



Designation: D1038 – 19

Standard Terminology Relating to Veneer, Plywood, and Wood Structural Panels^{1,2}

This standard is issued under the fixed designation D1038; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

The terms included in this terminology standard are intended to apply to a family of wood veneer-based and wood structural panel products manufactured for use in construction, decorative, and industrial applications.

1. Scope

1.1 This standard covers a repository of terms and classifications for the business of Subcommittee D07.03.

1.2 The terms in this standard pertain to processing and characteristics of wood veneer, plywood, and wood structural panels.

1.3 The values stated in inch-pound units are to be regarded as the standard. Any SI equivalents provided are approximate.

2. Referenced Documents

2.1 *ASTM Standards*:³

D1165 [Nomenclature of Commercial Hardwoods and Softwoods](#)

D1554 [Terminology Relating to Wood-Base Fiber and Particle Panel Materials](#)

D5266 [Practice for Estimating the Percentage of Wood Failure in Adhesive Bonded Joints](#)

2.2 *Other Documents*:

PS 1 [Structural Plywood, U.S. Department of Commerce Voluntary Product Standard](#)⁴

PS 2 [Performance Standard for Wood-Based Structural-Use Panels, U.S. Department of Commerce Voluntary Product Standard](#)⁴

ANSI/HPVA [HP-1 American National Standard for Hard-](#)

[wood and Decorative Plywood](#)⁵

3. Terminology

Veneer and Plywood

adhesive, *n*—substance capable of holding materials together by surface attachment.

NOTE 1—Adhesive is the general term and includes, among others, cement, glue, mucilage, and paste. All of these terms are loosely used interchangeably. Various descriptive adjectives are applied to the term adhesive to indicate certain characteristics as follows:

(1) Physical form, that is, liquid adhesive or tape adhesive.

(2) Chemical type, that is, silicate adhesive or resin adhesive.

(3) Materials bonded, that is, paper adhesive or metal-plastic adhesive, can label adhesive.

(4) Conditions of use, that is, hot-setting adhesive.

back, *n*—surface opposite to the face of a panel, or the poorer surface of a panel in any grade of plywood calling for a face and back.

balanced construction, *n*—See under **construction**.

banding (railing), *n*—portion of wood or other material extending around one or more edges of a plywood panel.

bleed through, *n*—adhesive or components of adhesive that have seeped through the outer layer or ply of a bonded wood product and that show as a blemish or discoloration on the surface.

blemish, *n*—anything marring the appearance of the veneer that is not classifiable as a defect.

blending, *adj*—color change that is detectable at a distance of 6 to 8 ft (1.8 to 2.4 m) but which does not detract from the overall appearance of the panel.

blister, *n*—elevation of the surface of an adherend (separation between plies), somewhat resembling in shape a blister on

¹ This terminology is under the jurisdiction of ASTM Committee D07 on Wood and is the responsibility of Subcommittee D07.03 on Panel Products.

Current edition approved March 1, 2019. Published May 2019. Originally approved in 1949. Last previous edition approved in 2011 as D1038 – 11. DOI: 10.1520/D1038-19.

² These definitions are specific to veneer and plywood. Other definitions relating to timber appear in ASTM Terminology D9, Relating to Wood, *Annual Book of ASTM Standards*, Vol 04.10.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

the human skin; its boundaries may be indefinitely outlined and it may have burst or become flattened.

bolt (veneer), *n*—short log cut to length suitable for peeling in a lathe; also *block*.

bond, *n*—attachment at an interface between an adhesive and an adherend.

bond, *v*—to attach materials together by means of an adhesive.

borer holes, *n*—voids made by wood-boring insects.

broken grain (shelling, leafing, grain separation), *n*—separation on veneer surface between annual rings.

burl, conspicuous, *n*—swirl, twist, or distortion in the grain of the wood, usually associated with a knot or crotch, resulting in abrupt color variation and/or a cluster of small dark piths caused by a cluster of adventitious buds.

burl, blending, *n*—swirl, twist, or distortion in the grain of the wood, usually associated with a knot or crotch, but does not contain a knot, or abrupt color variation and is detectable at 6 to 8 ft (1.8 to 2.4 m) as a swirl or roundel.

cathedral, *n*—grain appearance characterized by a series of stacked and inverted V-shaped grain patterns common in plain-sliced (flat-cut) veneer (see **split heart**).

cauls, *n*—sheets of material employed singly or in pairs in hot or cold pressing of assemblies in order to protect either the faces or the press platen or both against marring and staining, to prevent sticking, to facilitate press loading, or to impart a desired surface texture or finish, and to provide uniform pressure distribution.

