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Forest Products Terminology

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The field of forest products is a blend of several subjects—forestry, biology, chemistry, and engineering, among many others. This blending can at times lead to communication gaps between disciplines and create confusion for consumers. Inaccuracies can lead to the inappropriate utilization of wood, shortening its service life, or worse, creating safety hazards. It is therefore pertinent for users of wood to become familiar with wood science and technology terminology. This will help to minimize confusion as well as increase accuracy in communication. This fact sheet, while not comprehensive, will introduce the North American wood user to many of the forest products industry's agencies, organizations, and terms.

Agencies

Environmental Protection Agency (EPA)—the federal regulating agency for environmental safety (ex. wood preservative application, dry kiln operation). Created in 1970, it promotes human health through environmental protection of air, land, and water resources.

National Institute of Standards and Technology (NIST)—a non-regulatory agency within the Department of Commerce charged with developing industrial standards.

State Department of Environmental Quality (DEQ)—a regulating agency for environmental protection at the state level (ex. wood preservative application, dry kiln operation).

State Department of Transportation (DOT)—the governmental agency which regulates travel across a state's highways (ex. weight limits for transport trucks).

State Extension Service—a division of the land-grant university system, the Extension Service transfers technology and research-based information to the state's citizens through demonstrations and educational programming with the goal of empowering citizens to make informed decisions for their well-being.

State Forest Agency—an agency charged with managing state forestlands and conducting landowner assistance. State Forest Agencies include the Ohio Department of Natural Resources Division of Forestry.

United States Forest Service (USFS)—a division within the U.S. Department of Agriculture that oversees federal forestland, forest research, and financial and program assistance to state forest agencies.

United States Forest Service Forest Products Lab—a research and development laboratory within the United States Forest Service dedicated to the study of wood and fiber located in Madison, WI.

Organizations

American Lumber Standards Committee, Inc. (ASLC)—a nonprofit group which accredits the grade marking of lumber produced under the American Lumber Standard, covering the sale and purchase of nearly all the softwood lumber traded in North America.

American National Standards Institute (ANSI)—an American standards-writing organization which also accredits groups adhering to international standards.

APA, the Engineered Wood Association—a nonprofit third party organization charged with quality assurance over engineered wood and composite products.

ASTM International (ASTM)—a voluntary product standards writing organization. ASTM standards are considered international, governing specification documents, testing methods, classifications, practices, and guides.

American Wood Protection Association (AWPA)—a nonprofit association representing the wood preservation industry. The AWPA also oversees product and testing standards for preservative-treated wood products.

Hardwood Furniture Guild—an organization of northeast and central Ohio hardwood furniture manufacturers and distributors. It is the largest concentrated group of hardwood furniture manufacturers and retailers in the United States.

National Hardwood Lumber Association (NHLA)—an association representing the hardwood lumber industry. The grading and measurement rules for hardwood lumber are governed by the NHLA.

Professional Associations and Societies—There are many professional groups for wood industry professionals and researchers. International wood societies include Forest Products Society (www.forestprod.org), Society of American Foresters (www.safnet.org), and Society of Wood Science and Technology (www.swst.org), among many others.

Railway Tie Association (RTA)—an organization dedicated to promoting the use of wood ties in railroads through education and research programs. The RTA develops standards for wood ties placed in track (addressing both species and defects) and works with researchers to ensure wood preservative processes are compatible with non-wood track materials and switches used in the railroad industry.

State Forestry Association—an organization representing a state's landowners, forest managers, and wood-using industries (ex. Ohio Forestry Association).

TAPPI—formerly known as the Technical Association of Pulp and Paper Industry, a paper science-based organization representing the pulp, paper, packaging, and converting industries as well as overseeing standards for pulp and paper products.

TECO—a private third party inspection group that certifies both structural and nonstructural wood products.

Terminology

A

Adhesion—the act of bonding two wood surfaces together through a combination of physical and chemical actions.

Adhesive—a substance which connects two wood surfaces.

Angiosperm—Flowering seed plants with a subclass called dicotyledons, which includes all hardwood trees.

Anisotropic—a material, such as wood, exhibiting different structure and/or properties along different axes; the opposite of an isotropic material, such as steel.

Annual Ring—or growth ring, the portion of wood encompassing one earlywood section and one latewood section. The annual ring constitutes one growing season.

Ash—a collective term for the non-combustible inorganic materials (minerals) remaining after burning wood.

B

Bandsaw—an upright, continuous blade saw, with the blade resembling a band, that cuts a smaller kerf than a traditional round saw.

Bark—the outermost tree tissue found beyond the cambium. Bark is comprised of living cells in the inner bark (see *phloem*) and non-living cells in the outer bark, which provides protection for a tree.

