edge of each piece and a groove on the opposite edge to provide a close tongue-and-groove joint by fitting two pieces together; when end-matched, the tongue and groove are worked in the ends also.

**3.3.3.2 Shiplapped lumber--**Lumber worked or rabbeted on both edges of each piece to provide a close-lapped joint by fitting two pieces together.

**3.3.3.3 Patterned lumber--**Lumber shaped to a pattern or to a molded form, in addition to being dressed, matched, or shiplapped, or any combination of these workings.

**3.4 Nominal size**

**3.4.1 Boards--**Lumber of less than nominal 2-inch thickness and of nominal 2-inch or greater width. Lumber of less than nominal 2-inch thickness and of less than nominal 6-inch width is designated as strips or boards.

**3.4.2 Dimension--**Lumber from nominal 2-inch to, but not including, nominal 5-inch thickness, and of nominal 2-inch or greater width. Dimension is also designated as framing, joists, planks, rafters, or studs.

**3.4.3 Timbers--**Lumber of nominal 5-inch or greater in least dimension. Timbers are also designated as beams, stringers, posts, caps, sills, girders, or purlins.

**3.4.4** The dressed sizes of all lumber dimensions referenced in this Standard in terms of "nominal" sizes are set-out in Tables 1 through 4. The use of "nominal" sizes in the language of this Standard follows the practice of the industry. No inferences shall be drawn that the "nominal" sizes are dressed sizes. [see 2.16]

**4. MEASUREMENT AND TALLY**

**4.1 Tally, standard sizes--**Lumber shall be tallied board measure or cubic measure. Dressed sizes shall be used when lumber is measured by cubic measure.

*Note: The invoices for dressed lumber of standard sizes should show the number of pieces of each nominal size and length as well as the actual thickness and width of such lumber.*

**4.2 Tally, nonstandard sizes–**Lumber finished to nonstandard sizes shall be tallied board measure as of either the rough or the nominal size that was used in its manufacture. Cubic measure of lumber shall also be permitted. Dressed sizes shall be used when lumber is measured by cubic measure.

*Note: The dressed thickness and width of such lumber should be shown on the invoice.*

**4.3 Board rule tally-** In lumber specified to be measured with a board rule on dressed widths, pieces measuring to the even half foot are alternately counted as of the next higher and lower foot count; fractions below the half foot are dropped, and fractions above the half foot are counted as of the next higher foot.

**4.4 Averages[3]–length, width–**The average length in feet of a shipment of lumber is computed by dividing the total length in feet by the total number of pieces in the shipment. The average width in inches of a shipment of lumber of nominal 1 inch or less thickness is computed by dividing the total board feet by the total length in feet and multiplying the results by 12; but if the pieces are thicker than nominal 1 inch, the total board foot tally is divided first by the nominal thickness as expressed in inches and fractions of an inch.

## 5. LUMBER SIZES

**5.1 Rough size–**The minimum rough thickness of dry or unseasoned lumber 1 or more inches in nominal thickness shall be not less than 3.2 mm (1/8 inch) thicker than the corresponding minimum dressed thickness, except that up to 20 percent of a shipment shall be not less than 2.4 mm (3/32 inch) thicker than the corresponding minimum dressed thickness. The minimum rough widths shall not be less than 3.2 mm (1/8 inch) wider than the corresponding minimum dressed width.

**5.2 Dressed sizes–**Dressed sizes of lumber shall equal or exceed the minimum sizes shown in Tables 1, 2, 3 and 4. Sizes in Tables 1, 2, 3 and 4 pertain to those items as measured at time of manufacture. Lumber will change in dimension (shrink or expand) in response to its equilibrium moisture content. [see 6.2.3.1 and 6.2.5.1] [see also 5.3.1 covering length and 7.3 for grade marking nonstandard sizes.]

**5.3 Lengths**

**5.3.1 Standard–**Standard lengths of lumber shall be in multiples of 0.3048 m (1 foot) or 0.6096 m (2 feet) as specified in the certified grading rules.

**5.3.2 Trimmed–**Unless otherwise stated in the contract of purchase, lumber shall be trimmed for the removal of spur and splintered ends, and if 2 inches or less in nominal thickness (except lath), shall be double-end-trimmed to a length that is not less than the nominal length and that is not more than 76 mm (3 inches) in excess of nominal length. The overlength tolerance in nominal 2 inch dimension over 305 mm (12 inches) wide or over 6.1 m (20 feet) in length is 305 mm (12 inches).

*Note: The marketing practice covering lengths of lumber should permit the buyer to obtain specified lengths or specified assortments of lengths.*

[3] This computation applies to conventional units.

**Table 1. Nominal and minimum-dressed dry sizes of finish, flooring, ceiling, partition, and stepping at 19 percent maximum-moisture content.**

The thicknesses apply to all widths and all widths apply to all thicknesses except as modified. Sizes are given in millimeters and inches. Metric units are based on dressed size. See B1, Appendix B for rounding rule for metric units.

| Item | Thicknesses | | | Widths | | |
|---|---|---|---|---|---|---|
| | Nominal | Minimum Dressed | | Nominal | Minimum Dressed | |
| | Inch | mm | inch | Inch | mm | inch |
| Finish | 3/8 | 8 | 5/16 | 2 | 38 | 1-1/2 |
| | 1/2 | 11 | 7/16 | 3 | 64 | 2-1/2 |
| | 5/8 | 14 | 9/16 | 4 | 89 | 3-1/2 |
| | 3/4 | 16 | 5/8 | 5 | 114 | 4-1/2 |
| | 1 | 19 | 3/4 | 6 | 140 | 5-1/2 |
| | 1-1/4 | 25 | 1 | 7 | 165 | 6-1/2 |
| | 1-1/2 | 32 | 1-1/4 | 8 | 184 | 7-1/4 |
| | 1-3/4 | 35 | 1-3/8 | 9 | 210 | 8-1/4 |
| | 2 | 38 | 1-1/2 | 10 | 235 | 9-1/4 |
| | 2-1/2 | 51 | 2 | 11 | 260 | 10-1/4 |
| | 3 | 64 | 2-1/2 | 12 | 286 | 11-1/4 |
| | 3-1/2 | 76 | 3 | 14 | 337 | 13-1/4 |
| | 4 | 89 | 3-1/2 | 16 | 387 | 15-1/4 |
| Flooring [a] | 3/8 | 8 | 5/16 | 2 | 29 | 1-1/8 |
| | 1/2 | 11 | 7/16 | 3 | 54 | 2-1/8 |
| | 5/8 | 14 | 9/16 | 4 | 79 | 3-1/8 |
| | 1 | 19 | 3/4 | 5 | 105 | 4-1/8 |
| | 1-1/4 | 25 | 1 | 6 | 130 | 5-1/8 |
| | 1-1/2 | 32 | 1-1/4 | | | |
| Ceiling [a] | 3/8 | 8 | 5/16 | 3 | 54 | 2-1/8 |
| | 1/2 | 11 | 7/16 | 4 | 79 | 3-1/8 |
| | 5/8 | 14 | 9/16 | 5 | 105 | 4-1/8 |
| | 3/4 | 17 | 11/16 | 6 | 130 | 5-1/8 |
| Partition [a] | 1 | 18 | 23/32 | 3 | 54 | 2-1/8 |
| | | | | 4 | 79 | 3-1/8 |
| | | | | 5 | 105 | 4-1/8 |
| | | | | 6 | 130 | 5-1/8 |
| Stepping | 1 | 19 | 3/4 | 8 | 184 | 7-1/4 |
| | 1-1/4 | 25 | 1 | 10 | 235 | 9-1/4 |
| | 1-1/2 | 32 | 1-1/4 | 12 | 286 | 11-1/4 |
| | 2 | 38 | 1-1/2 | | | |

[a] In tongued-and-grooved flooring and in tongued-and-grooved and shiplapped ceiling of 8 mm (5/16 inch), 11 mm (7/16 inch), and 14 mm (9/16 inch) dressed thicknesses, the tongue or lap shall be 5 mm (3/16 inch) wide, with the over-all widths 5 mm (3/16 inch) wider than the face widths shown in the above table. In all other worked lumber shown in this table of dressed thicknesses of 16 mm (5/8 inch) to 32 mm (1-1/4 inches), the tongue shall be 6 mm (1/4 inch) wide or wider in tongued-and-grooved lumber, and the lap shall be 10 mm (3/8 inch) wide or wider in shiplapped lumber, and the over-all widths shall be not less than the dressed face widths shown in the above table plus the width of the tongue or lap.

**Table 2. Nominal and minimum-dressed dry sizes of siding at 19 percent maximum-moisture content.**

The thicknesses apply to all widths and all widths apply to all thicknesses. Sizes are given in millimeters and inches. Metric units are based on dressed size. See B1, Appendix B for rounding rule for metric units.

| Item | Thicknesses | | | Widths | | |
|---|---|---|---|---|---|---|
| | Nominal Inch | Minimum Dressed | | Nominal Inch | Minimum Dressed | |
| | | mm | inch | | mm | inch |
| Plain Bevel | 1/2<br>9/16<br>5/8<br>3/4<br>1 | 11 butt, 5 tip<br>12 butt, 5 tip<br>14 butt, 5 tip<br>17 butt, 5 tip<br>19 butt, 5 tip | 7/16 butt, 3/16 tip<br>15/32 butt, 3/16 tip<br>9/16 butt, 3/16 tip<br>11/16 butt, 3/16 tip<br>3/4 butt, 3/16 tip | 4<br>5<br>6<br>8<br>10<br>12 | 89<br>114<br>140<br>184<br>235<br>286 | 3-1/2<br>4-1/2<br>5-1/2<br>7-1/4<br>9-1/4<br>11-1/4 |
| Rabbeted Bevel | 1/2<br>3/4 | 11 butt, 5 tip<br>17 butt, 7 tip | 7/16 butt, 3/16 tip<br>11/16 butt, 9/32 tip | 4<br>6<br>8<br>10<br>12 | 89<br>140<br>184<br>235<br>286 | 3-1/2<br>5-1/2<br>7-1/4<br>9-1/4<br>11-1/4 |
| Bungalow | 3/4 | 17 butt, 5 tip | 11/16 butt, 3/16 tip | 6<br>8<br>10<br>12 | 140<br>184<br>235<br>286 | 5-1/2<br>7-1/4<br>9-1/4<br>11-1/4 |
| Shiplap (10 mm (3/8 in.) lap)[b] | 5/8<br>1 | 14<br>18 [a] | 9/16<br>23/32 [a] | 4<br>5<br>6<br>8<br>10<br>12 | 76<br>102<br>127<br>171<br>222<br>273 | 3<br>4<br>5<br>6-3/4<br>8-3/4<br>10-3/4 |
| Shiplap ( 13 mm (1/2 in.) lap)[b] | 5/8<br>1<br>2 | 14<br>18 [a]<br>38 | 9/16<br>23/32 [a]<br>1-1/2 | 4<br>5<br>6<br>8<br>10<br>12 | 73<br>98<br>124<br>168<br>219<br>270 | 2-7/8<br>3-7/8<br>4-7/8<br>6-5/8<br>8-5/8<br>10-5/8 |
| Dressed and Matched (Tongue and Grooved, 6 mm (1/4 in.) tongue)[b] | 5/8<br>1 | 14<br>18 [a] | 9/16<br>23/32 [a] | 4<br>5<br>6<br>8<br>10<br>12 | 79<br>105<br>130<br>175<br>225<br>276 | 3-1/8<br>4-1/8<br>5-1/8<br>6-7/8<br>8-7/8<br>10-7/8 |
| Dressed and Matched (Tongue and Grooved, 10 mm (3/8 in.) tongue)[b] | 1 | 18 [a] | 23/32 [a] | 4<br>6<br>8<br>10<br>12 | 76<br>127<br>171<br>222<br>273 | 3<br>5<br>6-3/4<br>8-3/4<br>10-3/4 |

[a] Minimum dressed thickness for 1-inch nominal redwood and western red cedar shiplap and tongue and groove siding patterns is 17 mm (11/16 inch).

[b] In siding lumber less than nominal 2-inch thickness, the tongue shall be 6 mm (1/4 inch) or 10 mm (3/8 inch) wide in tongued and grooved lumber and the lap shall be 10 mm (3/8 inch) or 13 mm (1/2 inch) wide in shiplapped lumber with the over-all widths 6 mm (1/4 inch), 10 mm (3/8 inch) and 13 mm (1/2 inch) wider, respectively, than the face widths shown in the above table.

