Glossary

Adhesive—A substance capable of holding materials together by surface attachment. It is a general term and includes cements, mucilage, and paste, as well as glue.

Air-dry wood—Dried by exposure to air in a yard or shed, without artificial heat.

American Lumber Standards—Provisions for softwood lumber dealing with recognized classifications, nomenclature, basic grades, sizes, descriptions, measurements, tally, shipping, provisions, grade marking, and inspection of lumber. The primary purpose of these standards is to serve as a guide in preparing or revising grading rules of the various lumber manufacturers' associations. A purchaser must, however, make use of association rules because the basic standards are not in themselves commercial rules.

Angiosperms—Various orders of hardwoods that have true flowers and seeds enclosed in a fruit.

Anisotropic—Exhibiting different properties when measured along different axes. In general, fibrous materials such as wood are anisotropic.

Annual growth ring—The layer of wood growth put on a tree during a single growing season. In the temperate zone the annual growth rings of many species (e.g., oaks and pines) are readily distinguished because of differences in the cells formed during the early and late parts of the season. In some temperate zone species (black gum and sweetgum) and many tropical species, annual growth rings are not easily recognized.

Basis weight—In the United States, the weight in pounds of a ream of paper cut to a specific basic size; the basic size differs for different types of paper, as does the number of sheets constituting a ream. In most foreign countries basis weight is expressed in grams per square meter (grammage).

Biomass—The quantity of biological matter of one or more species present on a unit area. With respect to trees, biomass can be expressed in terms of various components (wood, bark, foliage, roots, etc.) of all trees on a unit area or of a single tree; biomass quantities of trees are commonly expressed on an oven-dry weight basis.

Bleaching, pulp—The process of removing residual lignin from pulp to improve the brightness and strength.

Board foot—A unit of measurement of lumber represented by a board 1 foot long, 12 inches wide, and 1 inch thick or its cubic equivalent. In practice, the board foot calculation for lumber 1 inch or more in thickness is based on its nominal thickness and width and the actual length. Lumber with a nominal thickness of less than 1 inch is calculated as 1 inch.

Bole—The main stem or trunk of a tree of substantial diameter—roughly, capable of yielding sawtimber, veneer logs, or large poles. Seedlings, saplings, and small-diameter trees have stems, not boles.

Bolt—(1) A short section of a tree trunk; (2) in veneer production, a short log of a length suitable for peeling in a lathe.

Bond—(noun) The union of materials by adhesives. (verb) To unite materials by means of an adhesive.

Bone-dry unit (BDU)—A quantity of wood residue that would weigh 2,400 pounds at zero percent moisture content.

British thermal unit (Btu)—The quantity of heat required to raise the temperature of one pound of water by one degree Farhenheit.

Bucking—Cross-cutting felled trees into logs or bolts.

Built-up timbers—An assembly made by joining layers of lumber together with mechanical fastenings so that the grain of all laminations is essentially parallel.

Bulk density—Factor used to convert between solid wood equivalent of processed wood such as chips, pulp, particleboard, and sawdust. The solid wood equivalent volume is considered to have a bulk density factor of one.

Calorific value—The potential heat-production value of a wood source. Depends on the cellulose-lignin ratio, the percentage of extractives, and the moisture content.

Cellulose—The carbohydrate that is the principal constituent of wood and forms the framework of the wood cells.

Chemical pulp—The product of the reduction of wood or other fiber into component parts during cooking with various chemical liquors in processes such as sulfate, sulfite, and soda pulping.

Chemimechanical pulp (CMP)—A product made by pretreating chips with chemicals at a temperature usually below 100° C, followed by atmospheric refining.

Chipper canter—A headrig machine that reduces barked logs directly to chips and cants without producing sawdust.

Circular saw—A circular metal plate with teeth on the circumference that rotates on a drive shaft.

Clipper loss—During the manufacture of veneer, the ribbon of veneer is cut to specific sizes by a device called a clipper. Losses during this step occur because of unacceptable defects (knots, rot, etc.) in the veneer, splits and breakage, or sizing.

Combustion—Consumption by oxidation, evolving heat, and, generally, also flame and incandescence.

Compaction—Close packing of chips in a given volume of space in order to minimize the voids between the individual chips.