Biomass—a collective term describing the grass, vine, shrub, and woody plant material contained on a site.

Birdseye—a localized circular or elliptical distortion of wood fibers resembling a bird's eye on the tangential surface; commonly found in sugar maple and valued by woodworkers and consumers.

Bleached Pulp—wood pulp made white by removing additional dark-colored lignin following the pulping process.

Blow—(1) the delamination of a composite panel following pressing due to high wood moisture content, premature curing of the adhesive, or a high compaction ratio; (2) the release of pulp from a digester, or to release pressure on the digester.

Blue-stain Fungi—a group of sapstain fungi that propagate in the food-storing wood parenchyma cells because of the nutrient availability. The fungi typically appear as blue, green, or black in color depending on the species and degree of habitation.

Board—a value-added product derived from a tree. Usually in nominal dimension increments of 1 in. to 2 in. thick with widths of 2 in. to 12 in. for softwoods and less than 2 in. (8/4) thick and at least 2 in. (8/4) wide for hardwoods.

Board Foot—a lumber measurement unit 12 in. long, 12 in. wide, and 1 in. thick or its cubic equivalent.

Bole—the primary stem of a tree.

Bolt—a short section, normally 4 ft., of the primary stem of a tree.

Bond—the joining of wood members or elements by an adhesive.

Bondability—the ability of a wood species to be joined by an adhesive.

Bond Strength—a measure of the load carrying capacity of a wood-adhesive bond.

Bow—a form of warp in which lumber deviates from flatness lengthwise but not across the faces.

Bright—lumber exhibiting minimal discoloration and/or stain.

Buck—the process of cutting logs to length. Typically logs are cut in even foot increments from 8 ft. to 20 ft. (i.e. 8, 10, 12 ft., etc., plus several inches of trim allowance) but sometimes longer for softwoods.

Butt Log—the bottom 16 foot, plus trim, portion of a tree stem immediately above the stump. The majority of a tree's value is normally contained in the butt log.

C

Cambium—the thin layer of reproductive cells in wood found between the xylem, or wood, and phloem, or inner bark. Cell reproduction occurs in the cambium.

Cant—a squared-off log.

Carrier—(1) a piece of equipment designed to hold and transport logs, lumber, and sawdust in and out of a production facility; (2) a liquid used for delivering the active ingredient of a pesticide.

Casehardening—a wood drying condition in lumber. A condition of stress and set in dry wood in which the outer fibers are under compressive stress and the inner fibers are under tensile stress.

Cell—the basic unit of wood structure.

Cellulose—the carbohydrate that is the principal constituent of wood and forms the framework of wood cells. It is made up of glucose units arranged into structured and unstructured regions put together in a long, straight chain molecule. Amounts to approximately 40–44% for hardwoods and softwoods.

Charge—a general term for a stack of lumber processed in or through a dry kiln until dry.

Check—a drying defect caused by wood drying non-uniformly. It is a lateral separation of the wood fibers resulting from tension stresses on the surface of the wood (either as a log or lumber).

Chips—small pieces of wood, ranging in size, chopped from a log.

Circular Saw—a round saw traditionally used to manufacture logs into value-added wood products, such as lumber.

Clearcut—a timber harvesting method resulting in the felling of all trees on the logging site.

Compaction Ratio—the ratio of composite panel density to the density of the wood species used to produce the panel.

Composite—a product consisting of two or more constituents, such as the wood veneer and adhesive used to manufacture plywood.

Compression—a measure of inward-pushing forces as a load is applied to a wood member.

Compression Wood—a form of reaction wood present on the lower side of the stem in conifers.

Conditioning—the relieving of stresses present in wood at the end of the drying process. Wood will caseharden without conditioning.

Conifer—tree species with needles or scale-like leaves, lacking vessels and often referred to as nonporous. Conifers are often called softwoods, though the term softwood is not an indication of wood hardness.

Contact Angle (θ)—a measure of wood wetting, obtained by measuring the angle at the point of contact between a liquid and the wood surface. Perfect wetting— $\theta=0^\circ$; High wetting— $0^\circ < \theta < 90^\circ$; Low wetting— $90^\circ \leq \theta < 180^\circ$; Non-wetting— $\theta=180^\circ$.

Cooking Liquor—a solution of lignin-degrading chemicals used in the pulping process.

Coupling Agent—a substance used in wood-plastic composites to bond the chemically dissimilar wood and polymer.

Crane—equipment used for moving logs via a boom-cable-pulley system.

Creep—deformation over time due to constant loading.

Crook—a form of warp in which lumber deviates edgewise from a straight line from end to end.