**Table 3. Nominal and minimum-dressed sizes of boards, dimension, and timbers.**

The thicknesses apply to all widths and all widths apply to all thicknesses. Sizes are given in millimeters and inches. Metric units are based on dressed size. See B1, Appendix B for rounding rule for metric units.

| Item | Thicknesses | | | | | Widths | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Nominal Inch | Minimum Dressed | | | | Nominal Inch | Minimum Dressed | | | |
| | | Dry [a] | | Green [a] | | | Dry [a] | | Green [a] | |
| | | mm | inch | mm | inch | | mm | inch | mm | inch |
| Boards | 3/8 | 8 | 5/16 | 9 | 11/32 | 2 | 38 | 1-1/2 | 40 | 1-9/16 |
| | 1/2 | 11 | 7/16 | 12 | 15/32 | 3 | 64 | 2-1/2 | 65 | 2-9/16 |
| | 5/8 | 14 | 9/16 | 15 | 19/32 | 4 | 89 | 3-1/2 | 90 | 3-9/16 |
| | 3/4 | 16 | 5/8 | 17 | 11/16 | 5 | 114 | 4-1/2 | 117 | 4-5/8 |
| | 1 | 19 | 3/4 | 20 | 25/32 | 6 | 140 | 5-1/2 | 143 | 5-5/8 |
| | 1-1/4 | 25 | 1 | 26 | 1-1/32 | 7 | 165 | 6-1/2 | 168 | 6-5/8 |
| | 1-1/2 | 32 | 1-1/4 | 33 | 1-9/32 | 8 | 184 | 7-1/4 | 190 | 7-1/2 |
| | | | | | | 9 | 210 | 8-1/4 | 216 | 8-1/2 |
| | | | | | | 10 | 235 | 9-1/4 | 241 | 9-1/2 |
| | | | | | | 11 | 260 | 10-1/4 | 267 | 10-1/2 |
| | | | | | | 12 | 286 | 11-1/4 | 292 | 11-1/2 |
| | | | | | | 14 | 337 | 13-1/4 | 343 | 13-1/2 |
| | | | | | | 16 | 387 | 15-1/4 | 394 | 15-1/2 |
| Dimension | 2 | 38 | 1-1/2 | 40 | 1-9/16 | 2 | 38 | 1-1/2 | 40 | 1-9/16 |
| | 2-1/2 | 51 | 2 | 52 | 2-1/16 | 2 1/2 | 51 | 2 | 52 | 2-1/16 |
| | 3 | 64 | 2-1/2 | 65 | 2-9/16 | 3 | 64 | 2-1/2 | 65 | 2-9/16 |
| | 3-1/2 | 76 | 3 | 78 | 3-1/16 | 3 1/2 | 76 | 3 | 78 | 3-1/16 |
| | 4 | 89 | 3-1/2 | 90 | 3-9/16 | 4 | 89 | 3-1/2 | 90 | 3-9/16 |
| | 4-1/2 | 102 | 4 | 103 | 4-1/16 | 4 1/2 | 102 | 4 | 103 | 4-1/16 |
| | | | | | | 5 | 114 | 4-1/2 | 117 | 4-5/8 |
| | | | | | | 6 | 140 | 5-1/2 | 143 | 5-5/8 |
| | | | | | | 8 | 184 | 7-1/4 | 190 | 7-1/2 |
| | | | | | | 10 | 235 | 9-1/4 | 241 | 9-1/2 |
| | | | | | | 12 | 286 | 11-1/4 | 292 | 11-1/2 |
| | | | | | | 14 | 337 | 13-1/4 | 343 | 13-1/2 |
| | | | | | | 16 | 387 | 15-1/4 | 394 | 15-1/2 |
| Timbers | 5 & 6 thick | 13 off | 1/2 off | 13 off | 1/2 off | 5 & 6 wide | 13 off | 1/2 off | 13 off | 1/2 off |
| | 7-15 thick | 19 off | 3/4 off | 13 off | 1/2 off | 7-15 wide | 19 off | 3/4 off | 13 off | 1/2 off |
| | >=16 thick | 25 off | 1 off | 13 off | 1/2 off | >= 16 wide | 25 off | 1 off | 13 off | 1/2 off |

[a] See 2.7 and 2.11 for the definitions of dry and green lumber.

**Table 4. Nominal and minimum-dressed sizes of worked lumber.**

The thicknesses apply to all widths and all widths apply to all thicknesses. Sizes are given in millimeters and inches. Metric units are based on dressed size. See B1, Appendix B for rounding rule for metric units.

| Item | Thicknesses | | | | | Widths | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Nominal Inch | Minimum Dressed | | | | Nominal Inch | Minimum Dressed | | | |
| | | Dry[a] | | Green[a] | | | Dry[a] | | Green[a] | |
| | | mm | inch | mm | inch | | mm | inch | mm | inch |
| Shiplap, 10 mm (3/8 inch) lap[b] | 1 | 19[d] | 3/4[d] | 20 | 25/32 | 4 | 79 | 3-1/8 | 81 | 3-3/16 |
| | | | | | | 6 | 130 | 5-1/8 | 133 | 5-1/4 |
| | | | | | | 8 | 175 | 6-7/8 | 181 | 7-1/8 |
| | | | | | | 10 | 225 | 8-7/8 | 232 | 9-1/8 |
| | | | | | | 12 | 276 | 10-7/8 | 283 | 11-1/8 |
| | | | | | | 14 | 327 | 12-7/8 | 333 | 13-1/8 |
| | | | | | | 16 | 378 | 14-7/8 | 384 | 15-1/8 |
| Shiplap, 13 mm (1/2 inch) lap [b,c] | 1 | 19[d] | 3/4[d] | 20 | 25/32 | 4 | 76 | 3 | 78 | 3-1/16 |
| | 2 | 38 | 1-1/2 | 40 | 1-9/16 | 6 | 127 | 5 | 130 | 5-1/8 |
| | 2-1/2 | 51 | 2 | 52 | 2-1/16 | 8 | 171 | 6-3/4 | 178 | 7 |
| | 3 | 64 | 2-1/2 | 65 | 2-9/16 | 10 | 222 | 8-3/4 | 229 | 9 |
| | 3-1/2 | 76 | 3 | 78 | 3-1/16 | 12 | 273 | 10-3/4 | 279 | 11 |
| | 4 | 89 | 3-1/2 | 90 | 3-9/16 | 14 | 324 | 12-3/4 | 330 | 13 |
| | 4-1/2 | 102 | 4 | 103 | 4-1/16 | 16 | 375 | 14-3/4 | 381 | 15 |
| Centermatch (Tongue & Groove), 6 mm (1/4 inch) tongue[b] | 1 | 19[d] | 3/4[d] | 20 | 25/32 | 4 | 79 | 3-1/8 | 81 | 3-3/16 |
| | | | | | | 5 | 105 | 4-1/8 | 108 | 4-1/4 |
| | 1-1/4 | 25 | 1 | 26 | 1-1/32 | 6 | 130 | 5-1/8 | 133 | 5-1/4 |
| | 1-1/2 | 32 | 1-1/4 | 33 | 1-9/32 | 8 | 175 | 6-7/8 | 181 | 7-1/8 |
| | | | | | | 10 | 225 | 8-7/8 | 232 | 9-1/8 |
| | | | | | | 12 | 276 | 10-7/8 | 283 | 11-1/8 |
| Centermatch (Tongue & Groove), 10 mm (3/8 inch) tongue [c] | 2 | 38 | 1-1/2 | 40 | 1-9/16 | 4 | 76 | 3 | 78 | 3-1/16 |
| | 2-1/2 | 51 | 2 | 52 | 2-1/16 | 6 | 127 | 5 | 130 | 5-1/8 |
| | 3 | 64 | 2-1/2 | 65 | 2-9/16 | 8 | 171 | 6-3/4 | 178 | 7 |
| | 3-1/2 | 76 | 3 | 78 | 3-1/16 | 10 | 222 | 8-3/4 | 229 | 9 |
| | 4 | 89 | 3-1/2 | 90 | 3-9/16 | 12 | 273 | 10-3/4 | 279 | 11 |
| | 4-1/2 | 102 | 4 | 103 | 4-1/16 | | | | | |
| Grooved-for-Splines | 2-1/2 | 51 | 2 | 52 | 2-1/16 | 4 | 89 | 3-1/2 | 90 | 3-9/16 |
| | 3 | 64 | 2-1/2 | 65 | 2-9/16 | 6 | 140 | 5-1/2 | 143 | 5-5/8 |
| | 3-1/2 | 76 | 3 | 78 | 3-1/16 | 8 | 184 | 7-1/4 | 190 | 7-1/2 |
| | 4 | 89 | 3-1/2 | 90 | 3-9/16 | 10 | 235 | 9-1/4 | 241 | 9-1/2 |
| | 4-1/2 | 102 | 4 | 103 | 4-1/16 | 12 | 286 | 11-1/4 | 292 | 11-1/2 |

[a] See 2.7 and 2.11 for the definitions of dry and green lumber.

[b] In worked lumber less than nominal 2-inch thickness, the tongue shall be 6 mm (1/4 inch) wide in tongued and grooved lumber and the lap shall be 10 mm (3/8 inch) or 13 mm (1/2 inch) wide in shiplapped lumber, with the over-all widths 6 mm (1/4 inch), 10 mm (3/8 inch) and 13 mm (1/2 inch) wider, respectively, than the face widths shown in the above table.

[c] In worked lumber of nominal 2-inch and greater thickness, the tongue shall be 10 mm (3/8 inch) wide in tongued-and-grooved lumber and the lap shall be 13 mm (1/2 inch) wide in shiplapped lumber, with the over-all widths 10 mm (3/8 inch) and 13 mm (1/2 inch) wider, respectively, than the face widths shown in the above table. Double tongued-and-grooved decking shall be manufactured with a 10 mm (3/8 inch) or 8 mm (5/16 inch) wide tongue.

[d] Alternate minimum dressed dry thickness for 1-inch nominal center-match and shiplap is 18 mm (23/32 inch).

## 6. GRADING RULE REQUIREMENTS

### 6.1 General concepts

**6.1.1 Grading parameters--**To the extent to which differences in the characteristics of species, in the quality of logs, in conditions of manufacture and in the uses to which the product is put will permit, the basic provisions for the grading of lumber shall be uniform. The grading of lumber cannot be considered an exact science because it is based on either a visual inspection of each piece and the judgment of the grader or on the results of a method of mechanically determining the strength characteristics of structural lumber [see 6.3.2.2]. Grading rule provisions shall be sufficiently explicit to establish 5 percent below grade as an allowable variation between qualified graders. If any grading rules indicate that a grade qualifies under two use classifications, the grade provisions shall satisfy the requirements for both classifications.

**6.1.2 Minimum grade requirements--**The method of determining the extent and limitations of the characteristics permitted in the poorest pieces admissible in each grade of lumber shall be stated in a certified rule, except in the lowest grade of each classification. Since lumber grades are broad manufacturing categories, grades overlap and pieces are selected from a grade to comprise another grade outside of that grade category. A specific shipment shall not be made up of only pieces containing characteristics of the maximum number or size permitted in the grade.

**6.1.3 Grade characteristics -**Characteristics permitted and limitations for rough lumber shall be the same as those prescribed in grading rules for dressed lumber of the same grade and, in addition, such others as will disappear in standard dressing shall be allowed. If characteristics other than those described in certified grading rules are encountered, they shall be evaluated in relation to the characteristics permitted or limitations prescribed for the grade under consideration and shall be allowed if regarded as equivalent or less damaging in effect on the strength, appearance, or other utility value of the piece. In all grades, the size of allowable characteristics shall not exceed that specified in the respective grading rules.

*Note: In many grades, the size of permitted characteristics varies in proportion to the size of a face or the area of a cross section of the piece.*

**6.1.4 Special provisions--**When heartwood, sapwood, grain classifications, and other optional provisions are specified, and the lumber conforms to the requirements of such special provisions as well as to the regular grade designated, it shall be regarded as of standard quality.

**6.1.5 Mixed grades--**Mixed grades other than the two highest established grades for each grading rule category shall not be included in certified grading rules.

**6.1.6 Nonstandard grades--**When nonstandard grades, sizes, or patterns are specified, or when particular provisions of a standard grade are waived or changed, inspection shall be made accordingly, but all of the other provisions of the certified grading rules shall apply.

