

**Absorption**

The gain of free water by the cell cavities.

**Adsorption**

The gain of bound water by the cell wall from adjacent air.

**Air-dry moisture content**

The equilibrium moisture content of wood for conditions outdoors but undercover; the standard moisture content for this condition is taken at 12 percent.

**Anisotropic**

Exhibiting different properties when tested along axes in different directions.

**Annual growth**

Layer of wood laid down during a given year; same as annual or seasonal increment; see *growth ring*.

**Annual ring**

Annual increment of wood growth, consisting of a zone of earlywood and a zone of latewood, as seen on a cross section. Same as growth ring.

**Assay zone**

The zone in a treated wood product which is sampled for the determination of preservative retention.

**Balloon frame**

A construction system in which vertical shrinkage is minimized through the use of ledgers and continuous or multi-story framing systems, minimizing vertical shrinkage.

**Bark**

The tissues of a tree outside of the cambium; bark is composed of inner living bark and outer dead brown bark.

**Batten**

A narrow strip of wood used to cover joints or as decorative vertical members over plywood or wide boards.

**Bending strength**

The resistance to stress applied transversely in such a manner as to cause curvature of the member axis.

**Boards**

Lumber that is nominally less than 2 inches thick and 2 or more inches wide. Boards less than 6 inches wide are sometimes called strips.

**Bound water**

Water in the wood that is associated with the cell wall material; adsorbed water.

**Bow**

The distortion of lumber in which there is a deviation, in a direction perpendicular to the flat face, from a straight line from end-to-end of the piece.

**Box-heart split**

A split originating in the wood surrounding the pith during drying; caused by stresses set up because of the differences in tangential and radial shrinkage of the wood.

**Boxed heart**

A piece of lumber containing the pith.

**Brashness**

A condition in wood which causes a sudden and complete break with very little splintering, often under small loads and deformations.

**Brown rot**

A type of wood-destroying fungus that decomposes cellulose and the associated pentosans, leaving the lignin in a more or less unaltered state; the resultant mass of decayed wood has cubical fractures and becomes powdery when dry.

**Building envelope**

The system of overlapping layers of material designed to shed water down and out on the exterior of the building.

**Butt joint**

An end joint formed by abutting the squared edges of two pieces.

**Cambium**

A unique tissue responsible for growth, located between the wood and bark, and capable of repeated cell divisions.

**Casehardening**

A stressed condition in a board caused by drying under severe conditions. Characterized by compression in the outer layers and tension in the center.

**Caulk**

To fill or close a joint with a seal to make it watertight and airtight. The material used to seal a joint.

**Cell wall**

The wall that encloses the cell contents; in a mature cell it is compound; i.e., it consists of several layers.

**Check**

A lengthwise separation of wood fibers, usually extending across the rings of annual growth, caused chiefly by strains produced in drying.

**Chipped grain**

Wood surface from which pieces of wood have been scooped out or chipped by the action of cutting tools; also called *torn grain*.

**Collapse**

Defect that sometimes develops above the fiber saturation point when very wet heart-wood of certain species is dried; evidenced by abnormal and irregular shrinkage.

**Commercial standards**

Standards which are published by any of a variety of organizations such as trade associations or technical societies and which are generally accepted by industry.

**Compression wood**

Abnormal wood formed on the lower side of branches and of curved stems of conifers; this tissue has unusually high longitudinal shrinkage and physical properties that differ from those of normal wood; see *reaction wood* and *tension wood*.

**Conifer**

Cone-bearing tree. Conifers are part of the botanical class *Gymnospermae*, and produce softwood—one of the two broad classes of wood.

**Core gap**

An open joint extending through or partially through a panel, which results when crossband or center veneers are not tightly butted.

**Core lap**

A condition where the veneers are so placed that one piece overlaps the other.

**Creep**

The ability of wood to undergo a plastic flow under loads.

**Creosote**

A distillation of coal tar with a continuous boiling range of 125°C, beginning at about 200°C. Used for the preservative treatment of wood.

**Crook**

The distortion of lumber in which there is a deviation, in a direction perpendicular to the edge, from a straight line from end-to-end of the piece.