Composites—Built-up, bonded products consisting wholly of natural wood, or in combination with metals, plastics, etc.

Compression wood—Abnormal wood formed on the lower side of branches and inclined trunks of softwood trees. Compression wood is identified by its relatively wide annual rings (usually eccentric when viewed on cross section of branch or trunk), relatively large amount of summerwood, sometimes more than 50% of the width of the annual rings in which it occurs, and its lack of demarcation between earlywood and latewood in the same annual rings. Compression wood shrinks excessively lengthwise, as compared with normal wood.

Cord—See page 38 for various definitions of a cord.

Cubic recovery ratio (CRR)—In a material balance diagram, the ratio of wood product recovered divided by the wood raw material used, both measured in cubic volume. The fraction of wood raw material converted to the intended product.

Cunit—A measurement equal to 100 cubic feet of solid wood.

Defect—A characteristic of a tree, log, lumber, or other product that makes it either less desirable or completely unsuitable for the intended purpose. Examples are knots, decay, insect holes, and diagonal grain.

Density—As usually applied to wood of normal cellular form, density is the mass of wood substance enclosed within the boundary surfaces of a wood-plus-voids complex having unit volume. It is variously expressed as pounds per cubic foot, kilograms per cubic meter, or grams per cubic centimeter at a specified moisture content.

Diameter at breast height (dbh)—Breast height of a tree is considered to be four and one-half feet above ground level.

Diameter inside bark (dib)—A measurement used in log scaling.

Dissolving pulp—A special grade of chemical pulp, usually made from wood or cotton linters, for use in the manufacture of regenerated cellulose (viscose rayon and cellophane) or cellulose derivatives such as acetate, nitrate, and others.

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. Also called springwood.

East-side Scribner—Reference to the method of applying the Scribner log rule and obtaining log measurements, other than in western Oregon and western Washington.

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.

Excess air—Refers to the quantity of air supplied that exceeds the minimum necessary to support the combustion chemistry.

Expansion factor—With respect to chips, bark, sawdust, and shavings, the ratio of volume occupied in one of these forms to the volume of solid wood before conversion.

Extractive—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 solvents that do not react chemically with wood components.

Factory and Shop lumber—*See* Lumber.

Fiberboard—A broad generic term inclusive of sheet materials of widely varying densities manufactured of refined or partly refined 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. *See also* Medium density fiberboard.

Fiber saturation point (fsp)—The stage in the drying or wetting of wood at which the cell walls are saturated and the cell cavities are free from water. It applies to an individual cell or group of cells, not to whole boards. It is usually taken as approximately 30% moisture content, based on oven-dry weight.

Fines—A term referring to material passing through a screening process that is smaller than the acceptable minimum size.

Firmwood—Solid wood free of decay and voids; a term used in log scaling.

Flitch—A portion of a log sawn on two or more faces—commonly on opposite faces leaving two waney edges. When intended for resawing into lumber, it is

resawn parallel to its original wide faces. Or, it may be sliced or sawn into veneer, in which case the resulting sheets of veneer laid together in the sequence of cutting are called a flitch. The term is loosely used.

Fluffing factor—*See* Expansion factor.

Furnish—The wood material which has been reduced for incorporation into wood-based fiber or particle panel products.

Glue—Originally, a hard gelatin obtained from hides, tendons, cartilage, bones, etc., of animals. Also, an adhesive prepared from this substance by heating with water. Through general use the term is now synonymous with the term "Adhesive."

Glue laminating—Production of structural or non-structural wood members by bonding two or more layers of wood together with adhesive.

Glueline—The layer of adhesive that attaches two adherends. Also called bondline.

Grade—The designation of the quality of a manufactured piece of wood or of logs.

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.

Close-grained wood has narrow, inconspicuous annual rings. The term is sometimes used to designate wood having small and closely spaced pores, but in this sense the term "fine-textured" is more often used.

Coarse-grained wood has wide, conspicuous annual rings in which there is considerable difference between springwood and summerwood. The term is sometimes used to designate wood with large pores, such as oak, ash, chestnut, and walnut, but in this sense the term "coarse-textured" is more often used.

Cross-grained wood has fibers that deviate from a line parallel to the sides of the piece; may be either diagonal or spiral grain or a combination of the two.