### 6.2 Seasoning provisions

**6.2.1 General**—The grading rules shall include provisions regulating lumber seasoning and moisture content. The provisions shall be developed by each geographical region for each species based on its own conditions and the requirements of the users of its products subject to the other provisions of Section 6. Provisions shall be expressed in terms of maximum moisture content allowed in each piece of lumber and determined in accordance with ASTM D 4444 *Standard Test Method for Laboratory Standardization and Calibration of Hand-Held Moisture Meters* and ASTM D 7438 *Standard Practice for Field Calibration and Application of Hand-Held Moisture Meters* as appropriate. The restrictions on the moisture con-

tent of seasoned lumber shall apply at the time of shipment, at the time of dressing (if dressed lumber is involved), and at the time of any reinspection (if moisture content is involved in the reinspection), as provided in the applicable grading rules. Any piece exceeding the allowable moisture content of the applicable grade provisions shall be considered out of compliance.

**6.2.2 Grading rules--**The grading rules for each species or region shall include clear definitions for dry lumber under nominal 5-inch thickness [see 2.7]. The definitions shall be based on a maximum moisture content of 19 percent or less. The choice to grade and grade mark any item as green ALS program lumber or dry ALS program lumber shall be determined by each rules writing agency in accordance with its own conditions [see 2.7, 2.11, and 2.13].

**6.2.3 Dry size requirements--**The grading rules shall require lumber under nominal 5-inch thickness sold as dry to be 19 percent or less in moisture content at the time of dressing, and to be not less than ALS minimum dry dressed thickness and width at 19 percent moisture content, or at such lower maximum-moisture content as may be applicable to the lumber at the time of dressing. The minimum-dressed dry sizes are shown in tables 1, 2, 3 and 4.

**6.2.3.1 Shrinkage or expansion from dry size** – Shrinkage or expansion that occurs after dressing to standard dry size shall be recognized through the allowance of a tolerance below or above minimum standard dry sizes on a basis of 1 percent shrinkage or expansion for each four percentage points of moisture content change or 0.7 percent shrinkage or expansion for each four percentage points of moisture content change for Redwood, Western Red Cedar, and Northern White Cedar. The shrinkage or expansion percentages are average values. Shrinkage or expansion of individual pieces may vary.[4] Shrinkage allowances are determined assuming maximum allowable moisture content at the time of surfacing. Expansion allowances are determined assuming a typical equilibrium moisture content or other suitable reference moisture content.

**6.2.4 Size differentials--**When the grading rules in any region permit lumber less than nominal 5-inch thickness to be dressed green, the rules shall require that the lumber be dressed to sizes specifically stated according to both thickness and width, as set forth in tables 3 and 4.

**6.2.5 Green size requirements--**The minimum dressed green sizes specifically stated in the rules shall be not less than the green sizes[5] shown in tables 3 and 4, except for Redwood, Western Red Cedar, and Northern White Cedar. For these three species, the following minimum dressed green thicknesses shall apply: 17 mm (21/32 inch) for corresponding nominal 3/4 inch dry, 20 mm (25/32 inch) for nominal 1-inch, 40 mm (1-9/16 inch) for nominal 2-inch, 52 mm (2-1/16 inch) for nominal 2-1/2 inch, 65 mm (2-9/16 inch) for nominal 3-inch, 78 mm (3-1/16 inch) for nominal 3-1/2 inch, 90 mm (3-9/16 inch) for nominal 4-inch, and 103 mm (4-1/16 inch) for nominal 4-1/2 inch. The following minimum green dressed widths shall apply: 65 mm (2-9/16 inch) and 90 mm (3-9/16 inch) for nominal 3-inch and 4-inch, 116 mm (4-9/16 inch), 141 mm (5-9/16 inch), and 167 mm (6-9/16 inch) for nominal 5-inch, 6-inch, and 7-inch,

[4] The range of shrinkage of individual pieces from experimental observation is from 2% to 7%. Variables that affect measurement and shrinkage of lumber are: density, species, grain orientation and allowable grade characteristics. See Forest Products Laboratory Research Reports 15 and 30.

[5] The minimum green sizes are based on shrinkage factors of 2.35 percent in thickness and 2.80 percent in width from the fiber saturation point to a 19 percent maximum moisture content with recognition given to manufacturing practices and the differences in shrinkage characteristics between species of lumber or species groups of lumber.

187 mm (7-3/8 inch), 238 mm (9-3/8 inch), 289 mm (11-3/8 inch) for nominal 8-inch, 10-inch, and 12-inch, 341 mm (13-7/16 inch) and 392 mm (15-7/16 inch) for nominal 14-inch and 16-inch.

**6.2.5.1 Shrinkage or expansion from green size** – Shrinkage that occurs after dressing to standard green size shall be recognized through the allowance of a tolerance below minimum standard green sizes on a basis of 1 percent shrinkage for each four percentage points of moisture content below 30 percent or 0.7 percent shrinkage for each four percentage points of moisture content below 30 percent for Redwood, Western Red Cedar, and Northern White Cedar. Expansion allowances are determined assuming a typical equilibrium moisture content or other suitable reference moisture content. The shrinkage or expansion percentages are average values. Shrinkage or expansion of individual pieces may vary.[6]

**6.2.6 Grade marking (grade stamping)–-** Grading rules that provide for grade marking of lumber less than nominal 5-inch thickness shall contain a provision for standardized marking so as to indicate whether the lumber was green or dry at time of dressing. The standardized mark shall be S-GRN if surfaced green, S-DRY if surfaced dry, or KD if kiln dried to a maximum moisture content of 19 percent at time of surfacing. Moisture-content limits of less than 19 percent maximum moisture-content for dry or kiln dried shall only be specified if included in rules certified by the Board. For lumber of nominal 5-inch or greater thickness, other moisture-content limits shall be specified only if included in rules certified by the Board.

[6] The range of shrinkage of individual pieces from experimental observation is from 2% to 7%. Variables that affect measurement and shrinkage of lumber are: density, species, grain orientation and allowable grade characteristics. See Forest Products Laboratory Research Reports 15 and 30.

## 6.3 Use classification provisions for visual grading

### 6.3.1 Yard lumber

**6.3.1.1 Grade classifications–-**The grading of surfaced yard lumber is based upon the uses for which the particular grade is designed and is applied to each kind with reference to its size and length when graded without consideration to further manufacture. On the basis of quality, the basic grade classifications of yard lumber shall be as follows:

**(a) Select:** Lumber for natural and paint finishes.

**(b) Common:** Lumber for general construction and utility purposes.

**6.3.1.2 Yard lumber sizes–-**The dressed thicknesses and widths of yard lumber as specified in 3.4, 5.1 and 5.2 shall be considered as minimum standards for the corresponding nominal sizes as shown.

*Note: Lumber of standard size, rough or dressed, may be described by its nominal dimension providing dressed sizes are shown on invoices and other documents.*

**6.3.1.3 Bundled lumber–-**Each length of bundled lumber, except end-matched lumber, beveled siding, and bungalow siding shall be bundled separately unless otherwise specified.

**6.3.1.4 Finish and boards–-**In shipments of rough finish/selects and boards, pieces 13 mm (1/2 inch) or greater than the nominal inch-unit thickness, such as are produced by uneven sawing, shall, at the option of the buyer, be rejected or be accepted as of the next lower grade.

**6.3.1.5 Grading faces–-**Yard lumber other than timbers and dimension [see 6.3.2.3] shall be graded from the face or best side only unless otherwise specified.

**6.3.1.6 Fencing** – Sawn boards used in the construction of fences may be square-top, dog-eared, square-edge or tongue and groove. The tolerance in sawing of such boards shall not exceed 1.6 mm (1/16 inch) over or under the invoice thickness.

**6.3.2 Structural lumber**

**6.3.2.1 Development of design values--** Design values contained in grading rules shall be developed in accordance with appropriate ASTM standards and other technically sound criteria. The National Institute of Standards and Technology, with the advice and counsel of the U.S. Forest Products Laboratory, shall be the final authority as to the appropriateness of such standards or criteria. The Board shall seek the assistance of the U.S. Forest Products Laboratory in reviewing design values set forth in grading rules and, in the case of each set of grading rules submitted for certification, the Board shall obtain a report from the Laboratory evaluating whether the procedures used in developing the claimed values are in accordance with the standards and criteria described herein. Rules-writing agencies shall make available upon request an explanation of the means by which the claimed values were derived. When more than one rules-writing agency has responsibility for writing grading rules for a given species, a group of species, or a geographical subdivision of a species or of a group of species, a common set of strength and stiffness values shall be used by the agencies involved for that species, subdivision, or group of species in the interest of uniformity and standardization.

**6.3.2.2 Grading--mechanical--**The grading of structural lumber by mechanical means is recognized as an acceptable method of grading. When graded by mechanical means all such grading equipment and methods shall be subject to approval and certification by the Board.

**6.3.2.3 Grading faces--**Timbers and dimension shall be graded from all four faces.

**6.3.3 Factory and shop lumber**

**6.3.3.1 Grade classification -** The grade classifications of factory and shop lumber shall be those promulgated by the agencies which formulate and publish grading rules and which have been certified by the Board.

**6.3.3.2 Grade characteristics--**Factory and shop lumber shall be graded with reference to its use for doors and sashes, or on the basis of characteristics affecting its use for general cutup purposes, or on the basis of size of cutting. Its grade shall be determined by the percentage of the area of each board or plank available in cuttings of specified or of given minimum size and qualities and shall be determined from the poor face based on the quality of both sides of each cutting.

**6.3.3.3 Grade sizes--** The ALS program grade sizes for factory and shop lumber shall be those promulgated by the agencies which formulate and publish grading rules and which have been certified by the Board.

**6.3.3.4 Warped lumber--**The cuttings in warped lumber shall be so laid out as to surface two sides to standard thickness and have straight edges parallel to the edges of the board or plank.

**7. GRADE MARKING (GRADE STAMPING)**

**7.1 Agency procedures--**Each accredited agency shall submit procedures with respect to grade marking to the Board for approval.

**7.2 Agency symbol--**Each accredited agency shall maintain a bona fide supervisory inspection service under which each mill authorized to use the registered symbol of the accredited agency[7] in conjunction with the grade mark will be in-

[7] Facsimiles of the grade marks of the grading and inspection agencies that are accredited by the Board of the ALSC, Incorporated, are available on the web at

spected regularly as to grading efficiency and conformity to all the agency established rules for grade marking.

**7.3 The Grade mark (grade stamp)--** When ALS program lumber is grade marked, the grade marking shall be subject to the following provisions:

**7.3.1** The grade mark shall signify that the lumber conforms to the size, grade and seasoning provisions of the rules under which it is graded. When green lumber of less than nominal 5-inch thickness is graded and grade marked under the applicable grading rules [see also 6.2.6], it shall comply with the green size requirements of such rules. If lumber is dressed to a size below the minimum size requirements shown in Tables 1-4 or below the minimum sizes set forth in the applicable grading rules, the mark shall show that size, and if less than of nominal 5-inch thickness, shall state whether the lumber was dry or green when dressed.

**7.3.2** A distinguishable mark or insignia, registered and symbolizing grading supervision by an accredited agency, shall be used in conjunction with the grade mark for each agency. Facsimiles of the grade marks of the grading and inspection agencies that are accredited shall be available to specifiers, purchasers and consumers.[8]

**7.3.3** All pieces and/or bundles of a given grade shall be grade marked. Bundled lumber is defined as a small number of boards or strips bound by some method, such as shrink wrap, string or similar binding, so as to form a small package.

**7.3.3.1** Except for bundled lumber, the mixing of grade marked and non-grade marked lumber in the same package shall not be permitted.

**7.3.4** Mixed grades, other than the two highest recognized grades for each grading rule category, shall not be grade marked with a combination grade designation.

**7.3.5** The grade mark for lumber shall include an identification or designation of the commercial name of the species [see Appendix A] from which the lumber was produced. The identification of species shall not be required when the agency symbol also indicates the species from which the lumber was produced. Where grading rules contain provisions for the grouping of species, each individual species included in a group shall be identified in the rules, and the grade mark shall include the designation assigned to the group.

**7.3.6** These provisions are not intended to preclude the inclusion of additional regulations by an agency regarding the use of its grade mark provided the basic provisions of this section are observed.

**7.3.7** Remanufacture (ripping, resawing or surfacing) of graded or grade marked lumber negates the grade or grade mark and the design values of the original product and the original grade mark shall be removed, by any appropriate means.

**7.3.7.1** When grade marked dimension lumber is resawn or remanufactured in such a way as to potentially alter the grade indicated by the grade mark, the original grade mark shall be obliterated.

