

This section is part of Standard Grading Rules for West Coast Lumber No. 17 (2004 edition) published by West Coast Lumber Inspection Bureau (www.wclib.org). Other sections and provisions of the grade rules may be applicable to the information and specifications provided here. Please refer to the table of contents for additional cross reference information.

GLOSSARY

700. Throughout these rules various words and terms are used with meanings specifically applicable to lumber. In the use of these rules a full understanding of the words and terms in this Glossary is essential. An Index to the Glossary follows:

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DEFINITIONS

702. 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.

704. CHECKS — A separation of the wood normally occurring across or through the rings of annual growth and usually as a result of seasoning.

- (a) A surface check occurs on a face of a piece.
- (b) A through check extends from one surface of a piece to the opposite or adjoining surface.
- (c) Small checks are not over 1/32" wide and not over 4" long.
- (d) Medium checks are not over 1/32" wide and not over 10" long.
- (e) Large checks are more than 1/32" wide or longer than 10" or both.
- (f) A roller check is a crack in the wood structure caused by a piece of cupped lumber being flattened in passing between the machine rollers.

A light roller check is a perceptible opening not over 2' long.

A medium roller check is a perceptible opening over 2' long but not exceeding 4' in length.

A heavy roller check is over 4' in length.

706. COMPRESSION WOOD — Abnormal wood that forms on the under side 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.

708. DECAY (UN SOUND WOOD) — A disintegration of the wood substance due to action of wood-destroying fungi, and is also known as dote or rot. Some examples are as follows:

- (a) Heart center decay is a localized decay developing along the pith in some species and is detected by visual

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inspection. The limitation for heart center decay applies to Southern Pine. Heart center decay develops in the living tree and does not progress further after the tree is cut.

- (b) White specks are 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 these 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. NOTE: "Firm" in relation to white speck infers that it will not crumble readily under thumb pressure and cannot be easily picked out.
- (c) Honeycomb is similar to white speck but the pockets are larger. Where permitted in the 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. NOTE: "Firm" in relation to honeycomb infers that it will not crumble readily under thumb pressure and cannot be easily picked out.
- (d) Incipient decay is 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.
- (e) Peck is 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.

710. EDGE — There are three meanings for edge: (1) The narrow face of rectangular-shaped pieces. (2) The corner of a piece at the intersection of two longitudinal faces. (3) In stress grades that part of the wide face nearest the corner of the piece.

- (a) Eased edges means slightly rounded surfacing on pieces of lumber to remove sharp corners. The standard radius for 1", 2", 3" and 4" nominal thickness lumber shall not exceed 1/16", 1/8", 3/16" and 1/4" respectively. NOTE: Lumber 4" or less in thickness is frequently shipped with eased edges unless otherwise specified.
- (b) Square edged means free from wane and without eased edges.

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- (c) Free of wane means without wane but has either eased or square edges. (See WANE definition.)
- (d) Square corners means without eased edges but has an allowance for wane in certain grades.
- (e) To “destroy the nailing edge” shall mean (1) the decay occupies more of the narrow face than the allowable maximum wane in thickness when in streak form, or (2) the decay occupies more than twice the length of the allowable knot hole when a spot occurs completely through the narrow face.

711. FULL SAWN — When specified to be full sawn, lumber may be manufactured to the basic oversize tolerance as provided in Para. 250-a, but may not be undersize at time of manufacture.

712. GRAIN — The fibers in wood and their direction, size, arrangement, appearance or quality.

- (a) For requirements and method of measuring medium grain, close grain and dense material, see Para. 204.
- (b) Slope of grain is the deviation of the line of fibers from a straight line parallel to the sides of the piece. For method of measurement, see Para. 203.
- (c) Summerwood is the portion of the annual growth ring formed during the latter part of the yearly growth ring. It is darker in color, more dense, and stronger mechanically than springwood.
- (d) Springwood is the portion of the annual growth 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.
- (e) Vertical grain (VG) (Edge grain EG) (Rift grain) lumber is 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
- (f) Flat grain (FG) (Slash grain SG) lumber is 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.
- (g) Mixed grain (MG) lumber includes either or both vertical and flat grained pieces.
- (h) Spiral grain is 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.