Curly-grained wood has fibers that are distorted so that they have a curled appearance, as in "birdseye" wood. The areas showing curly grain may vary up to several inches in diameter.

Diagonal-grained wood has annual rings that are at an angle with the axis of a piece as a result of sawing at an angle with the bark of the tree or log. A form of cross-grain.

Edge-grained lumber has been sawed so that the wide surfaces extend approximately at right angles to the annual growth rings. Lumber is considered edge-grained when the rings form an angle of 45 to 90 degrees with the wide surface of the piece.

End-grained wood is the grain as seen on a cut made at a right angle to the direction of the fibers (e.g., on a cross section of a tree).

Fiddleback-grained wood has a type of fine wavy grain found, for example, in species of maple; such wood is traditionally used for the backs of violins.

Flat-grained wood has been sawed parallel to the pith and approximately tangentially to the growth rings. Lumber is considered flat-grained when the annual growth rings make an angle of less than 45 degrees with the surface of the piece.

Interlocked-grained wood has fibers that for several years slope in a right-handed direction, and then for a number of years slope to a left-handed direction, and so on. Such wood is exceedingly difficult to split radially, though tangentially it may split fairly easily.

Open-grained wood is the common classification for woods with large pores, such as oak, ash, chestnut, and walnut. Also known as "coarse-textured."

Plainsawed lumber is another term for flat-grained lumber.

Quartersawed lumber is another term for edge-grained lumber.

Side-grained wood is another term for flat-grained lumber.

Slash-grained wood is another term for flat-grained lumber.

Spiral-grained wood has fibers that take a spiral course around the trunk of a tree instead of the normal vertical course. The spiral may extend in a right-handed or left-handed direction around the tree trunk. Spiral grain is a form of cross grain.

Straight-grained wood has fibers that run parallel to the axis of a piece.

Vertical-grained lumber is another term for edge-grained lumber.

Wavy-grained wood has fibers that collectively take the form of waves or undulations.

Grammage—*See* Basis weight.

Gravity packed unit (GPU)—A unit (normally a 200 cubic foot space) filled with chips or other residue material and allowed to settle under the action of gravity.

Green—Freshly sawed or undried wood. Wood that has become completely wet after immersion in water would not be considered green, but may be said to be in the "green condition."

Green target sizes—Dimensions that wood conversion industries calculate as settings for the processing machinery.

Gross scale—The volume of a log obtained from original geometric measurements without adjustments for potential processing losses associated with crookedness, decayed regions, and so forth.

Groundwood pulp—A mechanical wood pulp produced by pressing a debarked log against a revolv-

ing pulpstone and reducing the wood to a mass of fibers.

Growth ring—*See* Annual growth ring.

Gymnosperm—A term signifying plants bearing exposed seeds, usually borne in cones. *See also* Softwoods.

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.

Hardwoods—Generally one of the botanical groups of trees that have broad leaves in contrast to the conifers or softwoods. The term has no reference to the actual hardness of the wood. Also called angiosperms or deciduous.

Heartwood—The wood extending from the pith to the sapwood, the cells of which no longer participate in the life processes of the tree. Heartwood may contain phenolic compounds, gums, resins, and other materials that usually make it darker and more decay resistant than sapwood.

Hemicellulose—A celluloselike material (in wood) that is easily decomposable as by dilute acid, yielding several different simple sugars.

Hog fuel—A product made by reducing waste pieces of lumber and slabs, or small tree stems, to chip form.

Holocellulose—The total carbohydrate fraction of wood – that is, cellulose plus hemicellulose.

Horizontally laminated timbers—Laminated timbers designed to resist bending loads applied perpendicular to the wide faces of the laminations.

Insulation board—*See* Structural insulating board.

Juvenile wood—The innermost rings of wood adjacent to the pith, formed during the initial development of that part of the stem by the live crown. As the crown moves higher with growth in subsequent years, "mature" wood rings are formed. Certain features of juvenile wood, such as cell structure and size, differ from those typical of mature wood.

Kappa number—A test for the degree of lignification of pulps.

Kiln—A chamber having controlled airflow, temperature, and relative humidity for drying lumber, veneer, and other wood products.