**Cross grain**

In wood any deviation of the grain (fibers) from the direction of the main axis of the piece. Because of the marked strength differences between parallel to grain and perpendicular to grain directions, cross grain induces severe reductions in most engineering properties.

**Cross section**

The surface obtained when cutting a log perpendicular to its long axis or a piece of wood perpendicular to the longitudinal direction.

**Cup**

A distortion of a board in which there is a deviation flatwise from a straight line across the width of the board.

**Decay**

Decomposition of wood by fungi, resulting in loss of density, bending strength, and stiffness. A change in the color, the development of a soft texture, and presence of invasion zones indicate fungal infection. Cellulose and/or lignin have been depolymerized into simpler compounds. Advanced decay is the older stage in which punkiness and a crumbly texture is evident.

**Defect**

Any abnormality or irregularity that lowers the commercial value of wood by decreasing its strength or affecting adversely its working or finishing qualities or its appearance.

**Delamination**

A visible separation between plies that would normally receive glue at their interface and be firmly contacted in the pressing operation. Wood characteristics, such as checking, leafing, splitting, and broken grain, are not to be construed as delamination.

**Density**

Mass divided by total volume.

**Diamonding**

Uneven shrinkage that causes "squares" to become diamond-shaped on drying; usually develops in pieces in which the growth increments extend diagonally, so that the faces of the piece are neither flat- nor edge-grained.

**Dimension**

Lumber with a nominal thickness of from 2 up to but not including 5 inches and a nominal width of 2 inches or more.

**Dimensional stability**

Resistance to swelling (or shrinkage) upon absorption (or desorption) of water.

**Dressed size**

The dimensions of lumber after being surfaced with a planing machine.

**Dry rot**

A special type of brown rot, causing wide-spread damage in buildings; in the United States the causal organism is *Poria incrassata* (B. & C.) Burt. Also, a term commonly and erroneously used to describe any wood decay.

**Durability**

A general term for permanence or resistance to deterioration. Frequently used to refer to the degree of resistance of a species of wood to attack by wood-destroying fungi under conditions that favor such attack. In this connection the term "decay resistance" is more specific. As applied to gluelines, the life expectancy of the structural qualities of the adhesive under the anticipated service conditions of the structure.

**Earlywood**

The portion of the annual growth ring that is formed during the early part of the growing season. It is usually less dense and weaker mechanically than latewood.

**Edge grain**

Lumber which has been sawn so that the face of the board is the radial plane of the log; commercially lumber is considered edge-grained when the angle between the surface and the annual rings lies between 45 and 90° with the wide surface of the piece; synonymous with *vertical grain*, *rift grain* and *quarter-sawn*.

**Elastomer**

A macromolecular material which, at room temperature, is deformed by application of a relatively low force and is capable of recovering substantially in size and shape after removal of the force.

**Encased knot**

That portion of a branch which becomes embedded in the bole of a tree after the branch dies; also called *loose knot*.

**End checks**

Drying checks that develop on the ends of a piece of wood.

**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 (EMC).

**Extractives**

Substances in wood, not an integral part of the cellular structure, that can be removed by solution in hot or cold water, ether, benzene, or other solvent that does not degrade the wood substance. Synonymous with extraneous materials in wood.

**Factory and shop lumber**

Lumber intended to be cut up for use in further manufacture. It is graded on the basis of the percentage of the area that will produce a limited number of cuttings of a specified minimum size and quality.

**Felt**

Generally, the traditional asphalt saturated roll paper used frequently as the water barrier between the building frame and exterior cladding.

**Fiberboard**

A broad generic term inclusive of sheet materials of widely varying densities manufactured or refined or partially refined from wood (or other vegetable) fibers. Bonding agents and other materials may be added to increase strength, resistance to moisture, fire, or decay, or to improve some other property.

**Fiber saturation point**

The moisture content of wood at which the cell walls are saturated and the cell cavities free from water. A critical point with reference to most properties of wood.

**Fiber, wood**

A wood cell comparatively long (1/25 or less to 1/3 inch), narrow, tapering, and closed at both ends.