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- (i) Diagonal grain is a deviation in the slope of grain caused by sawing at an angle with the bark of the tree. See slope of grain.

713. GRAIN TIGHT — Lumber which is suitable for lining and decking of rail cars which transport cereal grains.

714. HEART — (Heartwood) Inner core of the tree trunk comprising the annual rings containing nonliving elements. In some species, heartwood has a prominent color different from sapwood.

- (a) Boxed heart means with the pith enclosed in the piece.
- (b) Heart center is the pith or center core of the log.
- (c) Free of heart centers (FOHC) means without pith (side cut). An occasional piece (See Para. 726) when showing pith for not more than 1/4 the length on the surface shall be accepted.
- (d) Firm red heart is 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.
- (e) Heartwood and sapwood of equivalent character are of equal strength. No requirement of heartwood is made when strength alone is the governing factor.
- (f) Heartwood is more durable than sapwood. When wood is to be exposed to decay-producing conditions without preservative treatment, it shall be permitted to specify the minimum percentage of heartwood to be present in all pieces in a shipment.
- (g) Sapwood takes preservative treatment more readily than heartwood.

715. HEAT TREATED (HT) — Green lumber which has been placed in a closed chamber and artificial heat added until the lumber achieves a minimum core temperature of 56° C for a minimum of 30 minutes.

716. HOLES — Holes either extend partially or wholly through the piece. An alternate designation for holes which extend only partially through the piece is surface pits. Unless otherwise specified, holes are measured the same as knots. Holes are classified by size as follows:

- (a) A pin hole is not over 1/16" in diameter.
- (b) A medium (small) hole is not over 1/4" in diameter.
- (c) A large hole is not over 1" in diameter.
- (d) A very large hole is over 1" in diameter.

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718. KNOTS — 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. A red knot is one that results from a live branch growth in the tree and is intergrown with the surrounding wood. A black knot is one that results from a dead branch which the wood growth of the tree has surrounded.

- (a) A round knot is produced when the limb is cut at approximately a right angle to its long axis.
- (b) An oval knot is produced when the limb is cut at slightly more than a right angle to the long axis.
- (c) A spike knot is produced when the limb is cut either lengthwise or diagonally.
- (d) A pin knot is not over 1/2".
- (e) A small knot is not over 3/4".
- (f) A medium knot is not over 1-1/2".
- (g) A large knot is over 1-1/2".
- (h) A sound knot contains no decay.
- (i) A pith knot is sound in all respects except it contains a pith hole not over 1/4" in diameter.
- (j) A hollow knot is a sound knot containing a hole greater than 1/4" in diameter. Through opening of a hollow knot is limited to the size of other holes permitted.
- (k) An unsound knot contains decay.
- (l) A "firm" knot is solid across its face but contains incipient decay.
- (m) A tight knot is so fixed by growth, shape or position that it retains its place in the piece.
- (n) An intergrown knot is one whose growth rings are partially or completely intergrown on one or more faces with the growth rings of the surrounding wood.
- (o) A watertight knot has its annual rings completely intergrown with those of the surrounding wood on one surface of the piece, and it is sound on that surface.
- (p) An encased knot is one which is not intergrown with the growth rings of the surrounding wood.
- (q) A "loose" or "not firmly fixed" knot is one not held tightly in place by growth, shape or position.
- (r) A "fixed" knot will retain its place in dry lumber under ordinary conditions but is moveable under pressure though not easily pushed out.
- (s) A knot cluster is 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.
- (t) A star-checked knot has radial checks.
- (u) Well-scattered knots are not in clusters and each knot is separated from any other by a distance at least equal to the diameter of the smaller of the two.

