



Designation: D 907 – 03

## Standard Terminology of Adhesives<sup>1</sup>

This standard is issued under the fixed designation D 907; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This standard is a compilation of definitions used in the science and technology of the adhesives industry. Terms that are generally understood or adequately defined in other readily available sources are not included.

1.2 Any changes in this standard since 1988 are documented as follows:

1.2.1 Appendix X1 gives a history of revisions made since 1988. Table X1.1 lists the terms that are affected as: (1) Terms Added, (2) Terms Revised, and (3) Terms Deleted.

1.2.1.1 In Table X1.1, the year of publication in Volume 15.06 is shown in parentheses following the term.

1.2.2 In the text of the standard, the year of publication is shown following each definition. Also, the following codes are included after the year of publication to describe the type change that was made: (A) Addition, (R) Revision, or (E) Edited.

1.2.3 Deletions are shown in Appendix X1, suitably footnoted. The deleted terms do not appear in the text of the standard.

1.2.4 Any special circumstances not covered by 1.2.2 and 1.2.3 are documented in Table X1.1, suitably footnoted.

### 2. Terminology

**acceptance test**, *n*—a test, or series of tests conducted by the procuring agency, or an agent thereof, upon receipt to determine whether an individual lot of materials conforms to the purchase order or contract or to determine the degree of uniformity of the material supplied by the vendor, or both. (Compare **preproduction test** and **qualification test**.)

**acid number**, *n*—the quantity of base, expressed in milligrams of potassium hydroxide, that is required to titrate acidic constituents present in 1 g of sample. (1992) (A) **D 2849, D-20**

**adhere**, *v*—to cause two surfaces to be held together by adhesion.

**adherend**, *n*—a body held to another body by an adhesive. (See also **substrate**.)

**adherend preparation**, *n*—See **surface preparation**.

**adhesion**, *n*—the state in which two surfaces are held together by interphase forces which may consist of chemical forces or interlocking action, or both. (R)

**mechanical adhesion**, *n*—adhesion between surfaces in which the adhesive holds the parts together by interlocking action.

**specific adhesion**, *n*—adhesion between surfaces which are held together by intermolecular forces of a chemical or physical nature. (2000) (R)

**adhesion promoter**, *n*—a substance used to improve bonding of the adhesive to the substrate. (Compare coupling agent and primer.)

DISCUSSION—The adhesion promoter may be added to an adhesive formulation or applied to the substrate.

**adhesive**, *n*—a substance capable of holding materials together by surface attachment. (See also **glue**, **gum**, **mucilage**, **paste**, **resin**, and **sizing**.)

DISCUSSION—Adhesive is the general term and includes among others cement, glue, mucilage, and paste. 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, tape adhesive
- (2) Chemical type, that is, silicate adhesive, resin adhesive
- (3) Materials bonded, that is, paper adhesive, metal-plastic adhesive
- (4) Conditions of use, that is, hot-setting adhesive

**adhesive, assembly**, *n*— See **assembly adhesive**.

**adhesive, bulk**, *n*— See **bulk adhesive**.

**adhesive, casein**, *n*— See **casein adhesive**.

**adhesive, cellular**, *n*— See **cellular adhesive**.

**adhesive, cold-setting**, *n*— See **cold-setting adhesive**.

**adhesive, contact**, *n*— See **contact adhesive**.

**adhesive, foamed**, *n*— See **foamed adhesive**.

**adhesive, gap-filling**, *n*— See **gap-filling adhesive**.

**adhesive, heat activated**, *n*— See **heat activated adhesive**.

**adhesive, hot-melt**, *n*— See **hot-melt adhesive**.

**adhesive, hot-setting**, *n*— See **hot-setting adhesive**.

**adhesive, intermediate-temperature-setting**, *n*— See **intermediate-temperature-setting adhesive**.

**adhesive, mastic**, *n*— See **mastic adhesive**.

**adhesive, multiple-layer**, *n*— See **multiple-layer adhesive**.

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.04 on Terminology.

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*adhesive, polyvinyl acetate emulsion, n*—See **polyvinyl acetate emulsion adhesive**.

*adhesive, pressure-sensitive, n*—See **pressure-sensitive adhesive**.

*adhesive, room-temperature-setting, n*—See **room-temperature-setting adhesive**.

*adhesive, separate application, n*—See **separate-application adhesive**.

*adhesive, solvent, n*—See **solvent adhesive**.

*adhesive, solvent-activated, n*—See **solvent-activated adhesive**.

*adhesive, structural, n*—See **structural adhesive**.

*adhesive, warm-setting, n*—See **warm-setting adhesive**.

*adhesive, urea-formaldehyde, n*—See **urea-formaldehyde adhesive**.

**adhesive, anaerobic, n**—See **anaerobic adhesive**.

**adhesive assembly, n**—a group of materials or parts, including adhesive, placed together for bonding or which has been bonded together. (See **assembly adhesive**.)