NOTE 2—Cauls may be made of any material such as aluminum, stainless steel, hardboard, fiberboard, or plastic, with the length and width generally equal to the platen size of the press in which they are employed.

center, *n*—inner layers whose grain direction runs parallel to that of the outer plies; may be of parallel laminated plies. (See also **core**.)

characteristic, open, *n*—checks, splits, open joints, knotholes, cracks, loose knots, wormholes, gaps, voids, or other openings interrupting the smooth continuity of the wood surface.

characteristic, growth, *n*—discolorations, pitch streaks and knots that naturally occur in wood.

checks, *n*—small slits running parallel to grain of wood, caused by strains produced in seasoning and/or by stresses caused during peeling in a rotary lathe.

clipper, *n*—shearing machine used to dimension dry or green veneers to width.

combination core, *n*—core that includes two or more different types of wood based material, one of which is reconstituted wood product (see **reconstituted wood**).

comb grain, *n*—exceptionally straight grain with closely spaced growth increments resembling the appearance of long strands of combed hair.

component (of ply), *n*—individual piece of veneer that is jointed to other pieces to achieve a full length and width ply.

NOTE 3—When the term is used in the context of the face it may also be referred to as *piece* or *leaf*.

compreg, *n*—synthetic resin-treated, compressed wood with reduced swelling and shrinking characteristics and increased density and strength properties.

construction, *n*—details of assembly or thickness or both, of veneers and/or other components used in the fabrication of plywood.

all-veneer construction—plywood assembly in which all plies are veneer with ordinarily no single ply of veneer exceeding $\frac{5}{16}$ in. (7.9 mm) in thickness.

balanced construction—plywood assembly such that the forces induced by uniformly distributed changes in moisture content will not cause warpage.

composite construction—panel assembly consisting of veneers and other wood-based materials.

lumber core construction—hardwood plywood assembly in which the center ply or core is lumber rather than of veneer.

symmetrical construction—plywood assembly in which the plies on one side of the panel center line are essentially equal in thickness, grain direction, properties, and arrangement to those on the other side of the center line.

core, *n*—(1) in *decorative or hardwood plywood*, the inner part of plywood between outer plies, usually veneer, but which may also be sawn lumber (lumber core), particleboard, medium density fiberboard (MDF), hardboard, or other material, (2) in *structural plywood*, all plies and layers between the face and back.

NOTE 4—See Terminology **D1554** for terms applicable to fiber-based panels such as MDF.

core block, *n*—in *cutting rotary veneer*, the portion of the bolt remaining after available veneer has been removed.

cross band, *n*—inner layers of veneer whose grain direction is usually perpendicular to that of the face plies, applied particularly to plywood of five or more plies and lumber-core panels.

cross band, *v*—to place the grain of the inner layer of veneer at right angles to that of the face and back.

cross bar, *n*—irregularity of grain resembling a dip in the grain running at right angles, or nearly so, to the length of the veneer.

cross break, *n*—separation of the wood cells, often appearing as barely distinct fine irregular lines across the grain, often due to internal strains resulting from unequal longitudinal shrinkage or to external forces.

cross figure, *n*—naturally occurring grain effect characterized by mild or dominant patterns across the grain in some faces, such as the washboard effect that occurs in fiddle-back cross figure and cross wrinkles that result in a mottle figure.

delamination, *n*—area of a panel where separation of layers occurred because of failure of the adhesive, either in the adhesive itself or at the interface between the adhesive and the adherend.

discolorations, *n*—stains in wood substances such as sap stains, blue stains, from chemical action such as by iron coming in contact with the tannic acid of the wood, from exposure of natural wood extractives to oxygen and light, from chemical action of vat treatments or adhesives, and from surface finishes.

dryer, *n*—kiln or chamber, or machine through which the green veneers are passed to remove moisture.