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- (v) Well-spaced knots means that the sum of the sizes of all knots in any 6" of length of a piece must not exceed twice the size of the largest knot permitted. More than one knot of maximum permissible size must not be in same 6" of length and the combination of knots must not be serious.

720. MANUFACTURING IMPERFECTIONS—Means all imperfections or blemishes which are the result of surfacing, such as the following:

- (a) Chipped grain is 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% of the surface involved.
- (b) Torn grain is an irregularity in the surface of a piece where wood has been torn or broken out by surfacing. Torn grain is described as follows:
- Very light torn grain — not over 1/64" deep.
 - Light torn grain — not over 1/32" deep.
 - Medium torn grain — not over 1/16" deep.
 - Heavy torn grain — not over 1/8" deep.
 - Very heavy torn grain — over 1/8" deep.
- (c) Raised grain is 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 is not over 1/64".
 - Light raised grain is not over 1/32".
 - Medium raised grain is not over 1/16".
 - Heavy raised grain is not over 1/8".
- (d) Loosened grain is a grain separation or loosening between springwood and summerwood without displacement.
- Very light loosened grain is not over 1/64" separation.
 - Light loosened grain is not over 1/32" separation.
 - Medium loosened grain is not over 1/16" separation.
 - Heavy loosened grain is not over 1/8" separation.
 - Very heavy loosened grain is over 1/8" separation.
- (e) Skips are areas on a piece that failed to surface clean. Skips are described as follows:
- Very light skip is not over 1/64" deep.
- *[and approximately 6" in length.]

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Light skip is not over 1/32" deep.

*[On face, may be 12" in length and on edge, may be 2' long.]

Medium skip is not over 1/16" deep.

*[On face, may be 12" in length and on edge, may be 2' long.]

Heavy skip is not over 1/8" deep.

- (f) Hit and miss is a series of skips not over 1/16" deep with surfaced areas between.
- (g) Hit or miss means completely or partly surfaced or entirely rough. Scantness may be 1/16".
- (h) Mismatch is an uneven fit in worked lumber when adjoining pieces do not meet tightly at all points of contact or when the surface of adjoining pieces are not in the same plane.

* Portions of definitions of skips in brackets are not included in National definitions.

Slight mismatch is a barely evident trace of mismatch.

Very light mismatch is not over 1/64".

Light mismatch is not over 1/32".

Medium mismatch is not over 1/16".

Heavy mismatch is not over 1/8".

- (i) Machine burn is a darkening of the wood due to overheating by machine knives or rolls when pieces are stopped in machine.
- (j) Machine bite is a depressed cut of the machine knives at the end of the piece.
 - Very light machine bite is not over 1/64" deep.
 - Light machine bite is not over 1/32" deep.
 - Medium machine bite is not over 1/16" deep.
 - Heavy machine bite is not over 1/8" deep.
 - Very heavy machine bite is over 1/8" deep.
- (k) Machine gouge is a groove cut by the machine below the desired line.
 - Very light machine gouge is not over 1/64" deep.
 - Light machine gouge is not over 1/32" deep.
 - Medium machine gouge is not over 1/16" deep.
 - Heavy machine gouge is not over 1/8" deep.
 - Very heavy machine gouge is over 1/8" deep.
- (l) A machine offset is an abrupt dressing variation in the edge surface which usually occurs near the end of the piece and without reducing the width or without changing the plane of the wide surface.
 - Very light machine offset is a variation not over 1/64".

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Light machine offset is a variation not over 1/32".

Medium machine offset is a variation not over 1/16".

Heavy machine offset is a variation not over 1/8".

Very heavy machine offset is a variation over 1/8".

- (m) Chip marks are 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 are not over 1/64" deep.

Light chip marks are not over 1/32" deep.

Medium chip marks are not over 1/16" deep.

Heavy chip marks are not over 1/8" deep.