## 8. INSPECTION AND REINSPECTION

### 8.1 Inspection

**8.1.1 Agency certification and supervision--**When ALS program lumber is grade

www.alsc.org or from the ALSC, Incorporated, P.O. Box 210, Germantown, MD 20875-0210. Telephone (301) 972-1700, Fax (301) 540-8004.

[8] Ibid.

marked, the grade marking shall be under the direction, including regular grading supervision at mills, of an agency accredited by the Board as being competent and having adequate facilities for such supervision.

**8.1.2 Delegation of grading authority--** Permission to grade mark shall be delegated only by an agency accredited by the Board to operate a mill supervisory service to those mills which have demonstrated and proven their ability to conform to and are currently in conformance with the grading rules for the species and grades which they manufacture. The mill shall also agree to maintain the established standards of size and grade and to submit its lumber to inspection by the supervisory agency both at the mill and upon complaint at destination.

**8.1.3 Payment--certificate costs--**When an accredited agency issues a certificate on a shipment, the party requesting the certificate shall pay for the cost thereof.

**8.1.4 Service--**Inspection service shall be required for the inspection of grades not described in the rules only when written detailed specifications accompany the request for such inspection. For the inspection of standard grades in nonstandard sizes, inspection service shall be required based on 6.1.6 unless otherwise prescribed in the contract of purchase and sale.

**8.2 Reinspection**

**8.2.1 General--**Subject to freedom of agreement between buyer and seller as to the settlement of complaints, the purchase, sale, or shipment of ALS program grades of lumber shall be construed as involving agreement to submit lumber to reinspection by an accredited inspection agency under published rules by which the lumber was graded [see 8.2.4]. Grading rules shall include provisions for reinspection in case of complaint, and reinspection shall be available to anyone at reasonable cost.

**8.2.2 Complaints--**Grade complaints on lumber shall be recognized only when the lumber is in the form in which it was shipped. Any subsequent change in manufacture, working, or through kiln-drying shall relieve the seller of responsibility for any grade complaints.

**8.2.3 Buyer's responsibilities--**In case of a complaint, the buyer shall accept that portion of the shipment that is of the grade, size, and moisture content specified and shall hold intact that portion which is disputed for inspection or reinspection. Any action on the part of the buyer in accepting and using such portion of the shipment that is of the grade, size, and moisture content specified shall not be construed as the acceptance of the entire shipment. The buyer shall hold the disputed lumber intact, properly protected, for not more than 30 days after the date of the request for inspection or reinspection. The buyer shall file a complaint with the seller within the time specified in 8.2.6 and 8.2.7. The buyer shall pay in accordance with the terms of the sale for that portion accepted, but acceptance of a part of a shipment does not prejudice the buyer's just claims that any unused lumber does not meet the specifications of the grade, size, or moisture content.

**8.2.4 Seller's responsibilities--**Upon receipt of a complaint from the purchaser, the seller shall immediately request the agency under whose rules shipment has been made, or such other agency that was agreed upon, to provide inspection, reinspection or retally as required according to the grading rules in effect at the time of execution of the contract.

**8.2.5 Cost and assistance--**The expense of such inspection, reinspection, or retally shall be borne in accordance with the inspection provisions of the applicable grading rules, but the person calling for the reinspection shall be responsible to the agency for the costs thereof. The purchaser shall lend all reasonable assistance to facilitate the inspection, reinspection or retally.

**8.2.6 Tally, grade, and size complaints--**In case of a complaint involving tally, the entire item shall be held intact for retally. In case of a complaint regarding grade or size, but not involving tally, the buyer shall hold intact that portion of the item that is of the grade or size which is in dispute for inspection and shall file complaint with the seller within 10 days of date of receipt of the shipment.

**8.2.7 Moisture content complaints--**In case of a complaint involving moisture content, the buyer shall inform the seller of the complaint within 72 hours after the lumber is unloaded. In such cases, the seller shall answer such complaint within 72 hours from receipt of complaint. A reinspection involving a complaint on moisture content shall be made in accordance with the provisions of the applicable grading rules. Each piece shall be tested for moisture content, and separation shall be made of all pieces conforming to the maximum allowable moisture content from any portion exceeding such maximum.

**8.2.8 Reinspection results--**Each item of a shipment shall be considered as of the grade invoiced if, upon reinspection under the grading rules under which the lumber was graded and sold, 95 percent or more thereof is found to be of said grade or better. When degrades in grade or moisture content or both are in excess of 5 percent of the board footage of each item, or when they are more than one grade lower than the grade invoice, such degrades shall be kept separate and shall be the property of the seller unless otherwise agreed. These provisions shall not apply in the case of specially worked lumber.

## 9. AMERICAN LUMBER STANDARD COMMITTEE

**9.1 Functions of ALSC--**The functions of the ALSC shall be:

**9.1.1** To act as the Standing Committee for the purpose of considering proposals for future revisions of or amendments to this Standard. When acting as the Standing Committee, the procedures for the development of Voluntary Products Standards of the US Department of Commerce shall be applicable. The Department of Commerce shall provide the secretariat and appoint a chairman for the Standing Committee.

**9.1.2** To cooperate with the U.S. Department of Commerce in establishing and making continuously available basic standards for lumber size, pattern, quality, inspection, and reinspection for use by industry and trade.

**9.1.3** To determine the criteria by which the Board shall adjudge and approve the following as being in conformance with this Standard:

**9.1.3.1** Any published rules.

**9.1.3.2** The competency, reliability, and adequacy of the facilities provided by agencies publishing grading rules for the purpose of lumber certification, inspection, reinspection, and supervision of grade marking.

**9.1.3.3** The competency, reliability, and adequacy of the facilities provided by non-rules writing agencies participating in this program that do not publish grading rules.

**9.1.4** To advise the Board with respect to the interpretation or application of this Standard and the detailed requirements defined and established by the ALSC.

**9.1.5** To fix, after consultation with the agencies participating in the use of its facilities, such charges and fees as the ALSC finds to be necessary to cover the actual cost, including reserves and provisions for contingencies, of carrying out its functions, those of the Board, and the NGRC. Such charges and fees shall be assessed at a uniform proportionate rate against the agencies par-

ticipating in the use of the facilities of the ALSC. The accreditation of any agency not paying its assessment within 60 days after notification by the Secretary of the ALSC shall be revoked by the Board.

**9.2 Appointment of members** - The principal and alternate members shall be appointed by the Secretary of Commerce for terms of not less than two nor more than five years.

**9.3 Composition of ALSC--**The following procedures shall apply in making appointments to the ALSC.

**9.3.1** A rules-writing agency is one that participates in this program and that formulates, publishes, and maintains grading rules and maintains inspection facilities covering the various lumber species. Each rules-writing agency may nominate a principal and alternate for each member allotted to that agency. Principal members and their alternates shall be appointed from the nominees furnished by each agency as follows:

| *Agency* | *Members Allotted* |
|---|---|
| Southern Pine Inspection Bureau | 2 |
| Western Wood Products Association | 2 |
| West Coast Lumber Inspection Bureau | 2 |
| Redwood Inspection Service | 1 |
| Northeastern Lumber Manufacturers Association | 1 |
| Northern Softwood Lumber Bureau | 1 |
| National Lumber Grades Authority | 1 |
| Each other agency qualifying under this category | 1 |

**9.3.2** A non-rules writing agency is one that participates in this program and that does not publish grading rules. Each non-rules writing agency may nominate a principal and alternate member. Three principal members and their alternates shall be appointed from among the nominees so furnished.

**9.3.3** Firms or organizations within lumber specifying, distributing, and consuming groups, at the request of the Secretary of Commerce, may nominate a principal and an alternate for each member allotted. Principal members and their alternates shall be appointed from those groups as follows:

| *Groups* | *Members Allotted* |
|---|---|
| Lumber Distributors & Wholesalers | 2 |
| Lumber Retailers | 2 |
| Wood Using Industries | 2 |
| General Contractors | 1 |
| Home Builders | 1 |
| Architects | 1 |
| Engineers | 1 |
| Wood Treating Industry | 1 |

**9.3.4** The Secretary of Commerce may appoint consumer-at-large principal members and their alternates to represent the general public.

**9.3.5** Each nomination shall be submitted to the Secretary of Commerce by the appropriate agency, firm, or organization upon request or whenever a vacancy occurs in the segment represented. Each nomination shall contain the following:

**9.3.5.1** A summary of the qualifications of the nominee.

**9.3.5.2** A statement of the method or procedure by which the nominee was selected and the procedures under which the nominee will exercise the responsibility of membership for the agency or industry segment represented.

**9.3.5.3** A statement of any interests, financial or otherwise, which the nominee has in agencies or segments of the industry other than the one the nominee represents.

**9.3.5.4** For agencies submitting more than one nominee, a listing in the order of priority for appointment.

**9.3.6** Ex officio, non-voting principal and alternate members may be appointed by the Secretary of Commerce from the following Federal agencies:

Department of Defense
Department of Agriculture
Department of Interior
General Services Administration
Department of Housing & Urban Development
National Institute of Standards & Technology

**9.3.7 Balance of representation -** Upon request, the Secretary of Commerce may consider making changes in the constitution of the ALSC or making additional appointments to ensure that the ALSC has a balance of interest and is not dominated by a single interest category. In such considerations, the Secretary of Commerce shall consult the ALSC for advice regarding balance and the criteria by which it may be determined.

**9.4 ALSC secretary--**Except as provided in 9.1.1, the manager or executive officer of the Board, employed as provided in 10.5, shall serve as the Secretary of the ALSC.

**9.5 Transaction of business**

**9.5.1 Meetings--**A majority of the members of the ALSC representing agencies which formulate, publish, and maintain grading rules and maintain inspection facilities, together with a majority of the other members, shall constitute a quorum for the transaction of business. A vote of the majority of those present shall decide any question that comes before a meeting; but if at any meeting of the ALSC there shall be less than a quorum present, a majority of those present shall adjourn the meeting or act on the subjects before it, subject to ratification in writing by the respective majorities which constitute a quorum.

**9.5.2 Correspondence--**Business that has not been previously presented at a meeting of the ALSC shall be held until the next meeting or transacted by correspondence in accordance with rules to be established by the ALSC.

**10. BOARD OF REVIEW**

**10.1 Autonomy of Board--**The Board shall be an autonomous body functioning under by-laws approved by the ALSC and consistent with Section 10.

**10.2 Composition, election, terms, compensation, and removal -** The Board shall be composed of three members, none of whom shall be members of the ALSC or affiliated with an accredited agency or any member of an accredited agency.

**10.2.1** The chairman of the ALSC shall appoint a spokesperson for each of the three membership groups within the ALSC that shall each nominate one potential member of the Board. The spokesperson shall determine and report the decision of the group to the Chairman along with a summary of the qualifications of the nominee and a statement of any interests, financial or otherwise, which the nominee has in the lumber industry. Board members shall be nominated as follows:

**10.2.1.1** One member by majority decision of those ALSC members representing the accredited rules-writing agencies.

**10.2.1.2** One member by majority decision of those members representing the accredited non-rules-writing lumber inspection agencies.

**10.2.1.3** One member by majority decision of those remaining ALSC members representing other interests.

**10.2.1.4** The name of the nominee shall be submitted to the Department of Commerce prior to

election and shall be accompanied by a summary of the qualifications of the nominee and an attestation that the requirements of 10.2 and 10.2.1 have been met.

**10.2.2 Election--**Board members shall be elected by the members of the ALSC by a majority of those voting. In the event that a nominee designated under 10.2.1.1, 10.2.1.2 or 10.2.1.3 fails to receive a majority of the votes cast at any election, a new nominee shall be designated in accordance with the procedure set forth in 10.2.1.1, 10.2.1.2 or 10.2.1.3.

**10.2.3 Terms--**The three members of the Board shall be elected for terms, respectively, of three years, two years, and one year, or until their successors are duly elected. Annually thereafter, one member shall be elected for a term of three years or until a successor is duly elected. Vacancies on the Board by reason of death, resignation, or removal shall be filled at any regularly called committee meeting subject to the provisions of 10.2.1, 10.2.2 and 9.5.2. Any person elected to fill a vacancy shall serve the unexpired term of the predecessor.

**10.2.4 Compensation--**The ALSC shall fix and pay compensation to the members of the Board and shall reimburse them for all reasonable expenses incurred in fulfilling their duties.

**10.2.5 Removal--**The removal of any Board member shall require a vote of not less than two-thirds of all the members of the ALSC, with the concurrence of the Department of Commerce.