Kiln-dry wood—Dried in a kiln with the use of artificial heat to a specified moisture content.

Knot—That portion of a branch or 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.

Encased knot: The rings of annual growth are not intergrown with those of the surrounding wood.

Intergrown knot: The rings of annual growth are completely intergrown with those of the surrounding wood.

Loose knot: It is not held firmly in place by growth or position and cannot be relied on to remain in place.

Pin knot: It is not more than 1/2 inch in diameter.

Sound knot: It is solid across its face, at least as hard as the surrounding wood, and shows no indication of decay.

Spike knot: It is cut approximately parallel to its long axis so that the exposed section is definitely elongated.

Kraft (sulfate) process—A chemical pulping process in which lignin is dissolved by a solution of sodium hydroxide and sodium sulfide.

Kraft pulp—A chemical wood pulp obtained by cooking wood chips at a high temperature in a solution of sodium hydroxide and sodium sulfide.

Laminate—A product made by bonding together two or more layers (laminations) of material or materials.

Laminated timbers—An assembly made by bonding layers of veneer or lumber with an adhesive so that the grain of all laminations is essentially parallel. *See also* Built-up timbers.

Laminated veneer lumber (LVL)—A structural lumber manufactured from veneers laminated into a panel with the grain of all veneer running parallel. The resulting panel is generally manufactured in 3/4 to 1-1/2 inch thicknesses and ripped to common lumber widths of 1-1/2 to 11-1/2 inches, or wider.

Latewood—The portion of the annual growth ring that is formed after the earlywood formation has ceased. It is usually denser and stronger mechanically than earlywood. Also called summerwood.

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

Lignin—The second most abundant constituent of wood, located principally in the secondary wall and the middle lamella, which is the thin cementing layer between wood cells. Chemically it is an irregular polymer of substituted propylphenol groups, and thus no simple chemical formula can be written for it.

Longitudinal—Generally, parallel to the direction of the wood fibers.

Lumber—The product of the saw and planing mill not further manufactured than by sawing, resawing,

passing lengthwise through a standard planing machine, crosscutting to length, and matching.

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.

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.

Dressed size: The dimensions of lumber after being surfaced with a planing machine. The dressed size is usually 1/2 to 3/4 inch less than the nominal or rough size. A 2- by 4-inch stud, for example, actually measures about 1-1/2 by 3-1/2 inches.

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.

Matched lumber: Lumber that is edge dressed and shaped to make a close tongued-and-grooved joint at the edges or ends when laid edge to edge or end to end.

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.

Patterned lumber: Lumber that is shaped to a pattern or to a molded form in addition to being dressed, matched, or shiplapped, or any combination of these workings.

Rough lumber: Lumber that has not been dressed (surfaced) but which has been sawed, edged, and trimmed.

Shiplapped lumber: Lumber that is edge dressed to make a lapped joint.

Shipping-dry lumber: Lumber that is partly dried to prevent stain and mold in transit.

Shop lumber: *See* Factory and Shop lumber above.

Side lumber: A board from the outer portion of the log—ordinarily one produced when squaring off a log for a tie or timber.

Structural lumber: Lumber that is intended for use where allowable properties are required. The grading of structural lumber is based on the strength or stiffness of the piece as related to anticipated uses.

Surfaced lumber: Lumber that is dressed by running it through a planer.

Timbers: Lumber that is nominally 5 inches or more in least dimension. Timbers may be used as beams, stringers, posts, caps, sills, girders, purlins, and so forth.

Yard lumber: A little-used term for lumber of all sizes and patterns that is intended for general building purposes having no design property requirements.

Lumber dimensions—*Actual size:* The dimensions obtained when an individual piece of lumber is measured with a caliper and tape. *Manufactured size:* The dimensions for a given state of manufacture that are provided in product specifications. Examples are rough-green, surfaced-dry, and so forth. The manufactured size stated in the American Lumber Standards for a surfaced-dry 2x4 is 1.5 x 3.5 inches. *Nominal size:* The size in name only; the commerical name by which lumber is known and sold on the market (e.g., 2x4) and the basis used to calculate lumber volume in board feet.

Lumber recovery factor (LRF)—An expression of the number of board feet of lumber obtained by a sawmill per cubic foot, log scale, of log input.