**Finger joint**

An end joint made up of several meshing wedges or fingers of wood bonded together with an adhesive. Fingers are sloped and may be cut parallel to either the wide or narrow face of the piece.

**Fire-retardant**

Chemical or mixture of chemicals applied to combustible materials, usually as an aqueous solution, to discourage or retard combustion. May also be used in the form of coatings.

**Flakeboard**

See *particleboard*.

**Flat-sawn**

Said of wood so sawed that the tangential face of the wood is exposed on the wide surfaces of boards; same as *plain-sawn*.

**Flat grain**

Lumber which has been sawn so that the wide face of the board is approximately perpendicular to the radius of the log; commercially lumber is considered to be flat-grained if the wide surface of the board is less than 45° from a tangent to the annual rings; synonymous with *slash grain*.

**Fungus**

One of a group of plants that contain no chlorophyll and are unable to manufacture their own food. They must have organic materials, such as wood, already prepared by the host. (Plural = fungi.) See *Decay*

**Glueline**

The layer of adhesive that attaches two pieces of wood to each other.

**Grade**

The designation of the quality of a manufactured piece of wood.

**Grain**

The direction, size, arrangement, appearance, or quality of the fibers in wood or lumber. To have a specific meaning the term must be qualified.

**Grain angle**

The angle formed between the direction of the wood fibers and the edge of a piece of lumber.

**Hot press**

Pressing equipment with heated platens used in the manufacture of plywood, particleboard, and most other glued wood panels.

**Grain direction**

In wood, the direction parallel to the long axis of the tracheids or fibers.

**Green wood**

Wood which has the original moisture present in the standing tree and has not been dried below the fiber saturation point.

**Growth ring**

A layer of wood produced during one growing period, composed of a zone of earlywood and a zone of latewood. Same as annual ring.

**Hardboard**

A generic term for a panel manufactured primarily from interfelted lignocellulosic fibers (usually wood), consolidated under heat and pressure in a hot press to a density of 31 pounds per cubic foot or greater, and to which other materials may have been added during manufacture to improve certain properties.

**Hardness**

Resistance to indentation.

**Hardwood**

Wood produced by broad-leaved trees such as oak, elm, and ash; same as *porous wood*.

**Heartwood**

The older inner region of a tree stem no longer participating in life processes. Usually darker than the outer sapwood.

**Hygroscopic**

The property of a material which enables it to attract moisture from the air.

**Hypha**

One of the threadlike elements of the mycelium of a fungus.

**Incipient decay**

The early stages of wood decay, when fungal attack has not advanced far enough to perceptibly soften or destroy wood.

**Incising**

The operation of making shallow, slitlike holes in the surface of material to be treated, so that deeper, more uniform penetration of preservative liquid may be obtained.

**Intergrown knot**

That portion of a branch which is embedded in the tree trunk while this branch is alive; also called *tight knot*.

**Juvenile wood**

Wood formed near the pith of the tree, often characterized by wide growth rings of lower density and abnormal properties.

**Kerf**

The gap created by a saw as it cuts.

**Knot**

That portion of a branch of limb that has been surrounded by subsequent growth of the stem. The shape of the knot as it appears on a cut surface depends on the angle of the cut relative to the long axis of the knot.

**Latewood**

Also called summerwood, is the wood formed during the latter part of the growing season, and is characterized by cells which are smaller and have thicker walls than the earlywood.

**Lathed checks**

Closely spaced checks in veneer, resulting from forces imposed during the cutting process. In panel layup, the face with the lath checks (loose space) is placed to the interior of the panel and the tight face is exposed.

**Layup**

The process of loosely assembling the adhesive-coated components of a unit, particularly a panel, to be pressed or clamped.

**Longitudinal**

Generally, parallel to the direction of the wood fibers.

**Loosened grain**

Loosened small portions of the wood on the flat-grained surfaces of boards.

**Marine borers**

Molluscs and crustaceans that attack submerged wood in salt and brackish water.

**Mature wood**

Wood produced after cambial cells have attained maximum dimensions. See *juvenile wood*.

**Maximum moisture content**

The maximum amount of water which can be contained in the combined spaces in the cell wall, the lumens, and intercellular spaces.