Cross-grain—wood in which the direction of fiber orientation along the length of a log or board deviates from being parallel to the long axis or centerline of the piece.

Cup—a form of warp in which lumber deviates from a straight line across the width of the board.

Cure—the setting of an adhesive using heat, pressure, a catalyst, or combination, by chemical reactions.

Cutting—the portion of a hardwood lumber board meeting the requirements of a specific grade. Different from “clear cutting,” which is a clear portion of a hardwood board meeting minimum size requirements for a given lumber grade.

Cut-to-length—the process of trimming the length of logs and lumber to a desired, merchantable measurement.

D

Debarker—a machine for removing bark from logs. Usually a mechanized apparatus that either tumbles logs inside a large tilted cylinder with internal vanes for scraping the bark off, or a device with knives or teeth that remove the bark from the log surface.

Decay—the biological deterioration of woody materials by fungi.

Decay Fungi—biological agents responsible for deteriorating woody materials. Decay fungi can propagate on wood only if oxygen is present, the wood has a moisture content of at least 20%, and the ambient temperature is warm enough to support and sustain life (optimally in the range of approximately 60–90°F, though fungi can grow outside this range).

Decay Rating—a subjective measurement of evaluation of wood that has been exposed to decay fungi.

Deciduous—trees whose current year’s leaves normally drop after the yearly growth period has ended.

Delamination—a visible separation in the wood-adhesive bond between strands, plies, or layers in wood composite products.

Delimber—a device for removing branches and limbs from harvested trees.

Density—a ratio describing the mass per unit volume of wood material; $D = \text{Mass}/\text{Volume}$.

Depth of Cut—a measure of the downward distance travelled by a cutting tool during a machining operation.

Diameter at Breast Height (DBH)—the diameter of a tree outside the bark measured at a height of 4.5 feet from the ground.

Diffuse-Porous—a description for hardwoods containing pores of essentially uniform size and even distribution throughout the growth ring.

Digester—a heated pressure vessel used to make wood pulp for papermaking in which wood is mixed with a chemical agent for dissolving or softening lignin.

Dowel—a cylindrical wooden rod, which can be used to provide support or reinforcement between two members (as in a chair).

Dry-bulb temperature—the temperature of air indicated by any temperature-measuring device with an uncovered sensing element.

Dry End—the portion of a wood products facility located beyond the dryers.

Dryer—an apparatus providing a heated environment for lowering the moisture content of wood elements travelling through it.

Dry Kiln—a closed vessel (except for operable vents and loading doors) where air temperature, velocity, and relative humidity can be controlled and circulated through lumber products to facilitate lowering the moisture content of the wood to a desired percent.

Durability—a material’s resistance to the deterioration effects of its surroundings over a length of time.

E

Earlywood—sometimes referred to as springwood, it is the portion of a tree’s annual ring formed early in the growing season. It is often characterized in conifers by

having larger cells of lower density and is often lighter in color due to the lesser amount of wood substance present.

Edgewise—the setting of a wood member on its narrow face so that its depth is greater than its width.

Empty-cell process—a process for pressure-treating wood with preservatives in which air is compressed in the wood. Once the desired penetration and retention are reached, the preservative is evacuated. A vacuum is then applied after treatment expanding the air and forcing excess preservative from the wood cell cavities.

Equilibrium Moisture Content—the moisture content at which a wood member will stabilize under unvarying temperature and relative humidity conditions.

Exposure Rating—an adhesive bond classification for wood composite products describing the atmospheric conditions required to meet end use specifications.

Extender—an adhesive-type substance added to an adhesive mix to aid in glue spreading and water retention. Wheat flour is the common extender used in softwood plywood resin mixes.

Extractives—substances deposited in wood during the transition from sapwood to heartwood, often colored or odoriferous, with decay resistance properties.

F

Fastener—device used to connect two wood members. Fasteners can include nails, screws, and bolts.

Feed Rate—the distance a wood member is fed into a cutting tool per unit time.

Fiber Saturation Point—the theoretical point in wood drying or wetting when wood free water (water inside cell cavities, or lumens) is absent, yet the remaining water is sufficient to saturate wood cell walls.

FIFRA—the Federal Insecticide Fungicide and Rodenticide Act. FIFRA regulates the use of pesticides, including wood preservatives.

Filler—a nonadhesive-type substance added to a plywood adhesive mix to aid in bulking and flow. For example, a ground corn cob residue is commonly used in softwood plywood resin mixes while pecan or walnut shell flour can be used in hardwood plywood resin mixes.

Finish—liquid material applied to the wood surface to enhance appearance and/or durability.

Fire Retardant—a material or substance added to wood to lower its flammability.