Material balance—A relationship, often portrayed in a diagram, that shows how all components of a raw material are allocated and used.

MBF—Thousand board feet.

Mechanical pulping—The production of fibers and fiber bundles by grinding wood with pulpstones or by mechanical refiners as opposed to chemical methods.

Medium density fiberboard (MDF)—A panel product manufactured from lignocellulosic fibers combined with a synthetic resin or other suitable binder. The panels are manufactured to a density of 31 pcf (0.50 specific gravity) to 55 pcf (0.88 specific gravity) by the application of heat and pressure by a process in which the interfiber bond is substantially created by the added binder. Other materials may have been added during manufacturing to improve certain properties.

Moisture content—The amount of water contained in the wood, either expressed as a percentage of the weight of the oven-dry wood or as a percentage of total weight of a piece.

Net scale—Log volume less defect scaling deductions.

Nominal size—*See* Lumber dimensions.

Oriented strandboard—*See* Particleboard.

Oven-dry wood—Wood dried to a relatively constant weight in a ventilated oven at 102˚ to 105˚C.

Overrun—The excess lumber, in board feet, actually sawn from logs compared to the amount of lumber predicted by a board foot log scale; usually expressed as a percent of log scale.

Panel products—A descriptor that generally includes some or all of the following: plywood, waferboard and oriented strandboard, medium density fiberboard, particleboard, hardboard, insulation board, and composites using these materials.

Paper—Generally, a matted or felted sheet of vegetable fiber, formed on a screen from a water suspension, used for writing and printing as well as for wrapping

and many other purposes. Paper is one of two broad subdivisions of the general term, papers; the other is paperboard.

Paperboard—A general term describing sheets made of fibrous material 0.012 inch or more in thickness. Compared with paper, paperboard is heavier per unit area, thicker, and more rigid. Paperboard is the term used to describe any single variety, or group of varieties, of board materials used in the production of boxes, folding cartons, and solid fiber and corrugated shipping containers.

Particleboard—A generic term for a material manufactured from wood particles or other lignocellulosic material and a synthetic resin or other suitable binder.

Extruded particleboard: Made by ramming binder-coated particles into a heated die, which subsequently cures the binder and forms a rigid mass as the material is moved through the die.

Flakeboard: A particle panel product composed of flakes.

Mat-formed particleboard: Particles (being previously coated with the binding agent) are formed into a mat having substantially the same length and width as the finished panel. This mat is then pressed in a heated flat-platen press to cure the binding agent.

Mende-process board: Made in a continuous ribbon from wood particles with thermosetting resins used to bond the particles. Thickness ranges from 1/32 to 1/4 inch.

Multilayer particleboard: Wood particles are made or classified into different sizes and placed into the preprocessed panel configuration to produce a panel with specific properties. Panels destined for primarily nonstructural uses requiring smooth faces are configured with small particles on the outside and coarser particles on the interior (core). Panels designed for structural application may have flakes aligned in orthogonal directions in various layers which mimic the structure of plywood. Three- and five-layer constructions are most common.

Oriented strandboard (OSB): Composed of strand-type flakes aligned in directions which make a panel stronger, stiffer, and with improved dimensional properties in the aligned directions than a panel with random flake orientation.

Waferboard: A particle panel product made of wafer-type flakes. Usually manufactured to possess equal properties in all directions parallel to the plane of the panel.

Particles—The aggregate component of particleboard manufactured by mechanical means from wood. These include all small subdivisions of wood such as chips, curls, flakes, sawdust, shavings, silvers, strands, wafers, wood flour, and wood wool.

Peel—To convert a log into veneer by rotary cutting.

Pile—A long, heavy timber, round or square, driven deep into the ground to provide a secure foundation for structures built on soft, wet, or submerged sites (e.g., landing stages, bridge abutments).

Planer shavings—The residue obtained when a piece of wood is surfaced by a planer.

Planing allowance—The quantity of wood, normally expressed in thousandths of an inch, that is set to be removed by a planer during surfacing.

Plywood—A glued wood panel made up of relatively thin layers of veneer with the grain of adjacent layers at right angles, or of veneer in combination with a core of lumber or of reconstituted wood. (*See* Composites.) The usual constructions have an odd number of layers.