- (n) Knife marks are the imprints or markings of the machine knives on the surface of dressed lumber. Very slight knife marks are visible only from a favorable angle and are perfectly smooth to the touch. Slight knife marks are readily visible but evidence no unevenness to the touch.

- (o) Wavy dressing involves more uneven dressing than knife marks.

Very light wavy dressing is not over 1/64" deep.

Light wavy dressing is not over 1/32" deep.

Medium wavy dressing is not over 1/16" deep.

Heavy wavy dressing is not over 1/8" deep.

Very heavy wavy dressing is over 1/8" deep.

722. CLASSIFICATION OF MANUFACTURING IMPERFECTIONS

- (a) Standard "A" Manufacture admits: Very light torn grain; occasional very light chip marks; very slight knife marks.
- (b) Standard "B" Manufacture admits: Very light torn grain; very light raised grain; very light loosened grain; very light chip marks; average of one very light chip mark per lineal foot but not more than two in any lineal foot; very slight knife marks; slight mismatch.
- (c) Standard "C" Manufacture admits: Medium torn grain; light raised grain; light loosened grain; very light machine bite; very light machine gouge; very light machine offset; light chip marks if well scattered; occasional medium chip marks; very slight knife marks; slight mismatch.

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- (d) Standard "D" Manufacture admits: Heavy torn grain; medium raised grain; very heavy loosened grain; light machine bite; light machine gouge; light machine offset; medium chip marks; slight knife marks; very light mismatch.
- (e) Standard "E" Manufacture admits: Very heavy torn grain; raised grain; very heavy loosened grain; medium machine bite; machine gouge; medium machine offset; chip marks; knife marks; light wavy dressing; light mismatch.
- (f) Standard "F" Manufacture admits: Very heavy torn grain; raised grain; very heavy loosened grain; heavy machine bite; machine gouge; heavy machine offset; chip marks; knife marks; medium wavy dressing; medium mismatch.

724. **MOISTURE CONTENT** — The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

726. **OCCASIONAL PIECES** — Means not more than 10% of the pieces in a parcel or shipment.

728. **PITCH** — Is an accumulation of resinous material.

- (a) Light pitch is the light but evident presence of pitch.
- (b) Medium pitch is a somewhat more evident presence of pitch than is the light.
- (c) Heavy pitch is a very evident accumulation of pitch showing by its color and consistency.
- (d) Massed pitch is a clearly defined accumulation of solid pitch in a body by itself.

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

- (a) Very small pitch streak $\frac{3}{8}$ " in width and 15" in length.
- (b) Small pitch streak $\frac{1}{12}$ the width and $\frac{1}{6}$ the length of the piece.
- (c) Medium pitch streak $\frac{1}{6}$ the width and $\frac{1}{3}$ the length of the piece.
- (d) A large pitch streak is not over $\frac{1}{4}$ the width by $\frac{1}{2}$ the length of the surface.
- (e) A very large pitch streak is over $\frac{1}{4}$ the width by $\frac{1}{2}$ the length of the surface.
- (f) A pitch seam is a shake or check which contains pitch.

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732. PITH — Is the small soft core in the structural center of a log.

- (a) Very small pith is not over 1/8" wide and occupies on face surface not over 1/4 square inch (1/8" wide by 2" long, or 1/16" by 4").
- (b) Small pith occupies not over 3/4 square inch (1/4" by 3", 3/16" by 4", 1/8" by 6", or 1/16" by 12").
- (c) Free of pith means that pith on or within the body of the piece is prohibited.

734. 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:

- (a) Very small pocket — 1/16" in width and 3" in length, or 1/8" in width and 2" in length.
- (b) Small pocket — 1/16" in width and 6" in length, or 1/8" in width and 4" in length, or 1/4" in width and 2" in length.
- (c) Medium pocket — 1/16" in width and 12" in length, or 1/8" in width and 8" in length, or 3/8" in width and 4" in length.
- (d) A large pocket is not over 4 square inches in area.
- (e) A very large pocket is over 4 square inches in area.
- (f) A closed pocket has an opening on one surface only.
- (g) A through or open pocket has an opening on opposite surfaces, and the through opening is considered the same as a through hole of equal size.