**10.3 Board manager--**The Board shall select and employ a salaried manager or other executive officer, subject to the approval of the ALSC, who shall assume the responsibilities and perform the duties delegated by the ALSC or the Board. Such manager or executive officer shall not be in the employment of any lumber organization, company, or inspection agency while employed by the Board.

**10.4 Certification functions--**Upon application, the Board shall examine and certify the following as conforming to the requirements of this Standard and to additional detailed requirements established by the ALSC: Grade strength ratios, nomenclature, descriptions of grades published by the NGRC and grading rules published by accredited, competent and reliable agencies having adequate facilities for mill inspection and for reinspection of lumber (provided that no such rules for any species in any region shall be certified if certified published rules and service applicable thereto are adequate and already fully and fairly available to all manufacturers, distributors, and consumers of such lumber, on equal terms and conditions without discrimination). Certification shall be subject to these conditions:

**10.4.1** Rules conform to the basic requirements of this Standard.

**10.4.2** Published rules carry specific references to such certification.

**10.4.3** The originating agency shall make the rules fully and fairly available to all manufacturers, distributors, users, and consumers of lumber on equal terms and conditions and without discrimination.

**10.4.4** Subsequent revisions made by the promulgating agency to grading rules that have been certified by the Board shall be acted upon within 90 days after submission to the Board.

**10.4.5** Grading rules of an agency shall not be certified as conforming to this Standard if the Board determines the dimension lumber rules therein fail to conform to the provisions of the National Grading Rule for dimension lumber established pursuant to Section 11 of this Standard.

**10.5 Accreditation functions--**Upon application, the Board shall examine and accredit rules-writing agencies and non-rules-writing

agencies as conforming to the requirements of this Standard and to additional requirements established by the ALSC. Accreditation shall be subject to these conditions:

**10.5.1** The competency, reliability, and adequacy of the facilities provided by agencies participating in this program for the purposes of lumber certification, inspection, reinspection, or supervision of grade marking.

**10.5.2** The adequacy of the procedure followed in authorizing mills to grade mark when providing adequate supervisory service.

**10.5.3** The continuing conformance of grading rules to this Standard.

**10.5.4** The continuing competency and adequacy of performance of agencies.

**10.6 Withdrawal of accreditation--**If at any time the practices of any accredited agency are found not in conformity with this Standard and other requirements adopted by the ALSC, and if, after due notice in writing to that effect, according to established procedures, those practices shall not have been brought into conformity with such standards and other requirements by the agency concerned, the Board is empowered to revoke all previous accreditation granted that agency.

**10.7 Actions of Board--**In all actions in relation to the certification of grading rules, accreditation of agencies and inspection facilities, and grade marking practices, the Board shall proceed in a fair and nondiscriminatory manner giving full and due consideration to the past experience and performance of agencies seeking accreditation, and shall apply uniform standards of judgment in making all determinations. In the matter of inspection agencies, definite requirements as to the integrity, competency and adequacy of the agency, and the adequacy of its facilities shall be established, but all such requirements shall be uniformly applied with respect to all agencies seeking accreditation from the Board. No inspection agency that is controlled by any person or firm whose own products are subject to its inspection and certification shall be accredited. Inspection services furnished by buyers and users for inspection of their own purchases shall not be accredited by the Board.

**10.8 Availability of Board--**The facilities of the Board shall be available at all times on equal terms to any affected party. The Board's facilities shall also be available to all lumber inspection agencies, without favor or discrimination and without any requirement for joining or otherwise subscribing to any trade association or supporting any service or activity other than those of grading, standardization, grade marking, and inspection that fall within the jurisdiction of the Board.

**10.9 Enforcement--**The Board shall adopt, subject to prior approval by the ALSC, and administer rules, regulations, and sanctions to ensure the continued competency, reliability, and integrity of accredited agencies providing inspection services.

**10.10 Board hearings--**Any party affected by a decision or action of the Board shall have the right to require the Board to hold a hearing at which such party may appear personally or be represented by counsel to present supporting evidence and argument of the party's position in accordance with procedures established by the Board.

**10.11 Reports of action--**The Board shall within 30 days following an official action make such official action public.

## 11. NATIONAL GRADING RULE COMMITTEE

**11.1 Autonomy of NGRC--**The National Grading Rule Committee (NGRC) shall be an autonomous body functioning under by-laws (provid-

ing, among other things, for the appointment of subcommittees) approved by the ALSC. The by-laws shall be reviewed at least every 5 years and reaffirmed or revised, as appropriate.

**11.2 Functions of the NGRC–**The NGRC shall establish, maintain, and make fully and fairly available grade-strength ratios, nomenclature, and descriptions of grades for dimension lumber conforming to this Standard. Grading rules of an agency shall not be certified as conforming to this Standard if the Board determines that the dimension lumber rules therein fail to conform to the provisions of the National Grading Rule for dimension lumber established pursuant to this section.

**11.3 Composition of NGRC–**In the interest of obtaining balanced views, the NGRC shall be composed of persons representing the following that desire to participate:

| *Organization* | *Number of Members* |
|---|---|
| Southern Pine Inspection Bureau | 2 |
| Western Wood Products Association | 2 |
| West Coast Lumber Inspection Bureau | 2 |
| Redwood Inspection Service | 1 |
| Northeastern Lumber Manufacturers Association, Inc. | 1 |
| Northern Softwood Lumber Bureau | 1 |
| International Code Council | 1 |
| National Fire Protection Association | 1 |
| National Association of Home Builders | 1 |
| Canadian Inspection Agencies | 1 |
| American Society of Civil Engineers | 1 |
| American Institute of Architects | 1 |
| Consumer Organizations | 1 |
| Lumber Wholesalers | 1 |
| Lumber Retailers | 1 |
| U.S. Non-rules Writing Agencies | 2 |

Ex officio, non-voting members shall be appointed from the following Federal agencies that desire to participate:

| | |
|---|---|
| Department of Housing and Urban Development | 1 |
| Defense Logistics Agency | 1 |
| Forest Products Laboratory | 1 |
| National Institute of Standards and Technology | 1 |

**11.4 Appointment of members and chairman–**Members of the NGRC shall be competent in the field of lumber technology. Every five years each organization or group of organizations desiring to participate and entitled to representation shall appoint a principal member and alternate for each member to which it is entitled. The ALSC shall appoint the principal member and alternate representing consumer organizations. The Chairman of the NGRC shall be elected every 5 years by the NGRC from among its members.

**11.5 Transaction of business**—A majority of members representing rules-writing agencies and a majority of the other members shall constitute a quorum to conduct business. Each member shall have one vote. The majority vote of those present and voting at a meeting shall prevail.

## 12. REFERENCES

### 12.1 ASTM Standards[9]

D9-12 *Standard Terminology Relating to Wood and Wood Based Products*

D1165-13 *Standard Nomenclature of Commercial Hardwoods and Softwoods*

[9] ASTM Standards are available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19248-2959; telephone (610) 832-9500; www.astm.org.

D4444-13 *Standard Test Methods for Laboratory Standardization and Calibration of Hand-Held Moisture Meters*

SI10-02 IEEE/ASTM SI 10 *American National Standard for Use of the International System of Units (SI): The Modern Metric System*

### 12.2 Other publications

Little, Elbert, Jr., *Checklist of United States Trees (Native and Naturalized)*, Agriculture Handbook No. 541, Forest Service, U.S. Department of Agriculture, Washington DC 20090-6090, 1979.

## APPENDIX A COMMERCIAL NAMES OF THE PRINCIPAL SOFTWOOD SPECIES

The commercial names listed below are intended to provide a correlation between commercial names for lumber and the botanical names of the species from which the lumber is to be manufactured. In some instances more than one species is associated with a single commercial name. For stress-graded lumber, the species to be associated with a commercial name will be determined in accordance with 6.3.2.1. These commercial names are to be used in grading rule descriptions and in specifications [see 2.15]. The provisions of this Standard apply to lumber manufactured from hardwood species or lumber manufactured from foreign species when the species is included in rules certified by the Board of Review. The information contained herein is a partial list of commercial names of the principal softwood species and species groups. Additional species and species groups are provided in ASTM Standard D 1165-13 and the rules certified by the Board of Review.

| *Commercial Species or Species Group Names*[10] | *Official Common Tree Names*[11] | *Botanical Names* |
|---|---|---|
| **CEDAR:** | | |
| Alaska Cedar | Alaska-cedar | *Chamaecyparis nootkatensis* |
| Incense Cedar | incense-cedar | *Libocedrus decurrens* |
| Port Orford Cedar | Port-Orford-cedar | *Chamaecyparis lawsoniana* |
| Eastern Red Cedar | eastern redcedar | *Juniperus virginiana* |
| | southern redcedar | *J. silicicola* |
| Western Red Cedar | western redcedar | *Thuja plicata* |
| Northern White Cedar | northern white-cedar | *T. occidentalis* |
| Southern White Cedar | Atlantic white-cedar | *Chamaecyparis thyoides* |
| **CYPRESS**[12] | | |
| Baldcypress | baldcypress | *Taxodium distichum* |
| Pond cypress | pond cypress | *T. distichum var. nutans* |
| **FIR:** | | |
| Balsam Fir[13] | balsam fir | *Abies balsamea* |
| Fraser Fir | Fraser fir | *A. fraseri* |
| Douglas Fir[14] | Douglas-fir | *Pseudotsuga menziesii* |

[10] The commercial names for species represent those commonly accepted. Some grading rules certified by the Board provide for the inclusion of additional species under the established names.

[11] The official common tree names conform to the *Checklist of United States Trees (Native and Naturalized)*, Agriculture Handbook No. 541 (1979), and are sometimes used as names for lumber. In addition to the official common names for a species, the Handbook lists other names by which the species and the lumber produced from it are sometimes designated.

[12]Cypress includes types designated as Red Cypress, White Cypress, and Yellow Cypress. Red Cypress is frequently classified and sold separately from the other types.

[13] Balsam fir lumber is sometimes designated either as Eastern fir or as Balsam.

[14] Douglas fir from Arizona, Colorado, Nevada, New Mexico and Utah is recognized as Douglas fir-South.

| *Commercial Species or Species Group Names*[8] | *Official Common Tree Names*[9] | *Botanical Names* |
|---|---|---|
| **FIR (continued)** | | |
| Bigcone Douglas fir | Bigcone Douglas fir | *P. macrocarpa* |
| Noble Fir | noble fir | *Abies procera* |
| Alpine Fir | subalpine fir (alpine fir) | *A. lasiocarpa* |
| California Red Fir | California red fir | *A. magnifica* |
| Grand Fir | grand fir | *A. grandis* |
| Pacific Grand Fir | Pacific silver fir | *A. amabilis* |
| White Fir | white fir | *A. concolor* |
| | | |
| **HEMLOCK:** | | |
| Carolina Hemlock | Carolina hemlock | *Tsuga caroliniana* |
| Eastern Hemlock | eastern hemlock | *T. canadensis* |
| Mountain Hemlock | mountain hemlock | *T. mertensiana* |
| Western Hemlock | western hemlock | *T. heterophylla* |
| | | |
| **JUNIPER:** | | |
| Western Juniper | alligator juniper | *Juniperus deppeana* |
| | Rocky Mountain juniper | *J. scopulorum* |
| | Utah juniper | *J. osteosperma* |
| | western juniper | *J. occidentalis* |
| | | |
| **LARCH:** | | |
| Western Larch | western larch | *Larix occidentalis* |
| | | |
| **PINE:** | | |
| Bishop Pine | Bishop pine | *Pinus muricata* |
| Digger Pine | Digger pine | *P. sabiniana* |
| Knobcone Pine | knobcone pine | *P. attenuata* |
| Coulter Pine | Coulter pine | *P. coulteri* |
| Jeffrey Pine | Jeffrey pine | *P. jeffreyi* |
| Jack Pine | jack pine | *P. banksiana* |
| Limber Pine | limber pine | *P. flexilis* |
| Lodgepole Pine | lodgepole pine | *P. contorta* |
| Norway Pine | red pine | *P. resinosa* |
| Pitch Pine | pitch pine | *P. rigida* |
| Ponderosa Pine | ponderosa pine | *P. ponderosa* |
| Radiata/Monterey Pine | Monterey pine | *P. radiata* |
| Sugar Pine | sugar pine | *P. lambertiana* |
| Whitebark Pine | whitebark pine | *P. albicaulis* |
| Idaho White Pine | western white pine | *P. monticola* |
| Northern White Pine | eastern white pine | *P. strobus* |

| *Commercial Species or Species Group Names*[8] | *Official Common Tree Names*[9] | *Botanical Names* |
|---|---|---|
| **PINE (continued)** | | |
| Longleaf Pine[15] | longleaf pine | *P. palustris* |
| | slash pine | *P. elliottii* |
| Southern Pine (Major) | loblolly pine | *P. taeda* |
| | longleaf pine | *P. palustris* |
| | shortleaf pine | *P. echinata* |
| | slash pine | *P. elliottii* |
| Southern Pine (Minor) | pond pine | *P. serotina* |
| | Virginia pine | *P. virginiana* |
| | sand pine | *P. clausa* |
| | spruce pine | *P. glabra* |
| **REDWOOD:** | | |
| Redwood | redwood | *Sequoia sempervirens* |
| **SPRUCE:** | | |
| black spruce | black spruce | *Picea mariana* |
| red spruce | red spruce | *P. rubens* |
| white spruce | white spruce | *P. glauca* |
| Blue Spruce | blue spruce | *P. pungens* |
| Engelmann Spruce | Engelmann spruce | *P. engelmannii* |
| Sitka Spruce | Sitka spruce | *P. sitchensis* |
| Norway Spruce | Norway spruce | *P. abies* |
| **TAMARACK:** | | |
| Tamarack | tamarack | *Larix laricina* |
| **YEW:** | | |
| Pacific Yew | Pacific yew | *Taxus brevifolia* |

[15] The commercial requirements for Longleaf Pine lumber are that not only must it be produced from trees of the botanical species of *Pinus elliottii* and *Pinus palustris*, but each piece in addition must average either on one end or the other not less than six annual rings per inch and not less than one-third summerwood. Longleaf Pine lumber is sometimes designated as Pitch Pine in the export trade.