Cold-pressed plywood: Refers to interior-type plywood manufactured in a press without external applications of heat.

Exterior plywood: A general term for plywood bonded with a type of adhesive that by systematic tests and service records has proved highly resistant to weather; microorganisms; cold, hot, and boiling water; steam; and dry heat.

Interior plywood: A general term for plywood manufactured for indoor use or in construction subjected to only temporary moisture. The adhesive used may be interior, intermediate, or exterior.

Marine plywood: Plywood panels manufactured with the same glueline durability requirements as other exterior-type panels but with more restrictive veneer quality requirements.

Molded plywood: Plywood that is glued to the desired shape either between curved forms or more commonly by fluid pressure applied with flexible bags or blankets (bag molding) or other means.

Postformed plywood: The product formed when flat plywood is reshaped into a curved configuration by steaming or plasticizing agents.

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—Coincident with a radius from the axis of the tree or log to the circumference. A radial section is a lengthwise section in a plane that passes through the center line of the tree stem.

Reaction wood—Wood with more or less distinctive anatomical characters, formed typically in parts of leaning or crooked stems and in branches. In hardwoods this consists of tension wood and in softwoods of compression wood.

Recoverable heat—Heat energy from combustion that is actually recovered to do useful work.

Recovery—*Product recovery:* An expression of the amount of product (nominal or actual) that can be manufactured from a given input of raw material. *Logging recovery:* The volume or weight of logs that can be harvested from a given volume of standing timber.

Relative density—*See* Specific gravity.

Relative humidity—Ratio of the amount of water vapor present in the air to that which the air would hold at saturation at the same temperature. It is usually considered on the basis of the weight of the vapor but, for accuracy, should be considered on the basis of vapor pressures.

Residue—*Logging residue:* Unmerchantable tops, branches, and stumps of felled trees, and logs and standing trees that are too small or defective to be removed economically from the woods during a logging operation. *Mill residue:* That portion of log input volume that remains after the primary product has been produced.

Roundup—The irregularly shaped pieces of veneer that are initially produced when a debarked, irregularly shaped and tapered log engages a rotary lathe during manufacture of veneer.

Roundwood—Wood products that are round, such as pulpwood, posts, pilings, utility poles, and fencing materials.

Sapwood— The wood of pale color near the outside of the log. Under most conditions the sapwood is more susceptible to decay than heartwood.

Sawkerf—(1) Grooves or notches made in cutting with a saw; (2) that portion of a log, timber, or other piece of wood removed by the saw as sawdust in parting the material into two pieces.

Seasoning—Removing moisture from green wood to improve its serviceability. *See* Air-dry wood; Kiln-dry wood.

Semichemical pulp—Pulp obtained by mild treatment of wood chips by any of the chemical pulping processes, which remove only part of the lignin from the wood chips, followed by mechanical treatment to complete the separation of individual cellulose fibers.

Shakes—In construction, a type of shingle usually hand cleft from a bolt and used for roofing or weatherboarding.

Shaving—A small wood particle of indefinite dimensions developed incidental to certain woodworking operations involving rotary cutterheads usually turning in the direction of the grain. This cutting action produces a thin chip of varying thickness, usually feathered along at least one edge and thick at another and generally curled.

Sheathing—The structural covering, usually of boards, building fiberboards, or plywood, placed over exterior studding or rafters of a structure.

Shingles—Thin, rectangular pieces of wood, sawn along the grain and tapering in thickness, used like tiles for roofing and weatherboarding.

Shipping dry—Having a moisture content (oven-dry basis) of 14 to 20%. Results in reduced shipping weight and less susceptibility to decay.

Shrinkage—Contraction caused by drying wood below the fiber saturation point; it is greater in the wide face of flat-grain than in edge-grain lumber, and minimal in the longitudinal direction.

Siding—The finish covering of the outside wall of a frame building, whether made of horizontal weatherboards, vertical boards with battens, shingles, or other material.

Slab—The exterior portion of a log removed in sawing lumber.

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. *See also* Gymnosperm.

Solid wood—Wood as it is observed in a tree, log, or piece of lumber and hence free of manufactured voids as would occur between chips or free of nonwood materials such as resins and other additives.