Firewood—or fuelwood, wood cut 16–24 inches in length and burned for heat or energy.

Flake—or strand, a wood element often produced from softwoods or low-density hardwoods, with the grain running along the length of the flake. Flakes are approximately 6 in. long × 1.5 in. wide × 0.02–0.03 in. thick when used to manufacture composite panel products but may vary in dimensions, especially length, depending on product requirements.

Flaker—a machine with high-speed rotating knives in which logs are reduced to flakes. Logs are fed via conveyor to a stop with the flaker moving across the log length.

Flatwise—the setting of a wood member on its wide face so that its width is greater than its depth.

Flitch—a two-sided piece cut from a log with unfinished edges and ends. It is normally further processed into lumber or sliced veneer.

Form class—a description of the straightness of trees in a stand, independent of species. Form class is the ratio of stem diameter inside the bark at the top of a 16 foot log (actually measured at a height of 17 feet, plus 4–8 inches from the ground to account for stump height and trim allowance) and the diameter at breast height outside the bark.

Full-cell Process—a process for pressure-treating wood with preservatives in order to achieve high retention levels. It incorporates pulling a vacuum before and during the induction of preservative chemicals into the treating vessel. Pressure is then applied, forcing the preservative into the wood cells. This is seldom used in modern practices.

Furnish—wood that has been processed at a mill for use in, or as, a specific product, such as oriented strand board.

G

Gatewood—logs delivered to a mill and purchased from independent logging firms.

Glulam—Structural Glued Laminated Timbers. Glulam is produced in varying lengths by gluing pieces of 1–2 inch thick lumber together with a resorcinol-based adhesive in the presence of a catalyst under pressure.

Grade—a quality rating assigned to wood products, such as lumber and railroad ties, based on criteria set by a grading authority. See also *Softwood Lumber Grade* and *Hardwood Lumber Grade*.

Grade Stamp—a marking applied to a wood product that denotes product grade, date produced, producing mill, kiln drying parameters (for lumber), and exposure rating (for composites).

Grain—the direction of fiber orientation along the length of a log or board.

Green—a description of wood material that has not been dried below a set moisture content threshold. For softwood lumber, “green” describes boards above 19% moisture content.

Green End—the portion of a wood products facility located before the dry kiln or dryers.

Gymnosperm—also known as conifers. These species are plants having naked seeds.

H

Hardboard—a non-structural composite product produced from wood fibers and consolidated under heat and pressure into a densified panel.

Hardness—a wood property determined by the load required to indent a 0.444 in. ball called a Janka-ball to one-half its diameter in a test specimen.

Hardwood—wood containing vessels, or pores, produced from broad-leaved tree species. The term hardwood is not an indication of the hardness of the wood.

Hardwood Lumber Grade—quality rating assigned to hardwood lumber by the NHLA based on minimum board size, minimum cutting size, minimum yield, and number of clear cuttings.

Headrig—the saw and carriage system used to process a log into flitches and cants.

Heartwood—the inner portion of a tree. The cells are usually darker, non-living, and often hold extractives.

Hemicellulose—branched-chain carbohydrate polymers consisting of glucose and various other sugars. Amounts to approximately 15–35% of the dry weight in hardwoods and 20–32% in softwoods.

Honeycomb—a kiln-drying defect in which fiber separations occur in the interior of a piece of wood often along the wood rays as a consequence of accelerated drying in the initial stages.

Hydrophilic—a material’s tendency to absorb water.

Hydrophobic—a material’s tendency to repel water.

Hydrothermal—the high-temperature treatment of wood in the presence of water.

Hygrothermal—the high-temperature treatment of wood in the presence of steam.

I

I-joist—an I-shaped wood composite product consisting of a solid-sawn or structural composite lumber flange and a plywood or OSB web.

Inactivation—a state in which the wood surface will not adequately wet when liquids are applied.

Insulation Board—a low-density non-structural composite panel product made from wood fiber.

Internal Bond—the strength of the wood-adhesive bond in composite panels measured by applying a force in tension perpendicular to the plane of the panel.

Invasive species—any organism living and reproducing outside its natural range unchecked due to the absence of natural predators.

J

Joint—the connecting point of two or more pieces of wood. Casework joints include screwed, dowel, rabbet, biscuit, and dado. Furniture joints include dovetail, mortise-and-tenon, finger joint, and tongue-and-groove.

Jointer—a piece of woodworking equipment that machines wood to make it flat, straight, and square-edged.

Juvenile Wood—wood formed generally in the first 15 years of a tree’s life located around the pith core. Juvenile wood is characterized as having more lignin present and higher shrinkage values in the longitudinal direction.