736. PLUGS AND FILLERS — Wood plugs and fillers are inserted into pieces of lumber to improve their appearance and usefulness. Lumber containing plugs and fillers shall only be shipped when the order, acknowledgment and invoice carry reference to the inserts. Quality of the inserts and workmanship must be in keeping with the quality of the grade. In dimension and other lumber graded for strength, inserts are limited to the same size and location as knots.

738. SAPWOOD — Outer layers of growth between the bark and the heartwood which contain the sap.

- (a) Bright sapwood shows no stain and is not limited in any grade unless specifically stated in the grade description.
- (b) Sapwood restrictions waived means that any restrictions in a rule on the amount of sapwood permitted in pieces graded under that rule are not to apply.

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- (c) Bright sapwood no defect (BSND) means that bright sapwood is permitted in each piece in any amount.

739. SAW-SIZED lumber is uniformly sawn to the net size for surfaced lumber, for uses requiring a rough texture. A slight variation in sawing of not more than 1/32" under in 20% of the pieces, and 1/8" over is permitted.

739-A. SIZED FRAMING lumber, 2" to 4" thick, 2" and wider — Sized Framing lumber is uniformly manufactured to the net surfaced sizes. Sized lumber may be rough, surfaced or partially surfaced on one or more faces. When opposing rough faces occur in the manufacture of Sized Framing, a variation in size of 1/32" under in 20% of the pieces and 1/32" over in No. 2 & Better and Standard & Better grades shall be permitted. Stud, Utility, and No. 3 grades shall permit a variation of 1/16" in twenty percent of the pieces over or under the standard surfaced size on opposing rough faces.

The appropriate skip provisions on surfaced faces shall apply. Sized Framing lumber shall meet all other grade provisions of the Rules. When Sized Framing is grade stamped, material shall be stamped as such.

740. SHAKE — A lengthwise separation of the wood which occurs between or through the rings of annual growth.

- A light shake is not over 1/32" wide.
- A medium shake is not over 1/8" wide.
- A surface shake occurs on only one surface of a piece.
- A through shake extends from one surface of a piece to the opposite or to an adjoining surface.
- A pith shake (or heart shake or heart check) extends through the growth rings from or through the pith towards the surface of a piece, and is distinguished from a season 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.
- A ring shake occurs between the growth rings to partially or wholly encircle the pith.

742. SPLITS — 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.

- A very short split is equal in length to 1/2 the width of the piece.

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- (b) A short split is equal in length to the width of the piece and in no case exceeds 1/6 the length.
- (c) A medium split is equal in length to twice the width of the piece and in no case exceeds 1/6 the length.
- (d) A long split is longer than a medium split.

744. STAINED WOOD.

- (a) Stained Heartwood and Firm Red Heart — Stained Heartwood or Firm Red Heart is a marked variation from the natural color. NOTE: It ranges from pink to brown. It 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. In grades where it is permitted, it has no more effect on the intended use of the piece than other characteristics permitted in the grade.
- (b) Stained Sapwood — Stained Sapwood similarly has no effect on the intended use of the pieces in which it is permitted but affects appearance in varying degrees.
 - (1) Light stained sapwood is so slightly discolored that it does not affect natural finishes.
 - (2) Medium stained sapwood has a pronounced difference in coloring. NOTE: Sometimes the usefulness for natural finishes but not for paint finishes is affected.
 - (3) Heavy stained sapwood has so pronounced a difference in color as to obscure the grain of the wood but the lumber containing it is acceptable for paint finishes.
- (c) Discoloration through exposure to the elements is admitted in all grades of framing and sheathing lumber.