Solids fraction—The portion of a space or container that is occupied by solid wood as opposed to voids between the pieces.

Specific gravity—Also called relative density. As applied to wood, the ratio of the oven-dry weight of a sample to the weight of a volume of water equal to the volume of the sample at a specified moisture content (green, air-dry, or oven-dry).

Specific heat—The heat in joules required to raise the temperature of one gram of wood 1° C.

Springwood—*See* Earlywood.

Spur trim—In the process of converting a log into veneer, devices called spur knives trim the raw veneer from the log to a desired veneer length; the difference between the log length and veneer length is the spur trim.

Square—A measure of the amount of material (e.g., shingles) required to cover a surface area of 100 square feet when applied as recommended.

Stack heat loss—Loss of combustion heat via gas emissions in the smokestack or chimney.

Stem—The principal axis of a tree, capable of producing sawlogs, veneer logs, large poles, or pulpwood.

Stere—A metric measure of cordwood or pulpwood representing a stack of such wood 1 x 1 x 1 meters. Approximately 0.27 cord.

Structural insulating board—A generic term for a homogeneous panel made from lignocellulosic fibers (usually wood or cane) characterized by an integral bond produced by interfelting of the fibers, to which other materials may have been added during manufacture to improve certain properties, but which has not been consolidated under heat and pressure as a separate stage in manufacture, said board having a density of less than 31 pcf (specific gravity 0.50) but having a density of more than 10 pcf (specific gravity 0.16).

Structural timbers—Pieces of wood of relatively large size, the strength or stiffness of which is the controlling element in their selection and use. Examples of structural timbers are trestle timbers (stringers, caps, posts, sills, bracing, bridge ties, guardrails); car timbers (car framing, including upper framing, car sills); framing for building (posts, sills, girders); ship timber (ship timbers, ship decking); and crossarms for poles.

Sulfate process—*See* Kraft (sulfate) process.

Sulfite process—A chemical pulping process in which wood is cooked in aqueous acid sulfite solution containing free sulfur dioxide.

Sulfite pulp—A chemical wood pulp obtained by cooking wood chips in a bisulfite–sulfurous acid solution.

Summerwood—*See* Latewood.

Surfaced-dry (S-dry)—The condition referring to lumber that has been air or kiln dried and subsequently planed to a smooth surface.

Swelling—The opposite of shrinkage; the gain in dimensions when dry wood is placed in a moister environment. Occurs only when wood moisture content is below fiber saturation point.

Tangential—Strictly, coincident with a tangent at the circumference of a tree or log, or parallel to such a tangent. In practice, however, it often means roughly coincident with an annual layer. A tangential section is a longitudinal section through a tree or limb perpendicular to a radius. Flat-grain lumber is sawn tangentially.

Taper—The gradual diameter reduction of a tree or log from the base to the top.

Target size—*See* Green target sizes.

Tension wood—Abnormal wood found in leaning trees of some hardwood species and characterized by the presence of gelatinous fibers and excessive longitudinal shrinkage. Tension wood fibers hold together tenaciously, so that sawed surfaces usually have projecting fibers, and planed surfaces often are torn or have raised grain. Tension wood may cause warping.

Thermomechanical pulp (TMP)—A high yield pulp produced by a process in which wood chips are softened by preheating under pressure prior to mechanical separation into a mass of fibers.

Timber, standing—Timber still on the stump.

Timbers, round—Timbers used in the original round form, such as poles, piling, posts, and mine timbers.

Trim—The amount of extra length allowed when bucking logs or sawing green lumber to compensate for end checking and damage in transit, and for "squaring up" at the mill. The allowance is specified in contracts and by log scaling agencies.

Veneer—A thin layer or sheet of wood.

Rotary-cut veneer: Cut in a lathe which rotates a log or bolt, chucked in the center, against a knife.

Sawed veneer: Produced by sawing.

Sliced veneer: Sliced off a log, bolt, or flitch with a knife.

Vertically laminated timbers—Laminated timbers designed to resist bending loads applied parallel to the wide faces of the laminations.

Waferboard—*See* Particleboard.

West-side Scribner—A term commonly used to refer to the method for applying Scribner log scale and taking measurements in western Oregon and western Washington.

Yield—*See* Recovery.