## APPENDIX B DEFINITIONS OF TERMS USED IN DESCRIBING STANDARD GRADES OF LUMBER

**B1.** IEEE/ASTM SI 10-2002 was used as the authoritative standard in developing the metric dimensions found in this Standard. Metric dimensions are calculated at 25.4 millimeters (mm) times the dressed dimension in inches. The nearest mm is significant for dimensions greater than 1/8 inch, and the nearest 0.1 mm is significant for dimensions equal to or less than 1/8 inch.

The rounding rule for dimensions greater than 1/8 inch: if the digit in the tenths of mm position (the digit after the decimal point) is less than 5, drop all fractional mm digits; if greater than 5 or it is 5 followed by at least one non-zero digit, round one mm higher; if 5 followed by only zeroes, retain the digit in the unit position (the digit before the decimal point) if it is even or increase it one mm if it is odd.

The rounding rule for dimensions equal to or less than 1/8 inch: if the digit in the hundredths of mm position (the second digit after the decimal point) is less than 5, drop all digits to the right of the tenths position; if greater than 5 or it is 5 followed by at least one non-zero digit, round one-tenth mm higher; if 5 followed by only zeros, retain the digit in the tenths position if it is even or increase it one-tenth mm if it is odd.

CAUTION: Use great care when converting board feet, based on NOMINAL cross-sectional dimensions, to cubic meters of lumber, based on DRESSED cross-sectional dimensions. This is explained on page 32 of the IEEE/ASTM SI 10-2002 by the following note: "(9) No conversion is given for "board foot" because "board foot" is not a well-defined unit of volume. Calculation of the number of board feet in a piece of lumber is based on the nominal dimensions of the cross section."

Unfortunately, many older handbooks and dictionaries and some current references still contain erroneous or vague information about volume conversions to SI metric. The amount of dressing can also affect the cross-sectional dimensions. Therefore, use extra care when making conversions from NOMINAL board foot to actual cubic meters.

In case of a dispute on size measurements, the conventional (inch) method of measurement shall take precedence.

**B2. Definitions of terms used in describing standard grades of lumber:**

***air dried*--**seasoned by exposure to the atmosphere, in the open or under cover, without artificial heat.

***all-heart*--**of heartwood throughout; that is, free of sapwood.

***annual ring*--**denotes the amount of growth for a tree in a single year.

***bark pocket*--**patch of bark partially or wholly enclosed in the wood. Classified by size the same as pitch pockets.

***bevel siding***—a board that has been resawn diagonally to be used to clad the exterior of a building.

- ***rabbeted bevel siding***—bevel siding with a rabbeted joint milled on the reverse of the thick edge to facilitate alignment of pieces.

***blemish*--**anything marring the appearance of lumber.

***bow*--see WARP.**

***boxed heart*--**with the pith enclosed in the piece.

***bright*--**unstained.

***burl*--**a distortion of grain, usually caused by abnormal growth due to injury of the tree. The effect of burls is assessed in relation to knots.

***ceiling*-**a piece of patterned, tongue and grooved lumber, used to cover the ceiling of a room, porch or other partially enclosed areas.

***check*--**a separation of the wood normally occurring across or through the annual rings and usually as a result of seasoning.

- ***roller check*--**a crack in the wood structure caused by a piece of cupped lumber being flattened in passing between the machine rollers.
- ***surface check***--a separation that occurs on a face of a piece.
- ***small check*--**not over 0.8 mm (1/32 inch) wide or 102 mm (4 inch) long.
- ***medium check*--**not over 0.8 mm (1/32 inch) wide or 254 mm (10 inch) long.
- ***large check*--**over 0.8 mm (1/32 inch) wide or longer than 254 mm (10 inch) or both.
- ***through check*--**a separation that extends from one surface of a piece to the opposite or adjoining surface.

***chipped grain*--**a barely perceptible irregularity in the surface of a piece caused when particles of wood are chipped or broken below the line of cut. It is too small to be classed as torn grain and is not considered unless in excess of 25 percent of the surface involved.

***chip marks*--**shallow depressions or indentations on or in the surface of dressed lumber caused by shavings or chips getting embedded in the surface during dressing.

- ***very light chip marks*--**not over 0.4 mm (1/64 inch) deep.
- ***light chip marks*-**not over 0.8 mm (1/32 inch) deep.
- ***medium chip marks*--**not over 1.6 mm (1/16 inch) deep.
- ***heavy chip marks*--**not over 3.2 mm (1/8 inch) deep.

***clear*--**free or practically free of all blemishes, characteristics, or defects.

***compression wood*--**abnormal wood that forms on the underside of leaning and crooked coniferous trees. It is characterized, aside from its distinguishing color, by being hard and brittle and by its relatively lifeless appearance. Compression wood shall be limited in effect to other appearance or strength reducing characteristics permitted in the grade.

***corner*--**the intersection of two adjacent faces.

***crook*--**see WARP.

***cross break*--**separation of the wood across the width.

***crosscutting*--**cutting with a saw across the width.

***cup*--see WARP.**

***cutting*--**resulting pieces after crosscutting and/or ripping.

***decay (unsound wood)*--**a disintegration of the wood substance due to action of wood-destroying fungi, and is also known as dote or rot.

- ***advanced decay*--**an older stage of decay in which disintegration is recognized because the wood has become punky, soft, spongy, stringy, shaky, pitted, or crumbly. Decided discoloration or bleaching of the rotted wood is often apparent.

***heart center decay*--**a localized decay developing along the pith in some species and is detected by visual inspection. Heart center decay develops in the living tree and does not progress further after the tree is cut.

***honeycomb*--**similar to white specks but the pockets are larger. Where permitted in the grading rules, it is so limited that it has no more effect on the intended use of the piece than other characteristics permitted in the same grade. Pieces containing honeycomb are no more subject to decay than pieces which do not contain it.

***incipient decay*--**an early stage of decay in which disintegration of the wood fibers has not proceeded far enough to soften or otherwise change the hardness of the wood perceptibly. It is usually accompanied by a slight discoloration or bleaching of the wood.

***peck*--**channeled or pitted areas or pockets found in cedar and cypress. Wood tissue between pecky areas remains unaffected in appearance and strength. All further growth of the fungus causing peckiness ceases after the trees are felled.

***pecky*--**characterized by PECK

***pocket rot*--**decay which appears in the form of a hole, pocket, or area of soft rot, usually surrounded by apparently sound wood.

***water soak or stain*--**water-soaked area in heartwood, usually interpreted as the incipient stage of certain wood rots.

***white specks*--**small white or brown pits or spots in wood caused by the fungus *Fomes pini*. It develops in the living tree and does not develop further in wood in service. Where permitted in grading rules, it is so limited that it has no more effect on the intended use of the pieces than other characteristics permitted in the same grade. Pieces containing white speck are no more subject to decay than pieces which do not contain it.

***degrades*--**pieces which on reinspection prove of lower quality than the grade in which they were shipped.

***diagonal grain*--**a deviation in the slope of grain caused by sawing at an angle with the bark of the tree. See SLOPE OF GRAIN.

***dry*--** lumber of less than nominal 5-inch thickness which has been seasoned or dried to a maximum moisture content of 19 percent. Lumber of nominal 5-inch or greater in thickness (timbers) is often manufactured and sold without drying. When the maximum moisture content is specified for lumber of nominal 5-inch or greater thickness, it shall be in accordance with the provisions of the applicable lumber grading rules certified by the Board, which for some species defines dry lumber as having a maximum moisture content higher than 19 percent [see 2.7].

***eased edge*--**slightly rounded surfacing on pieces of lumber to remove sharp corners. *Note: Lumber nominal 4 inch or less in thickness is frequently shipped with eased edges unless otherwise specified.*

***edge*--either** : 1) the narrow face of rectangular-shaped pieces, or 2) the corner of a piece at the intersection of two longitudinal faces, or 3) in stress grades, that part of the wide face nearest the corner of the piece.

***edge grain (EG) [vertical grain (VG)] [rift grain]*--**a piece or pieces sawn at approximately right angles to the annual growth rings so that the rings form an angle of 45 degrees or more with the surface of the piece.

***equilibrium moisture content*** – the moisture content at which wood neither gains nor loses moisture when surrounded by air at a given relative humidity and temperature.

***finish***-a high-quality piece of lumber graded for appearance, often used for interior trim or cabinet work.

***firm red heart***--a stage of incipient decay characterized by a reddish color in the heartwood which does not render the wood unfit for the majority of yard purposes.

***flat grain (FG) [slash grain (SG)]***--a piece or pieces sawn approximately parallel to the annual growth rings so that all or some of the rings form an angle of less than 45 degrees with the surface of the piece.

***flooring***-a tongue and grooved piece of lumber typically used as a finished floor.

***f.o.h.c. (free of heart centers)***--without pith (side cut). An occasional piece, when showing pith for not more than 1/4 the length on the surface, shall be accepted.

***free of wane***--without wane but with either eased or square edges. (see WANE)

***grain***--the fibers in wood and their direction, size, arrangement, appearance, or quality.

***green***--lumber of less than nominal 5-inch thickness, which has a moisture content in excess of 19 percent. For lumber of nominal 5-inch or greater thickness (timbers), green shall be defined in accordance with the provisions of the applicable lumber grading rules certified by the Board [See 2.11].

***gum pocket***--an opening between growth rings which contains or has contained resin, or bark, or both.

***gum seam***--check or shake filled with gum.

***gum spot***--an accumulation of gumlike substance occurring as a small patch. Often occurs in conjunction with a bird-peck or other injury to the growing wood.

***gum streak***--a well-defined accumulation of gum in more or less regular streak. Classified as pitch streaks.

***heart center***--the pith or center core of the log.

***heart face***--face side free of sapwood.

***heart shake***--see SHAKE--PITH SHAKE.

***heartwood***--the inner core of the tree trunk comprising the annual rings containing nonliving elements. In some species, heartwood has a prominent color different from sapwood. Heartwood and sapwood of equivalent character are compared as follows:

***with regard to strength***, heartwood and sapwood are equal. No requirement of heartwood is made when strength alone is the governing factor.

***with regard to durability,*** heartwood is more durable than sapwood. When wood is to be exposed to decay-producing conditions without preservative treatment, it is permissible to specify the minimum percentage of heartwood to be present in all pieces of lumber in a shipment.

***with regard to preservatives,*** sapwood takes preservative treatment more readily than heartwood.

***hit-and-miss***--a series of skips not over 1.6 mm (1/16 inch) deep with surfaced areas between.

***hit-or-miss***--lumber that is completely or partly surfaced or entirely rough with a maximum scantness of 1.6 mm (1/16 inch).