746. STRESS GRADES — Lumber grades having assigned working stress and modulus of elasticity values in accordance with accepted basic principles of strength grading, and the provisions of sections 6.3.2.1 and 6.3.2.2 of Voluntary Product Standard 20-99.

748. TRIM

- (a) Trimming of lumber is the act of crosscutting a piece to a given length.
- (b) Double end trimmed (DET) NOTE: It is intended that DET lumber be trimmed square on both ends. Tolerances are found in certified grading rules.

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- (c) Precision end trimmed (PET) lumber is trimmed square on both ends to uniform lengths with a manufacturing tolerance of 1/16" over or under in length in 20% of the pieces.
- (d) Square end trimmed lumber is trimmed square having a manufacturing tolerance of 1/64" for each nominal 2" of thickness or width.

750. **WANE** — Bark or lack of wood from any cause, except eased edges, on the edge or corner of a piece of lumber.

Wane away from ends extending partially or completely across any face is permitted for one foot if no more serious than skips in dressing allowed or across a narrow face if no more damaging than the knot hole allowed (not to exceed in length twice the diameter of the maximum knot hole allowed in the grade) and is limited to one occurrence in each piece. These variations shall not be allowed in more than 5% of the pieces. (This provision applies only to the National Grading Rule for Dimension Lumber.)

752. **WARP** — Any deviation from a true or plane surface, including bow, crook, cup and 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 shall be appraised according to the combined effect in determining the amount permissible. In these 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 and tables:

- (a) Bow is 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. The maximum amount of bow allowed in a grade is as follows: If under 2" thick, three times as much as crook for 2" faces. If 2" thick and under 3", twice as much as crook for 2" faces. If 3" thick and over, the same as the amount of crook for that thickness.
- (b) Crook is 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. The maximum amount of crook allowed shall be that shown in the table on page 294.

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CROOK TABLE

Length in feet	Description	WIDTH OF PIECE						
		2"	3"	4"	5", 6"	8"	10"	12"
4 & 6	Very Light	1/8	1/8	1/8	1/8	1/16	1/16	1/16
	Light	1/4	1/4	1/4	3/16	1/8	1/16	1/16
	Medium	3/8	3/8	3/8	1/4	3/16	1/8	1/8
	Heavy	1/2	1/2	1/2	3/8	1/4	3/16	3/16
8	Very Light	1/4	1/4	3/16	1/8	1/8	1/16	1/16
	Light	3/8	3/8	3/8	5/16	1/4	3/16	1/8
	Medium	1/2	1/2	1/2	1/2	3/8	1/4	3/16
	Heavy	3/4	3/4	3/4	5/8	1/2	3/8	1/4
10	Very Light	3/8	5/16	1/4	3/16	3/16	1/8	1/8
	Light	3/4	5/8	1/2	7/16	3/8	1/4	1/4
	Medium	1-3/8	1	3/4	5/8	1/2	7/16	3/8
	Heavy	1-3/4	1-1/4	1-1/8	1	7/8	3/4	5/8
12	Very Light	1/2	3/8	3/8	5/16	1/4	1/4	3/16
	Light	1	3/4	11/16	5/8	1/2	7/16	3/8
	Medium	1-1/2	1-1/8	1	7/8	13/16	3/4	9/16
	Heavy	2	1-1/2	1-3/8	1-1/4	1-1/8	1	13/16
14	Very Light	5/8	1/2	7/16	3/8	5/16	1/4	3/16
	Light	1-1/4	1	7/8	3/4	5/8	1/2	3/8
	Medium	2	1-1/2	1-1/4	1-1/8	1	7/8	3/4
	Heavy	2-3/4	2	1-3/4	1-1/2	1-1/4	1-1/8	1
16	Very Light	3/4	5/8	1/2	7/16	3/8	5/16	1/4
	Light	1-5/8	1-1/4	1	7/8	3/4	5/8	1/2
	Medium	2-1/2	1-7/8	1-1/2	1-3/8	1-1/8	1	7/8
	Heavy	3-1/4	2-1/2	2	1-3/4	1-1/2	1-1/4	1-1/8
18	Very Light	1	3/4	5/8	1/2	7/16	3/8	5/16
	Light	2	1-3/8	1-1/8	1	7/8	3/4	5/8
	Medium	3	2-1/16	1-5/8	1-1/2	1-1/4	1-1/8	1
	Heavy	4	2-3/4	2-1/4	2	1-3/4	1-1/2	1-1/4
20	Very Light	1-1/8	7/8	3/4	5/8	1/2	7/16	3/8
	Light	2-1/4	1-1/2	1-3/8	1-1/4	1	7/8	3/4
	Medium	3-3/8	2-1/4	2-1/16	1-7/8	1-1/2	1-5/16	1-1/8
	Heavy	4-1/2	3	2-3/4	2-1/2	2	1-3/4	1-1/2
22	Very Light	1-1/4	1	7/8	3/4	5/8	1/2	7/16
	Light	2-1/2	1-3/4	1-5/8	1-1/2	1-1/4	1	7/8
	Medium	3-3/4	2-5/8	2-7/16	2-1/4	1-7/8	1-1/2	1-1/4
	Heavy	5	3-1/2	3-1/4	3	2-1/2	2	1-3/4
24	Very Light	1-1/2	1-1/8	1	7/8	3/4	5/8	1/2
	Light	3	2	1-7/8	1-3/4	1-1/2	1-1/4	1
	Medium	4-1/2	3	2-3/4	2-3/4	2-5/8	2-1/4	1-5/8
	Heavy	6	4	3-3/4	3-1/2	3	2-1/2	2-1/4