**Membrane**

A thin continuous sheet or layer installed in construction. May serve as a vapor barrier on the warm side of the wall or on the soil beneath the building or as a liquid water deflector beneath the exterior cladding.

**Modulus of rupture (R)**

The maximum bending load to failure.

**Moisture content**

The amount of water contained in wood, usually expressed as a percentage of the oven dry weight of the wood.

**Mycellium**

The mass of interwoven, threadlike filaments forming the vegetative part of a fungal plant; see *hypha*.

**Nominal size**

As applied to timber or lumber, the size by which it is known and sold in the market; often differs from the actual size.

**Oil-borne preservative**

Any oil-soluble wood preservatives, such as pentachlorophenol, copper naphthenate, etc.

**Old growth**

Timber in or from a mature, naturally established forest.

**Overlay**

A thin layer of paper, plastic, film, metal foil, or other material bonded to one or both faces of panel products or to lumber to provide a protective or decorative face or a base for painting.

**Particleboard**

A generic term for a panel manufactured from comminuted wood. Also, a specific type of board produced from typical wood particles.

**Photodegradation**

The chemical decomposition of wood resulting from exposure to light energy.

**Pitch pocket**

A well-defined opening between rings of annual growth, usually containing, or which has contained, pitch, either solid or liquid.

**Pitch streak**

A localized accumulation of resin in coniferous woods which permeates the cells forming resin soaked, patches or streaks.

**Pith**

The small, soft core occurring at the center of a tree trunk, branch, twig, or log.

**Platform frame**

The more common framing system in use today, in which each story is supported by the relatively completely framed story below. It equalizes vertical shrinkage but does not minimize it.

**Ply**

Layer. In plywood, a sheet of veneer.

**Plywood**

A glued wood panel made up of relatively thin layers of veneer with the grain of adjacent layers at right angles. Usually with an odd number of plies to achieve structural balance internally.

**Preservative**

Any substance that, for a reasonable length of time, is effective in preventing the development and action of wood-rotting fungi, borers of various kinds, and harmful insects that deteriorate wood.

**Radial direction**

In wood, the direction represented by the radius of the cross section of a log, i.e., perpendicular to the growth rings.

**Raised grain**

Roughened condition of the surface of dressed lumber on which the hard latewood is raised above the softer earlywood but is not torn loose from it.

**Reaction wood**

Wood with distinctive anatomical and physical characteristics, formed in leaning trees. In hardwoods reaction wood is known as *tension wood*, and in softwoods as *compression wood*.

**Relative humidity**

The ratio of the quantity of water in the air at the prevailing temperature to the quantity required to saturate the air at that temperature.

**Resin canal**

In wood, a tubelike, intercellular space surrounded by resin secreting cells, and containing a natural resin.

**Rolling shear**

Shear in which failure occurs in a plane parallel to grain by sliding perpendicular to grain.

**Rot**

See *Decay*

**Sapwood**

Outer (younger) portion of a woody stem (or a log), usually distinguishable from the core (heartwood) by its lighter color; see *heartwood*.

**Saw surfaced**

A surface texture for exposed products, usually produced by scratch sawing or scratch sanding perpendicular to the grain.

**Scarf joint**

An end joint formed by joining with adhesive the ends of two pieces that have been tapered or beveled to form sloping plane surfaces, usually to a featheredge, and with the same slope of the plane with respect to the length in both pieces.

**SDRY**

A statement on a lumber grade stamp indicating that the material was surfaced after drying to 19% moisture content or below.

**Sealant**

See *caulk*

**SGRN**

A notation on a lumber grade stamp indicating that the material was surfaced prior to drying.

**Shake**

Rupture of cells or between cells resulting in the formation of an opening in the grain of the wood; the opening may develop at the common boundary of two rings or within a growth ring.

**Shiplap**

Lumber that has been milled along the edge to make a rabbeted or lapped joint.

**Shrinkage**

Change in dimension due to loss of moisture below the fiber saturation point, expressed as a percentage of green dimension.

**Slash grain**

see *flat grain*.

**Slip sheet**

A sheet or membrane inserted between two layers of material to allow for slippage between them without damage to either.