***holes***--openings that either extend partially or wholly through a piece. An alternate designation for holes which extend only partially through a piece is surface pits. Holes are classified by size as follows:

***pin hole***--not over 1.6 mm (1/16 inch) in diameter.

***medium hole***--(small hole) not over 6 mm (1/4 inch) in diameter.

***large hole*--**not over 25 mm (1 inch) in diameter.

***very large hole*--**over 25 mm (1 inch) in diameter.

***kiln-dried***--seasoned in a chamber by means of artificial heat.

***knife marks*--**the imprints or markings of the machine knives on the surface of dressed lumber.

***very slight knife marks*--**marks that are visible only from a favorable angle and are perfectly smooth to the touch.

***slight knife marks*--**marks that are readily visible but evidence no unevenness to the touch.

***knot*--**a portion of a branch or limb that has become incorporated in a piece of lumber. In lumber, knots are classified as to form, size, quality, and occurrence.

***knot form--***

***oval knot*--**produced when the limb is cut at slightly more than a right angle to the long axis.

***round knot*--**produced when the limb is cut at approximately right angles to its long axis.

***spike knot*--**produced when the limb is cut either lengthwise or diagonally.

***knot size--***

***pin knot*--**not over 13 mm (1/2 inch) in diameter.

***small knot*--**not over 19 mm (3/4 inch) in diameter.

***medium knot*--**not over 38 mm (1-1/2 inch) in diameter.

***large knot*--**over 38 mm (1-1/2 inch) in diameter.

***knot quality--***

***black knot*--**results from a dead branch which the wood growth of the tree has surrounded.

***decayed knot*--**softer than the surrounding wood, and containing advanced decay.

***encased knot*--**not intergrown with the annual rings of the surrounding wood.

***firm knot***-solid across its face but contains incipient decay.

***fixed knot*--**retains its place in dry lumber under ordinary conditions but is movable under pressure though not easily pushed out.

***hollow knot*--**a sound knot containing a hole greater than 6 mm (1/4 inch) in diameter. The through opening of a hollow knot is limited to the size of other holes permitted.

***intergrown knot***—a knot whose annual rings are partially or completely intergrown on one or more faces with the annual rings of the surrounding wood.

***loose knot*--**not firmly fixed; a knot not held tightly in place by growth, shape, or position.

***pith knot*--**sound in all respects except it contains a pith hole not over 6 mm (1/4 inch) in diameter.

***red knot*--**knot that results from a live branch grown in the tree and is intergrown with the surrounding wood.

***sound knot***--contains no decay.

***star-checked knot*--**has radial checks.

***tight knot*--**so fixed by growth, shape, or position that it retains its place in the piece.

***unsound knot***--contains decay.

***water-tight knot*--**has annual rings completely intergrown with those of the surrounding wood on one surface of the piece, and it is sound on that surface.

***knot occurrence--***

***branch knots*--**two or more divergent knots sawed lengthwise and tapering toward the pith at a common point.

***corner knot*--**located at the intersection of adjacent faces.

***knot cluster***--two or more knots grouped together as a unit with the fibers of the wood deflected around the entire unit. A group of single knots is not a knot cluster.

***single knot*--**occurs by itself. The fibers of the wood being deflected around it.

***loosened grain*--**a grain separation or loosening between springwood and summerwood without displacement.

***very light loosened grain*--**not over 0.4 mm (1/64 inch) separation.

***light loosened grain*--**not over 0.8 mm (1/32 inch) separation.

***medium loosened grain*--**not over 1.6 mm (1/16 inch) separation.

***heavy loosened grain*--**not over 3.2 mm (1/8 inch) separation.

***very heavy loosened grain*--**over 3.2 mm (1/8 inch) separation.

***lumber*--**Lumber is defined as a manufactured product derived from a log through sawing or planing.

***machine bite*--**a depressed cut of the machine knives at the end of a piece.

***very light machine bite*--**not over 0.4 mm (1/64 inch) deep.

***light machine bite*--**not over 0.8 mm (1/32 inch) deep.

***medium machine bite*--**not over 1.6 mm (1/16 inch) deep.

***heavy machine bite*--**not over 3.2 mm (1/8 inch) deep.

***very heavy machine bite***--over 3.2 mm (1/8 inch) deep.

***machine burn*--**a darkening of the wood due to overheating by machine knives or rolls when pieces are stopped in the machine.

***machine gouge*--**a groove cut by the machine below the desired line.

***very light machine gouge*--**not over 0.4 mm (1/64 inch) deep.

***light machine gouge*--**not over 0.8 mm (1/32 inch) deep.

***medium machine gouge*--**not over 1.6 mm (1/16 inch) deep.

***heavy machine gouge*--**not over 3.2 mm (1/8 inch) deep.

***very heavy machine gouge*--**over 3.2 mm (1/8 inch) deep.

***machine offset*--**an abrupt dressing variation in the edge surface which usually occurs near the end of the piece without reducing the width or without changing the plane of the wide surface.

***very light machine offset*--**a variation not over 0.4 mm (1/64 inch).

***light machine offset*--**a variation not over 0.8 mm (1/32 inch).

***medium machine offset*--**a variation not over 1.6 mm (1/16 inch).

***heavy machine offset*--**a variation not over 3.2 mm (1/8 inch).

***very heavy machine offset*--**a variation over 3.2 mm (1/8 inch).

***metric units***—See B1.

***mismanufacture*--**includes all defects or blemishes, produced in manufacturing. See CHIPPED GRAIN, HIT-AND-MISS, HIT-OR-MISS, LOOSENED GRAIN, MACHINE BURN, MACHINE GOUGE, MISMATCHED LUMBER, RAISED GRAIN, SKIP, TORN GRAIN, and VARIATION IN SAWING.

***mismatch*--**an uneven fit in worked lumber when adjoining pieces do not meet tightly at all points of contact or when the surfaces of adjoining pieces are not in the same plane.

***slight mismatch*--**a barely evident trace of mismatch.

***very light mismatch*--**not over 0.4 mm (1/64 inch).

***light mismatch*--**not over 0.8 mm (1/32 inch).

***medium mismatch***--not over 1.6 mm (1/16 inch).

***heavy mismatch*--**not over 3.2 mm (1/8 inch).

***mixed grain (MG)***--either vertical or flat grained pieces or both.

***moisture content*--**the weight of the water in a piece of lumber expressed in a percentage of the weight of the piece after being over dried.

***occasional pieces*--**not more than 10% of the pieces in a parcel or shipment.

***partition***—a tongue and grooved piece of lumber with the same pattern run on both sides. For use where both sides may be exposed.

***pitch*--**an accumulation of resinous material.

***light pitch*--**the light but evident presence of pitch.

***medium pitch*--**a somewhat more evident presence of pitch than in the light pitch.

***heavy pitch***--a very evident accumulation of pitch showing by its color and consistency.

***massed pitch*--**a clearly defined accumulation of solid pitch in a body by itself.

***pitch seam*--**a shake or check which contains pitch.

***pitch streak*--**a well-defined accumulation of pitch in the wood cells in a streak. Pitch streaks, with equivalent areas being permissible, are described as follows:

***very small pitch streak***—10mm (3/8 inch) in width and 381 mm (15 inch) in length.

***small pitch streak*--**1/12 the width and 1/6 the length of the piece.

***medium pitch streak*--**1/6 the width and 1/3 the length of the piece.

***large pitch streak*--**not over 1/4 the width by 1/2 the length of the surface.

***very large pitch streak*--**over 1/4 the width by 1/2 the length of the surface.

***pith*--**the small soft core in the structural center of a log.

***very small pith*--**not over 3.2 mm (1/8 inch) wide and occupies on the face surface not over 161 square mm (1/4 square inch) [3.2 mm by 51 mm (1/8 inch wide by 2 inch long), or 1.6 mm by 102 mm (1/16 inch by 4 inch)]

***small pith*--**not over 484 square mm (3/4 square inch) on the face surface [6 mm by 76 mm (1/4 inch by 3 inch), 5 mm by 102 mm (3/16 inch by 4 inch), 3.2 mm by 152 mm (1/8 inch by 6 inch), or 1.6 mm by 305 mm (1/16 inch by 12 inch)]

***free of pith*--**the prohibition of pith on or within the body of the piece.

***boxed pith*--**pith that is within the four faces of an end of a piece.

***pocket*--**a well-defined opening, between the rings of annual growth, which develops during the growth of the tree. It usually contains pitch or bark. Pockets are described as follows with equivalent areas being permissible:

***very small pocket***—1.6 mm (1/16 inch) in width and 76 mm (3 inch) in length, or 3.2 mm (1/8 inch) in width and 51 mm (2 inch) in length.

***small pocket***—1.6 mm (1/16 inch) in width and 152 mm (6 inch) in length, or 3.2 mm (1/8 inch) in width and 102 mm (4 inch) in length, or 6 mm (1/4 inch) in width and 51 mm (2 inch) in length.

***medium pocket***—1.6 mm (1/16 inch) in width and 305 mm (12 inch) in length, or 3.2 mm (1/8 inch) in width and 203 mm (8 inch) in length, or 10 mm (3/8 inch) in width and 102 mm (4 inch) in length.

***large pocket***--not over 2581 square mm (4 square inches) in area.

***very large pocket*--**over 2581 square mm (4 square inches) in area.

***closed pocket*--**an opening on one surface only.

***open (through) pocket*--**an opening on opposite surfaces. A through opening is considered the same as a through hole of equal size.

***raised grain***-a roughened condition of the surface of dressed lumber in which the hard summerwood is raised above the softer springwood, but not torn loose from it.

***very light raised grain*--**not over 0.4 mm (1/64 inch).

***light raised grain*--**not over 0.8 mm (1/32 inch).

***medium raised grain*--**not over 1.6 mm (1/16 inch).

***heavy raised grain*--**not over 3.2 mm (1/8 inch).

***resawn lumber*--**the product of sawing any thickness of lumber to develop thinner lumber.

***ripped lumber*--**the product of sawing any width of lumber to develop narrower lumber.

***sapwood*--**the outer layers of growth between the bark and heartwood that contain the sap.

***bright sapwood***--sapwood that shows no stain and is not limited in any grade unless specifically stated in the grade description.

***sapwood restrictions waived*--**a lifting of any restrictions in a rule on the amount of sapwood permitted in pieces graded under that rule.

***bright sapwood no defect (BSND)*--**an indication that bright sapwood is permitted in each piece in any amount.

***seasoning*--**evaporation or extraction of moisture from green or partially dried wood.

***shake*--**a lengthwise separation of the wood which occurs between or through the rings of annual growth.

***fine shake*--**a barely perceptible opening.

***light shake*--**not over 0.8 mm (1/32 inch) wide.

***medium shake*--**not over 3.2 mm (1/8 inch) wide.

***open shake*--**over 3.2 mm (1/8 inch) wide.

***ring shake*--**occurs between the annual rings to partially or wholly encircle the pith.

***surface shake*--**occurs on only one surface of a piece.

***through shake*--**extends from one surface of a piece to the opposite or to an adjoining surface.

***pith shake (heart check or heart shake)*--**extends through the annual rings from or through the pith towards the surface of a piece, and is distinguished from a seasoning check by the fact that its greatest width is nearest the pith, whereas the greatest width of a season check in a pith-centered piece is farthest from the pith.

***side cut*--**pith is not enclosed within the four sides of the piece.

***skip*--**area on a piece that failed to surface clean. Skips are described as follows:

***very light skip*--**not over 0.4 mm (1/64 inch) deep.

***light skip***--not over 0.8 mm (1/32 inch) deep.

***medium skip***--not over 1.6 mm (1/16 inch) deep.

***heavy skip*--**not over 3.2 mm (1/8 inch) deep.

***slope of grain*--**the deviation of the line of fibers from a straight line parallel to the sides of the piece.

***softwood***--one of the group of trees which have needle-like or scale-like leaves. The term has no specific reference to the softness of the wood.

***sound*--**free of decay.

***spiral grain*--**a deviation in the slope of grain caused when the fibers in a tree take a spiral course around the trunk of the tree instead of the normal vertical course.

***split*--**a separation of the wood through the piece to the opposite surface or to an adjoining surface due to the tearing apart of the wood cells.

- ***very short split*--**equal in length to 1/2 the width of the piece.
- ***short split*--**equal in length to the width of the piece and in no case exceeds 1/6 the length.
- ***medium split*--**equal in length to twice the width of the piece and in no case exceeds 1/6 the length.
- ***long split*--**longer than a medium split.

***springwood*--**the portion of the annual ring formed during the early part of the yearly growth period. It is lighter in color, less dense, and not as strong mechanically as summerwood.