Maximum crook is limited to the amount shown in the preceding table for the appropriate length, width and grade. Pieces differing in length and width from these basic sizes may have crook in proportion to the amounts shown. Maximum crook is limited to occasional pieces of any item.

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DEFINITIONS

- (c) Cup is 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. The maximum amount of cup shall be that shown in the Cup Table.

CUP TABLE
FACE WIDTH

	2"&3"	4"	5"&6"	8"
Very Light	1/32"	1/32"	1/32"	1/16"
Light	1/32"	1/32"	1/16"	1/8"
Medium	1/32"	1/16"	1/8"	3/16"
Heavy	1/16"	1/8"	3/16"	1/4"
	10"	12"	14" and Wider	
Very Light	3/32"	1/8"	Proportionately more	
Light	3/16"	1/4"		
Medium	1/4"	3/8"	"	
Heavy	3/8"	1/2"	"	

DEFINITIONS

- (d) Twist is 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. The maximum amount of twist allowed shall be that shown in the Table below.

TWIST TABLE

Length in feet	Description	FACE WIDTH					
		2"	3", 4"	5", 6"	8"	10"	12"
4	Very Light	1/16	1/8	3/16	1/4	5/16	3/8
	Light	1/8	1/4	3/8	1/2	5/8	3/4
	Medium	3/16	3/8	1/2	3/4	7/8	1-1/8
	Heavy	1/4	1/2	3/4	1	1-1/4	1-1/2
6	Very Light	3/32	3/16	5/16	3/8	7/16	9/16
	Light	3/16	3/8	1/2	3/4	7/8	1-1/8
	Medium	9/32	1/2	3/4	1-1/8	1-3/8	1-5/8
	Heavy	3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
8	Very Light	1/8	1/4	3/8	1/2	5/8	3/4
	Light	1/4	1/2	3/4	1	1-1/4	1-1/2
	Medium	3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
	Heavy	1/2	1	1-1/2	2	2-1/2	3
10	Very Light	5/32	5/16	7/16	5/8	3/4	15/16
	Light	5/16	5/8	7/8	1-1/4	1-1/2	1-7/8
	Medium	1/2	7/8	1-3/8	1-7/8	2-3/8	2-3/4
	Heavy	5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4
12	Very Light	3/16	3/8	9/16	3/4	15/16	1-1/8
	Light	3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
	Medium	9/16	1-1/8	1-5/8	2-1/4	2-3/4	3-3/8
	Heavy	3/4	1-1/2	2-1/4	3	3-3/4	4-1/2
14	Very Light	7/32	7/16	5/8	7/8	1-1/16	1-5/16
	Light	7/16	7/8	1-1/4	1-3/4	2-1/8	2-5/8
	Medium	5/8	1-1/4	1-7/8	2-5/8	3-1/4	3-7/8
	Heavy	7/8	1-3/4	2-5/8	3-1/2	4-3/8	5-1/4
16	Very Light	1/4	1/2	3/4	1	1-1/4	1-1/2
	Light	1/2	1	1-1/2	2	2-1/2	3
	Medium	3/4	1-1/2	2-1/4	3	3-3/4	4-1/2
	Heavy	1	2	3	4	5	6