K

Kerf—the width of the wood removed by the cutting tooth on the blade when sawing.

Knot—circular or semi-circular portion of a branch that has become embedded in wood as a tree grows around it. There are many designations for knots (loose, tight, edge, firm, etc.), and they are likely stress concentration points when solid-sawn lumber is placed under a load.

Kraft Paper—wood pulp that has gone through the Kraft pulping process, which does not degrade the cellulose component of wood, for use in paper products where strength is desired, such as paper bags, industrial hand towels, and cardboard boxes. The word “kraft” is Swedish for “strong.”

L

Laminated Strand Lumber—a structural composite lumber product consisting of wood strands at least 150 times longer than they are thick (not to exceed 0.10 in.) and oriented along the length of the finished beam.

Laminated Veneer Lumber—a structural composite lumber product in which wood veneers (not to exceed 0.25 in. thick) are oriented along the length of the finished beam.

Latewood—or summerwood, wood that is added in the latter part of the growing season within an annual ring. Latewood cells in softwoods are often smaller, denser, and darker in color than earlywood cells. Latewood cells in hardwoods may be recognized by the difference in volume occupied by vessels (pores).

Lathe—a piece of woodworking equipment used to machine wood by turning. In plywood manufacturing, the piece of equipment that peels veneer from the log as it is spun against a sharp blade.

Lathe Check—a crack that develops on the underside of a piece of wood veneer as logs are peeled on the lathe.

Lignin—typically referred to as the “glue” that holds wood together. It is a complex high molecular weight polymer that is intimately associated with both cellulose and hemicelluloses. Amounts to approximately 18–25% of the dry weight in hardwoods and 25–35% in softwoods.

Loader—a machine designed to move logs and/or lumber on or off its mode of transport.

Log—portion(s) of a tree cut into lengths of at least 8 ft.

Log Deck—the location where log bucking and loading occurs at a harvesting site.

Log Rule—a measurement scale used to quantify log volume based upon log diameter and height. Doyle, Scribner, and International $\frac{1}{4}$ " are the three common log rules used in Forestry in the United States, with over 80 others in existence.

Log Truck—a commercial vehicle designed to transport logs from the log deck to a processing facility.

Log Yard—the short-term log holding and sorting facility usually located immediately adjacent to a sawmill.

Longitudinal Dimension—the dimension parallel to the long-axis (stem) of the tree.

Lumber—the value-added product sawn from a tree and its subsequent log at the sawmill.

M

Medium Density Fiberboard—a non-structural composite panel product manufactured from wood fibers and bonded with a synthetic resin or other suitable binder to a density of 44 lb/ft³ to 53 lb/ft³.

Microfibril Angle—the angle of fibrils within each layer of the wood cell wall. This term is frequently used to describe the angle of the microfibrils composing the dominant cell layer, the S2 layer of the secondary wood cell wall.

Millwork—lumber which has been dressed or given a moulded profile as a finished product.

Modified Wood—wood that has undergone changes to its structural composition and/or density by mechanical, chemical, or thermal processes.

Modulus of Elasticity—a material property measuring the bending stiffness of wood.

Modulus of Rupture—the bending strength of wood based upon the maximum load applied.

Moisture content—the ratio of the weight of water in wood expressed as a percentage of the oven-dry weight of wood. For example, 10% moisture content means the weight of the water is one-tenth the weight of dry wood.

Mold—a form of fungi growing at or near the surface of wood that can discolor but does not typically penetrate deeply. It can be green, yellow, blue, black, or red in color depending on species and degree of habitation.

Moulding—a decorative wood strip with a curved profile.

N

Naval Stores—the various oils, tars, and pitches contained in the sap of older trees of many pine species. They were historically used for building and maintaining wooden ships, but today are found in such products as paints and polishes.

Non-pressure Process—the application of treating wood products with preservatives in the absence of pressure, such as brushing, dipping, and soaking.

O

Oriented Strand Board—a composite product composed of rectangular-shaped wood flakes, or strands, arranged in layers (usually 3 to 5) at right angles to one another. Cross-orientation makes the panels strong and stiff in both directions, similar to plywood. The strands used

for the face layers are oriented to run the length of the panel, while the core layer strands run across the panel.

Oriented Strand Lumber—a structural composite lumber product in which wood strands at least 75 times longer than they are thick (not to exceed 0.10 in.) are oriented along the length of the finished beam.

Orthotropic—having distinct properties in three distinct orthogonal directions.

Oven-dry—wood dried in a ventilated oven at 215–221°F until no further loss in weight occurs.

P

Pallet—an item generally produced from lower quality lumber for stacking and maneuvering goods for shipment.