**Slope of grain**

The angular deviation of the grain from the longitudinal axis of the piece of wood.

**Soft rot**

Decay caused by the *Ascomycetes* and *Fungi Imperfecti*; the surface of the affected wood is typically softened.

**Softwoods**

Generally, one of the botanical groups of trees that in most cases have needlelike or scalelike leaves, the conifers, also the wood produced by such trees. The term has no reference to the actual hardness of the wood.



**Solid wood**

Wood that has not been taken apart and rejoined. Usually refers to larger pieces, such as lumber.

**Specific gravity of wood**

The decimal ratio of the oven-dry weight of a piece of wood to the weight of the water displaced by the wood at a given moisture content; abbreviated as sp gr or sg.

**Spiral grain**

Grain in which the fibers are aligned in a helical orientation around the axis of the stem.

**Split**

A longitudinal separation of the wood due to tearing apart of the wood cells.

**Split sheet**

A less than full width piece of felt or other membrane, generally used to flash around openings or to reinforce the membrane at corners or other intersecting planes in a building.

**Spore(s)**

A tiny, seedlike reproductive body capable of growing into an adult fungus plant.

**Springwood**

Portion of annual growth ring formed in early part of growth season. Same as earlywood.

**Summerwood**

Portion of annual growth ring formed in latter part of growth season. Same as latewood.

**Surface checks**

Seasoning checks that develop on the surface and extend into the wood for varying distances.

**Swelling**

Increase in the dimensions of wood due to increase in moisture content.

**Tangential**

A tangent at the circumference of a tree or log, or parallel to such a tangent. Flat-grained lumber is sawed tangentially.

**Telegraph**

To show through the surface layer, any irregularities below. For example, in particleboard, a characteristic manifested by the particle pattern showing through an overlay.

**Tension wood**

Reaction wood formed typically on the upper, usually concave side of leaning or crooked stems of hardwoods; see *compression wood*, *reaction wood*.

**Termite**

Insect that attacks wood for both food and shelter. Subterranean termites are those found in soil that require moisture and build earthen tunnels to shelter them as they invade the wood; drywood termites have no contact with soil and require little moisture; dampwood termites require abundant moisture, have no contact with soil, and are found largely in decaying wood.

**Termite shield**

Metal flashings or strips inserted between the foundation and wood sill-plate of buildings to serve as a barrier.

**Tight knot**

That portion of a branch which is embedded in the tree trunk while the branch is alive; also called *ingrown knot*.

**Timber**

A solid wood member whose least cross-sectional dimension is greater than 4 inches.

**Tongue and groove**

Boards or planks machined in such a manner that there is a groove on one edge and a corresponding projection (tongue) on the other edge, so that such boards or planks can be fitted together. *Dressed and matched* is an alternative term with the same meaning.

**Torn grain**

See *chipped grain*.

**Twist**

A distortion caused by the turning or winding of the edges of a board so that the four corners of any face are no longer in the same plane.

**Veneer**

A thin layer or sheet of wood. It may be cut in a lathe which rotates a log or bolt against a knife, produced by sawing, or sliced off a log, bolt, or flitch with a knife.

**Warp**

Any variation from a true or plane surface. Warp includes bow, crook, cup, and twist, or any combination thereof.

**Warping**

Any distortion in a piece of wood from its true plane that may occur in seasoning.

**Water-borne preservative**

A solution or formulation used to protect wood from organic deterioration.

**Weathering**

The mechanical or chemical disintegration and discoloration of the surface of wood caused by exposure to light, the action of dust and sand carried by winds, and the alternate shrinking and swelling of the surface fibers with the continual variation in moisture content.

**White rot**

A type of wood-destroying fungus that attacks both cellulose and lignin; the resultant mass is spongy or stringy, usually white, but may assume various shades of yellow, tan, and light brown.

**Wood**

A material of plant origin characterized by a fibrous structure containing tracheids or vessels and composed largely of lignin and cellulose. The high lignin content contributes unique rigidity to the structure and thus distinguishes wood from other plant materials. The general chemical composition of wood is approximated by the formula  $C_6H_9O_4$ .