***square corners*--**without eased edges but has an allowance for wane in certain grades.

***square edged*--**free from wane and without eased edges.

***stained wood*--**a discoloration in wood.

- ***stained heartwood or firm red heart*--** heartwood that shows a marked variation from the natural color. In grades where it is permitted, stained heartwood has no more effect on the intended use of a piece than other characteristics permitted in the grade. *Note: Stained heartwood ranges from pink to brown, and is not to be confused with natural red heart. Natural color is usually uniformly distributed through certain annual rings, whereas stains are usually in irregular patches.*
- ***stained sapwood***--sapwood with discoloration. In grades when it is permitted, stained sapwood has no more effect on the intended use of a piece than other characteristics permitted in the grade but it does affect appearance in varying degrees:
  - ***light stained sapwood***--a discoloration so slight that it does not affect natural finishes.
  - ***medium stained sapwood***--a pronounced difference in coloring. *Note: Sometimes the usefulness for natural finishes but not for paint finishes is affected.*
  - ***heavy stained sapwood***--a so pronounced difference in color that the grain of the wood is obscured, but lumber containing it is acceptable for paint finishes.
- ***stained wood resulting from exposure to the elements*--**discolored wood that is permitted in all grades of framing and sheathing lumber.

***stepping*-**lumber designed to be used for stair treads. Customarily surfaced three sides and bull-nosed on one edge.

***stress grades*--**lumber having assigned working stresses and modulus of elasticity values in accordance with accepted basic principles of strength grading, and the provisions of 6.3.2.1 and 6.3.2.2 of this Standard.

***summerwood*--**the portion of the annual ring formed during the latter part of the yearly growth. It is darker in color, more dense, and stronger mechanically than springwood.

***torn grain*--**an irregularity in the surface of a piece where wood has been torn or broken out by surfacing.

- ***very light torn grain*--**not over 0.4 mm (1/64 inch) deep.
- ***light torn grain*--**not over 0.8 mm (1/32 inch) deep.
- ***medium torn grain*--**not over 1.6 mm (1/16 inch) deep.
- ***heavy torn grain*--**not over 3.2 mm (1/8 inch) deep.
- ***very heavy torn grain*--**over 3.2 mm (1/8 inch) deep.

***trim*--**to cross-cut a piece to a given length.

- ***double-end trimmed (DET)*--**lumber trimmed square on both ends. Tolerances are found in certified grading rules.
- ***precision-end trimmed (PET)*--**lumber trimmed square on both ends to uniform lengths with a manufacturing tolerance of 1.6 mm (1/16 inch) over or under in length in 20% of the pieces.
- ***square-end trimmed*--**lumber trimmed square and having a manufacturing tolerance of 0.4 mm (1/64 inch) for each nominal 2 inch of thickness or width.

***unsound* -** see DECAY.

***variation in sawing*--**a deviation from the line of cut.

- ***slight variation*--**not over 1.6 mm (1/16 inch) scant in nominal 1-inch lumber, 3.2 mm (1/8 inch) in nominal 2-inch, 5 mm (3/16 inch) in nominal 3-inch to 7-inch, and 6 mm (1/4 inch) in nominal 8-inch and greater thickness or width.

***wane*--**bark or lack of wood from any cause, except eased edges, on the edge or corner of a piece of lumber.

***warp*--**any deviation from a true or plane surface, including bow, crook, cup, twist, or any combination thereof. Warp restrictions are based on the average form of warp as it occurs normally, and any variation from this average form, such as short kinks, shall be appraised according to its equivalent effect. Pieces containing two or more forms of warp shall be appraised according to the combined effect in determining the amount permissible. In grading rules, warp is classified as very light, light, medium, and heavy, and applied to each width and length as set forth in the various grades in accordance with the following provisions:

- ***bow*--**a deviation flatwise from a straight line drawn from end to end of a piece. It is measured at the point of greatest distance from the straight line.
- ***crook*--**a deviation edgewise from a straight line drawn from end to end of a piece. It is measured at the point of greatest distance from the straight line.
- ***cup*--**a deviation in the face of a piece from a straight line drawn from edge to edge of a piece. It is measured at the point of greatest distance from the straight line.
- ***twist*--**a deviation flatwise, or a combination of flatwise and edgewise, in the form of a curl or spiral, and the amount is the distance an edge of a piece at one end is raised above a flat surface against which both edges at the opposite end are resting snugly.

***wavy dressing*--**an involvement of more uneven dressing than knife marks.

- ***very light wavy dressing*--**not over 0.4 mm (1/64 inch) deep.
- ***light wavy dressing*--**not over 0.8 mm (1/32 inch) deep.
- ***medium wavy dressing*--**not over 1.6 mm (1/16 inch) deep.
- ***heavy wavy dressing*--**not over 3.2 mm (1/8 inch) deep.
- ***very heavy wavy dressing*--**over 3.2 mm (1/8 inch) deep.

## APPENDIX C LUMBER INDUSTRY ABBREVIATIONS

These abbreviations are commonly used for softwood lumber, although all of them are not necessarily applicable to all species. Additional abbreviations which are applicable to a particular region or species shall not be used unless included in certified grading rules.

Abbreviations are commonly used in the forms indicated, but variations such as the use of upper- and lower-case type, and the use or omission of periods and other forms of punctuation are not required.

| | |
|---|---|
| AD | Air-dried |
| ADF | After deducting freight sides |
| ALS | American Softwood Lumber Standard |
| AV or AVG | Average |
| Bd | Board |
| Bd ft | Board foot or feet |
| Bdl | Bundle |
| Bev | Beveled |
| B/L | Bill of lading |
| BM | Board Measure |
| Btr | Better |
| B&B or B&Btr | B and better |
| B&S | Beams and stringers |
| CB1S | Center bead one side |
| CB2S | Center bead two sides |
| CF | Cost and freight |
| CG2E | Center groove two edges |
| CIF | Cost, insurance, and freight |
| CIFE | Cost, insurance, freight, and exchange |
| Clg | Ceiling |
| Clr | Clear |
| CM | Center matched |
| Com | Common |
| CS | Caulking seam |
| Csg | Casing |
| Cu Ft | Cubic foot or feet |
| CV1S | Center Vee one side |
| CV2S | Center Vee two sides |
| D&H | Dressed and headed |
| D&M | Dressed and matched |
| DB Clg | Double-beaded ceiling (E&CB1S) |
| DB Part | Double-beaded partition (E&CB2S) |
| DET | Double end trimmed |
| Dim | Dimension |
| Dkg | Decking |
| D/S or D/Sdg | Drop siding |
| EB1S | Edge bead one side |
| EB2S | Edge bead two sides |
| E&CB1S | Edge and center bead one side |

| | |
|---|---|
| E&CB2S | Edge and center bead two sides |
| E&CV1S | Edge and center Vee one side |
| E&CV2S | Edge and center Vee two sides |
| EE | Eased edges |
| EG | Edge (vertical) grain |
| EM | End matched |
| EV1S | Edge Vee one side |
| EV2S | Edge Vee two sides |
| Fac | Factory |
| FAS | Free alongside (named vessel) |
| FBM | Foot or board measure |
| FG | Flat (slash) grain |
| Flg | Flooring |
| FOB | Free on board (named point) |
| FOHC | Free of heart center or centers |
| FOK | Free of knots |
| Frt | Freight |
| Ft | Foot or feet |
| GM | Grade marked |
| G/R or G/Rfg | Grooved roofing |
| HB | Hollow back |
| H&M | hit-and-miss |
| H or M | hit-or-miss |
| Hrt | Heart |
| Hrt CC | Heart cubical content |
| Hrt FA | Heart facial area |
| Hrt G | Heart girth |
| IN | Inch or inches |
| J&P | Joists and planks |
| KD | Kiln-dried |
| Lbr | Lumber |
| LCL | Less than carload |
| LFT or Lin Ft | Linear foot or feet |
| Lgr | Longer |
| Lgth | Length |
| Lin | Linear |
| Lng | Lining |
| M | Thousand |
| MBM | Thousand (feet) board measure |
| MC | Moisture content |
| Merch | Merchantable |
| Mldg | Moulding |
| mm | Millimeter |
| No | Number |
| N1E | Nosed one edge |
| N2E | Nosed two edges |
| Og | Ogee |
| Ord | Order |
| Par | Paragraph |
| Part | Partition |

| | |
|---|---|
| Pat | Pattern |
| Pc | Piece |
| Pcs | Pieces |
| PE | Plain end |
| PO | Purchase order |
| P&T | Post and timbers |
| Reg | Regular |
| Res | Resawed or resawn |
| Rfg | Roofing |
| Rgh | Rough |
| R/L | Random lengths |
| R/W | Random widths |
| R/W&L | Random widths and lengths |
| Sdg | Siding |
| Sel | Select |
| S&E | Side and Edge (surfaced on) |
| SE Sdg | Square edge siding |
| SE & S | Square edge and sound |
| S/L or S/LAP | Shiplap |
| SL&C | Shipper's load and count |
| SM or Std M | Standard matched |
| Specs | Specifications |
| Std | Standard |
| Stpg | Stepping |
| Str or Struc | Structural |
| S1E | Surfaced one edge |
| S1S | Surfaced one side |
| S1S1E | Surfaced one side and one edge |
| S1S2E | Surfaced one side and two edges |
| S2E | Surfaced two edges |
| S2S | Surfaced two sides |
| S2S1E | Surfaced two sides and one edge |
| S2S&CM | Surfaced two sides and center matched |
| S2S&SM | Surfaced two sides and standard matched |
| S4S | Surfaced four sides |
| S4S&CS | Surfaced four sides and caulking seam |
| T&G | Tongued and grooved |
| VG | Vertical grain |
| Wdr | Wider |
| Wt | Weight |

## APPENDIX D IMPLEMENTATION AND MAINTENANCE OF STANDARD

### D1. STANDING COMMITTEE

The American Lumber Standard Committee (ALSC) acts as the Standing Committee for this Standard for the purpose of its interpretation and for considering future proposals for amendments and revisions. Members of the ALSC and their alternates are appointed by the Secretary of Commerce in accordance with Section 9 of this Standard. The names of the members are available from the Committee's secretariat: Standards Services Division, National Institute of Standards and Technology, Gaithersburg, Maryland 20899-2100. Comments regarding the Standard and suggestions for its amendment or revision may also be sent to this address. No product shall be advertised or represented in any manner that would imply approval or endorsement of that product by the National Institute of Standards and Technology and/or the Department of Commerce.

### D2. EFFECTIVE DATE

Voluntary Product Standard PS 20-15, *American Softwood Lumber Standard*, a voluntary standard developed under the Department of Commerce procedures, shall be effective April, 2015 for products produced thereunder on and after that date. The Standard being superseded, *American Softwood Lumber Standard PS 20-10*, is effective for products produced thereunder through March, 2015.

### D3. HISTORY OF THE STANDARD

Early in 1922 Secretary of Commerce Herbert Hoover, responding to a request from the lumber industry, offered the cooperation of the Department in activities directed toward simplification, standardization, and development of adequate quality guarantees for the lumber-consuming public. This cooperation led to the development and publication in 1924 of Simplified Practice Recommendation R 16 under the guidance of the Department's Division of Simplified Practices, which was to become a part of the National Bureau of Standards (now the National Institute of Standards and Technology). The history of R 16's development and its subsequent revisions is summarized in editions issued, respectively, in 1924, 1925, 1926, 1929, 1939, and 1953.

R 16-53 was revised in 1969 and superseded by Voluntary Product Standard PS 20-70 American Softwood Lumber Standard. The significant provisions added to PS 20-70 were: 1) separate size standards for dry and green lumber, under nominal 5-inch thickness, were established in order to achieve greater uniformity in the dimensions of seasoned and unseasoned lumber at the point of use; 2) an independent National Grading Rule Committee was created to establish and maintain a national grading rule for dimension lumber conforming to PS 20; 3) an independent Board of Review was formed to assure uniform approval of grading rules and of agencies to grade under these rules, and to enhance enforcement of the accreditation program ; 4) the composition of the American Lumber Standard Committee was expanded to reflect a broader representation of interests; and 5) uniform methods for assignment of design values were accepted. Non-substantive changes were made to the Standard in 1985, 1991, 1992, 1999, 2005 and 2010. The Standard was reviewed in 2014 to assure it reflected the needs of manufacturers, distributors and consumers.

### D4. CURRENT EDITION

The current edition, PS 20-15, has the same technical requirements and administrative structure for implementing and enforcing the Standard as its previous edition. This new edition was based on the recommendations resulting from an extensive technical and editorial review of PS 20-10 conducted by the Standing Committee with the assistance from the National Institute of Standards and Technology in 2014.

**National Institute of Standards and Technology**
U.S. Department of Commerce