Paper—a product produced from wood fibers which have had the hemicelluloses and lignin removed by pulping, then is formed into a mat, compressed, and dried.

Paperboard—a paper product more than 0.3 mm thick with greater weight and rigidity than paper.

Parallel Strand Lumber—a structural composite lumber product in which wood veneer strands at least 300 times longer than they are thick (not to exceed 0.20 in.) are oriented along the length of the finished beam.

Parenchyma—wood cells which metabolize and store carbohydrates. Parenchyma cells in the sapwood of trees contain living protoplasm but do not in the heartwood.

Particleboard—a non-structural composite panel product composed of wood particles bonded with a synthetic resin, with the finer particles used on the faces of panels and the coarser particles used in the core. Particleboard is designed to be used only in interior, non-structural applications.

Peeler Core—the inner roundwood remaining from a log following veneer peeling in plywood manufacturing.

Permeability—the ability of a material, such as wood, to allow liquids to diffuse through it in response to pressure.

Ploem—the tissue of the inner bark which transports food downward through the tree.

Piling—poles manufactured from softwood or hardwood species capable of withstanding driving impact and still support the intended load.

Pith—the central core of a tree, branch, or twig.

Plainsawn—or flatsawn, lumber sawn generally around the annual rings forming angles of less than 45 degrees.

Plainsawn lumber is sawn along the tangential, or flat grained, face of a log.

Planer—a machine that produces a smooth wood surface via high-speed rotating knives.

Plywood—a wood composite product manufactured from cross-laminated veneer sheets. The veneers are arranged perpendicularly in layers and bonded with an adhesive.

Pole—(1) a size classification used to describe young trees 4–12 in. in diameter at breast height; (2) roundwood products selected from high-quality softwood logs for strength and durability (or ability to uptake preservatives) based upon species, dimensions, straightness, and freedom of defects. Poles are grouped by total length, minimum top circumference, and circumference 6 ft. from the butt end.

Porosity—the degree or intensity of the presence of pores in hardwood species. Also a measure of the void space in wood.

Post—a round, split or sawn piece of wood 3–8 in. in diameter and 7–8 ft. long.

Pre-dryer—a wood drying system used to slowly lower the moisture content of the wood, typically applied for drying refractory species (oaks, hickory/pecan, etc.). Hardwood lumber is typically pre-dried at 85–95°F, 70–80% relative humidity, with air velocities of about 125 ft/min to a final moisture content of 25–30% moisture content before moving to the kiln for final drying.

Preservative—a pesticide applied to wood via a pressure or non-pressure treatment to impart a degree of resistance to biological deterioration.

Press—a piece of equipment used in wood composite facilities for consolidating mats of loosely held-together wood elements, forming compressed panels.

Primary Processing Mill—a wood-using facility which processes logs into various sized members, such as a sawmill.

PS-1—a prescriptive standard for manufacturing plywood for use in non-structural applications.

PS-2—a performance standard for manufacturing plywood and oriented strand board for use in structural applications.

Psychrometer—an instrument used to determine the amount of water vapor present in the surrounding environment.

Pulpwood—roundwood scaled for use in papermaking.

Q

Quartersawn—or vertical sawn, lumber that is sawn across the annual rings forming an angle between 45 and 90 degrees. Quartersawn lumber is sawn along the radial face and is less prone to adverse drying than flatsawn lumber.

R

Radial Surface—a lengthwise surface or plane extending wholly or in part from the central pith to the bark.

Ray—radially extending cells which transport and store food horizontally across a tree's annual rings.

Reaction Wood—wood formed by a tree in response to a distorting event, such as leaning following a wind-storm, in an effort to return to a vertical position. Called *compression wood* in softwoods and *tension wood* in hardwoods.

Reclaimed Wood—wood taken from aged or dilapidated structures and refurbished for use.

Refiner—a machine which reduces wood chips to fibers in a series of toothed discs by grinding the wood under heat and pressure.

Refractory—wood that is difficult to process, dry, treat with preservatives, or work.

Resin—a sticky substance produced by specialized parenchyma cells normally found in only some coniferous species. Resin is believed to provide protection from external attack by wood decay agents and play a role in wound response.

Resin Canal—or resin duct, the passageway which contains and transmits *resin*. While normal-type resin canals are only found in some conifers, such as pines, traumatic resin canals can be produced in most coniferous species as a wound response.

Resin Pocket—localized deposits of resin on a piece of lumber.

Resistance—in wood preservation, the ability to withstand weathering and decay.

Retention—the amount of wood preservative retained following treatment.

Riftsawn—lumber sawn with the growth rings forming an angle of at least 30 degrees producing boards with vertical, or straight, grain patterns.