18	Very Light	5/16	9/16	13/16	1-1/8	1-7/16	1-11/16
	Light	9/16	1-1/8	1-5/8	2-1/4	2-3/4	3-3/8
	Medium	7/8	1-5/8	2-1/2	3-3/8	4-1/4	5
	Heavy	1-1/8	2-1/4	3-3/8	4-1/2	5-5/8	6-3/4
20 and Larger	Very Light	5/16	5/8	15/16	1-1/4	1-9/16	1-7/8
	Light	5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4
	Medium	1	1-7/8	2-3/4	3-3/4	4-5/8	5-5/8
	Heavy	1-1/4	2-1/2	3-3/4	5	6-1/4	7-1/2

DEFINITIONS

- (e) Boards graded under Paragraph 118w. Alternate Board Grades shall use the following table for determining the maximum allowable crook.

Length	Grade	Face Width				
		4"	6"	8"	10"	12"
8 Feet	2 & Btr. Com.	1/2	7/16	3/8	5/16	1/4
	3 Com.	13/16	3/4	11/16	5/8	1/2
	4 Com.	1	15/16	7/8	13/16	3/4
10 Feet	2 & Btr. Com.	13/16	11/16	9/16	1/2	3/8
	3 Com.	1-1/4	1-3/16	1-1/16	1	13/16
	4 Com.	1-9/16	1-7/16	1-3/8	1-1/4	1-3/16
12 Feet	2 & Btr. Com.	1-1/8	1	7/8	11/16	9/16
	3 Com.	1-13/16	1-11/16	1-9/16	1-7/16	1-1/8
	4 Com.	2-1/4	2-1/8	2	1-13/16	1-11/16
14 Feet	2 & Btr. Com.	1-9/16	1-5/16	1-1/8	15/16	3/4
	3 Com.	2-1/2	2-5/16	2-1/8	1-15/16	1-9/16
	4 Com.	3-1/16	2-7/8	2-11/16	2-1/2	2-5/16
16 Feet	2 & Btr. Com.	2	1-3/4	1-1/2	1-1/4	1
	3 Com.	3-1/4	3	2-3/4	2-1/2	2
	4 Com.	4	3-3/4	3-1/2	3-1/4	3

DEFINITIONS

754. Combination Grades - Product Standard PS20 permits grouping the highest two grades in a grade category, and grade marking the combination as an "& Better" grade. The combined grade is assigned the allowable property values of the lower grade unless allowable property values have been assigned to the combination. In the case of "No. 1 & Better", data collected for Douglas fir, Larch, Douglas fir-Larch, and Hem-Fir, during the U.S. In-grade testing program permits development of allowable property values specific to the combination grade. When the "No. 1 & Better" grade combination is assigned specific allowable properties, as for Douglas fir, Larch, Douglas fir-Larch, and Hem-Fir, the material is required to be stamped with a "No. 1 & Better" grade stamp. If the lumber is grade stamped as "Select Structural" and "No. 1" rather than "No. 1 & Better", the values assigned to the individual species apply.

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