durability, *n*—(1) *as applied to wood*, its lasting qualities or permanence in service with particular reference to decay, (2) *as applied to the adhesive bond*, its resistance to deterioration related to exposure conditions. (See also **delamination**.)

exterior type plywood, *n*—term applied to plywood that is capable of withstanding prolonged exposure to severe service conditions including prolonged and repeated wetting without failure in the adhesive bonds; the commercial bond classification is a function of veneer grade as well as adhesive durability.

face, *n*—better surface ply of a panel in any grade of plywood; also either side of a panel where the grading rules draw no distinction between outer surfaces.

figure, *n*—pattern produced in a wood surface by annual growth rings, rays, knots, deviations from natural grain such as interlocked, curly, and wavy grain, and irregular coloration.

fleck, ray, *n*—portion of a ray as it appears on the quartered or rift-cut surface, often a dominant appearance feature in oak.

fitch—portion of a log sawed on two or more sides and intended for remanufacture into sliced or sawn veneer; also applied to the resulting sheets of veneer stacked together in sequence of cutting.

gap, *n*—open joint or split in the inner plies that results when crossband or center veneers are broken or not tightly butted.

glue, *n*—See **adhesive**.

grain, *n*—direction, size, arrangement, and appearance of the fibers in wood or veneer.

grain sweep, *n*—expression of the angle of the grain to the long edges of the veneer component over the area extending one-eighth of the length of the piece from the ends.

groove, *n*—decorative face treatment, consisting of narrow parallel channels formed into the surface of the panel.

gum discoloration, *n*—gum (resinous material) spots and streaks caused by prior wood resin accumulations sometimes found on panel surfaces.

hairline, *adj*—very thin line at the joint of two pieces of wood.

hardwood, *n*—general term used to designate the wood produced from deciduous or broad-leaved trees in contrast to

softwood, which is produced from trees that are usually needle bearing or coniferous.

NOTE 5—The term *hardwood* does not infer hardness in its physical sense.

heartwood, *n*—non-active or dormant center of a tree, generally distinguishable from the outer portion (sapwood) by its darker color, sometime referred to as heart.

impreg, *n*—wood impregnated with synthetic resin that is cured in place so as to reduce swelling and shrinking of the wood on exposure to varying environmental conditions.

inner plies, *n*—plies other than face or back plies in a panel construction such as subface, subback, crossband, and center.

interior type plywood, *n*—term frequently applied to plywood bonded with adhesives that maintain adequate bonds under conditions usually existing in the interior of buildings.

joint, *n*—junction of two adjacent pieces of wood or veneer.

adhesive joint—place where two pieces of wood or veneer are joined together by means of adhesive.

edge joint—place where two pieces of wood or veneer are joined together edge to edge (joint running parallel to the grain).

end joint—place where two pieces of wood or veneer are joined together end to end (joint running perpendicular to the grain) which may be accomplished by a butt joint, scarf joint, or lap joint.

open joint—discontinuity between two adjacent pieces of wood or veneers within a ply (gap).

starved joint—adhesive joint that is poorly bonded because of an insufficient quantity of adhesive.

sunken joint—*in the case of plywood*, a depression in the surface of the face ply directly above an edge joint in a lumber core or crossband, the result of localized shrinkage in the edge-jointed layer.

jointed ply, *n*—veneer or other components that have machined edges for tightest possible layup.

knot, *n*—cross section of tree branch or limb with grain usually running at right angles to that of the piece of wood in which it occurs.

knot, open—opening produced when a portion of the wood substance of a knot has dropped out or where cross checks have occurred to produce an opening.

knotholes—voids remaining after removal of knots.

knots, blending pin—sound knots $\frac{1}{4}$ in. (6.4 mm) or less that generally do not contain dark centers.

NOTE 6—Blending pin knots are barely detectable at a distance of 6 to 8 ft (1.8 to 2.4 m), do not detract from the overall appearance of the panel, and are not prohibited from appearing in hardwood grades.

knots, conspicuous pin—sound knots $\frac{1}{4}$ in. (6.4 mm) or less in diameter containing dark centers.

knots, sound, tight—knots that are solid across their face and fixed by growth to retain their place.