Ring-Porous—hardwoods with relatively large pores concentrated in the earlywood portion of the annual ring.

Router—a woodworking tool utilized for producing decorative profiles, such as curved edges.

S

Sander—a woodworking tool used to shape or smooth the wood surface by using a gritty surface of varying roughness.

Sap—the fluid in a tree or processed green wood that contains nutrients and other chemicals in solution.

Sapstain—a form of fungi that can cause discolorations in wood but not affect its structural integrity.

Sapwood—the outer portion of a stem. It contains living cells (parenchyma) and is generally lighter in color than the center (heartwood) region.

Saw—a device or tool used to cut wood into smaller pieces.

Sawline—a visual detection of a sawed piece of wood.

Sawtimber—term typically used in reference to timber that is of adequate diameter to yield merchantable dimension lumber. The minimum diameter requirement at the small end for hardwood logs is 8 in. while softwoods require 6 in. The minimum length requirement is 8 ft.

Scalehouse—station located at or near the mill gate where log trucks are weighed, then tared following unloading. The difference between the loaded weight and tared weight is the wood weight.

Secondary Processing Mill—a wood-using facility that uses various sized wood pieces manufactured at a primary processing facility to produce value-added products, such as wood furniture.

Seedtree—a timber harvesting method in which individually selected trees remain across the harvesting site to provide a seed source for regeneration.

Semi-ring-Porous—hardwoods with fairly evenly distributed pores whose size gradually decreases from the earlywood to latewood portion of the annual ring.

Shake—a rupturing or separation of wood fibers along the grain or between annual rings.

Shaper—woodworking equipment used to cut decorative profiles, such as crowned moulding and raised panels.

Shear—a wood property which describes the load required for wood fibers to slip past one another along the direction of fiber orientation.

Sheathing—a reference to plywood or oriented strand board for use in walls, subflooring, or roofing.

Shelterwood—a timber harvesting method involving a series of partial cuttings over relatively short intervals, resulting in the gradual removal of the entire timber stand.

Shrinkage—the contraction of wood fibers caused by drying below the fiber saturation point.

Silviculture—the science of applying the principles of tree growth and development through technology to the forest as a biological unit for crop production.

Site index—a quantitative measure of a forested site's productivity based upon tree age and the height of dominant and co-dominant trees of a given species.

Skidder—a machine used in timber stands to transport felled trees to the logging deck.

Softwood—a description of the wood produced from conifers. The term is actually a misnomer and is not an indication as to the degree of the wood's hardness.

Softwood Lumber Grade—a quality rating assigned to softwood lumber based upon expected strength and stiffness values which can be ascertained visually by a certified grader.

Spalting—blackened streaks of fungal growth resulting from the initial stages of wood decay.

Specific Gravity—the density of wood (based upon its oven-dry weight and its volume at a specified moisture content) divided by the density of water (62.4 lb/ft³ or 1 g/cm³) at 39°F (4°C).

Squeezeout—adhesive that seeps away from an adhered joint as pressure is applied.

Static Bending—the bending of a wood test specimen perpendicular to its length under a constant and slowly applied load.

Sticker—a strip typically made from kiln-dried wood that is placed between layers of lumber to facilitate airflow and aid in proper, even drying of lumber.

Sticker Stain—the result of using stickers with dissimilar moisture contents. The stain appears as green, blue, or black depending on fungal species and degree of habitation.

Strength—the ability of wood to withstand a load. Or the maximum stress achieved prior to failure.

Structural Composite Lumber—lumber products manufactured from veneers or strands and bonded with an external adhesive for use in structural applications.

Stump—the bottom portion of a tree that is partially above ground and primarily below ground level.

Swelling—the enlarging of wood or wood cells due to the introduction of moisture.

T

Tall Oil—primarily a product of conifers, tall oil is a yellowish-black odorous liquid obtained through the kraft pulping process and used in the production of naval stores.

Tangential Surface—the lengthwise surface of wood perpendicular to the radius and tangent to the growth layer of a tree.

Taper—the lessening of a tree stem's diameter as it approaches the merchantable top.

Tension—a measure of outward pulling forces as a load is applied to a wood member.

Tension Wood—a form of reaction wood found on the upper side of leaning hardwood stems and branches.

Termite—a wood-destroying insect, white in color, similar in appearance to an ant but lacking (1) the narrow waist between the abdomen and thorax, (2) bent antennae, and (3) two pairs of **unequal** sized wings. Termites cause billions of dollars in damage each year in the United States and are the most economically significant wood-destroying insect.

Thickness Swell—a measure of the degree of enlargement of composite panel test specimens following a 2 or 24 hour period of soaking under water.

Tie—a four sided cant used in railroad construction. Rail ties commonly measure 7 in. × 9 in. × 8.5 ft. Switch ties, which are used where rail lines come together, vary in length from 9 to 24 ft. but are generally in the range of 9 to 16 ft.

Timber—a standing forest of merchantable trees.

Timbers—often referred to as logs or squared-off logs measuring a minimum of 5 in. in the least dimension used in commercial and residential construction.

Torsion—a measure of twisting forces as a torque load is applied to a wood member.

Toughness—the measure of a wood member's ability to absorb energy and resist fracturing when an impact force is applied.

Tracheid—the principal cell type in conifers, comprising 90–95% of wood volume. They are nonliving cells that function in water conduction and tree support.

Treated Wood—wood that has been chemically preserved through non-pressure or pressure treatment processes.

Tree—a woody plant containing xylem and phloem with a perennial stem and a minimum height of 15 ft.

Tree-length—or whole tree, a harvesting method in which the tree is topped following felling and loaded full-length onto a log truck, with no further processing at the harvesting site.

Twist—a form of warp with one corner turned or curled in relation to the rest of the face.

Tyloses—bubblelike structures of massed parenchyma cells that form in the vessel elements, or pores, of certain hardwood species due to the expansion of the surrounding parenchyma cell walls. Tyloses are commonly found in white oak and limit liquid movement along the longitudinal dimension.

V

Vacuum-pressure Soak—a testing procedure for composite panels in which samples are placed underwater in a sealed tank for specified time periods with alternating vacuum and pressure forces applied.

Veneer—thin sheets of wood sliced or peeled from a log for use in plywood or furniture.

Veneer Log—a log meeting stringent size and defect standards for manufacturing veneer. Veneer logs are of the highest quality and bring a premium price.

Vessel—also known as a pore when viewed on a wood sample's cross section. Vessels are tube-like longitudinal conductive passageways formed by an aligned series of cells called vessel elements found only in hardwood species.

Volatile Organic Compounds—chemicals within many softwood species that vaporize during kiln-drying. They are designated as “ozone precursor chemicals” under the Clean Air Act because they react with sunlight to form ground-level ozone. VOCs are monitored and destroyed with continuous air-cleaning equipment.

W

Wane—presence of bark or the lack of wood from any cause on the edges of a piece of square-edged lumber, giving a rounded appearance.

Water Absorption—a measure of the weight increase of composite panel test specimens following 2 or 24 hour period of soaking under water.

Water Repellant—an additive, usually wax or a chemical compound, which is applied to wood in order to keep the material from absorbing water.

Wet Bulb Depression—the difference in the dry bulb temperature and the wet bulb temperature. The air's relative humidity can be determined from a humidity diagram given the dry bulb temperature and wet bulb depression.

Wet Bulb Temperature—the temperature indicated by any temperature-measuring device with a sensitive element that is covered by a water-saturated cloth (wick). The evaporation of water from the wet cloth lowers the indicated temperature. This evaporation and lowering is directly related to the air's relative humidity.

Wettability—a measure of the interaction between liquids and solids in direct contact at their interface.

Withdrawal—a measure of the force required to pull a fastener, normally a nail or screw, out of a wood member.

Wood—scientifically referred to as xylem, the lignified tissue of a vascular plant composed of cellulose, hemicelluloses, and lignin. Wood is 49% carbon, 44% oxygen, and 6% hydrogen, with various minerals and a slight amount of nitrogen making up the remaining 1%.

Wood Borer—an insect that physically bores into wood to feed and lay eggs.

Wood Composite—a composite product consisting primarily of wood elements.

Wood Failure—in wood composites testing, a measure of bond strength where the area of ruptured wood fibers is expressed as a percentage of the total area tested under a load.

Wood Fiber—an elongated wood cell with a thick cell wall and pointed ends.

Wood Flour—or wood meal, wood that has been ground to a very small particle size with an appearance similar to wheat flour or corn flour/meal.

Wood Packaging Material—wood stock used in the shipping industry for movement of goods.

Wood Pulp—wood chips mechanically ground and/or chemically digested at elevated temperatures to produce

wood fibers for use in manufacturing paper or fiber-based wood composites.

Wood Sugars—the carbohydrate units that make up the cellulose and hemicellulose portions of wood.

Workability—a measure of a wood's ability to be processed by various woodworking hand tools and machines.

X

Xylem—commonly referred to as wood, the region of a tree lying between the pith and the cambium.

More Information

Additional information regarding forest products terminology can be found in many forestry and wood science publications, including the references listed below. You may also search the Forest Operations & Products website at www.ohiowood.osu.edu or contact the Forest Operations & Products Extension program in the School of Environment and Natural Resources.

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