**adhesive dispersion, n**—a two-phase system in which one phase is suspended in a liquid. (Compare to **emulsion**.)

**adhesive joint, n**—See *adhesive joint* under **joint**.

**adhesive-joint failure, n**—the locus of fracture occurring in an adhesively-bonded joint resulting in a loss of load-carrying capability. (1995) (A)

*adhesion failure, n*—in characterizing the locus of an adhesive-joint-failure, the fracture occurring within the interphase region. (Compare *cohesion failure*.) (1999) (R)

*cohesion failure, n*—rupture of an adhesive bond, such that the separation appears to be within the adhesive. (Compare *adhesive failure*.)

*substrate failure, n*—in characterizing the locus of an adhesive-joint failure, the fracture occurring within the substrate. (See *cohesion failure*.)

*aggressive tack, n*—See *aggressive tack* under **tack**.

**aging time, n**—See **joint conditioning time**.

**amylaceous, adj**—pertaining to, or of the nature of, starch; starchy.

**anaerobic adhesive, n**—an adhesive that is kept in the uncured state by oxygen, as in air, and that cures in the absence of oxygen when exposed to metal ions, especially copper or iron. (1990) (A)

**apparent viscosity, n**—resistance to shear at a given rate of shear, expressed as viscosity in absolute units. (See **viscosity**.) (1991) (A)

*assembly, n*—See **adhesive assembly**.

**assembly adhesive, n**—an adhesive that can be used for bonding parts together, such as in the manufacture of a boat, airplane, furniture, and the like.

DISCUSSION—The term assembly adhesive is commonly used in the wood industry to distinguish such adhesives (formerly called “joint glues”) from those used in making plywood (sometimes called “veneer glues”). It is applied to adhesives used in fabricating finished structures or goods, or subassemblies thereof, as differentiated from adhesives

used in the production of sheet materials for sale as such, for example, plywood or laminates.

**assembly time, n**—the time interval between applying the adhesive on the substrate and the application of pressure, or heat, or both, to the assembly. (1990) (R)

DISCUSSION—For assemblies involving multiple layers or parts, the assembly begins with applying the adhesive on the first substrate.

*closed assembly time, n*—the time interval between the closing together of substrates after the adhesive has been applied, and the application of pressure, heat, or both, to the assembly. (1990) (R)

*open assembly time, n*—the time interval between applying adhesive on the substrates and closing them together before bonding. (1990) (R)

**A-stage, n**—in polymer chemistry, an early stage in a thermosetting resin reaction in which the material melts when heated and dissolves in certain liquids. (Compare **B-stage** and **C-stage**.) (1991) (R)

**autohesion, n**—adhesion developed by interdiffusion of the molecules of two surfaces of the same material and consequent obliteration of the interface between them. (Sometimes called “autoadhesion.”) (Compare **blocking**.) (1990) (A)

**bag molding, n**—a method of molding or bonding involving the application of fluid pressure, usually by means of air, steam, water, or vacuum, to a flexible cover which, sometimes in conjunction with the rigid die, completely encloses the material to be bonded.

**batch, n**—the manufactured unit or a blend of two or more units of the same formulation and processing. (Compare **manufactured unit**.)

**binder, n**—a component of an adhesive composition that is primarily responsible for the adhesive forces which hold two bodies together. (See also **extender** and **filler**.)

**blister, n**—an elevation of the surface of an adherend, somewhat resembling in shape a blister on the human skin; its boundaries may be indefinitely outlined and it may have burst and become flattened.

DISCUSSION—A blister may be caused by insufficient adhesive, inadequate curing time, temperature or pressure, or trapped air, water, or solvent vapor.

**blocked curing-agent, n**—a curing agent or hardener rendered unreactive, which can be reactivated as desired by physical or chemical means. (Compare **hardener**.)

**blocking, n**—an undesired adhesion between touching layers of a material, such as occurs under moderate pressure during storage or use.

**bond, n**—the union of materials by adhesives.

*edge joint, n*—in wood bonding, a type of laminate joint made by bonding adherends edge-to-edge with grain directions parallel to form wider stock.

*face joint, n*—in wood bonding, a type of laminate joint made by bonding adherends face-to-face with grain directions parallel to form thicker stock.

*laminate joint, n*—in wood bonding, a joint made by bonding layers of adherends face-to-face or edge-to-edge to form thicker or wider stock.

**bond, v**—to unite materials by means of an adhesive. (Synonym for **glue, v.**) (See also **adhere.**) (Compare **laminate, v.**)

**bondline, n**—the layer of adhesive which attaches two adherends. (Synonym for *glue line.*)

**bond strength, n**—the unit load applied to tension, compression, flexure, peel, impact, cleavage, or shear, required to break an adhesive assembly with failure occurring in or near the plane of the bond. (See also **adhesion** and **bond.**)

DISCUSSION—The term adherence is frequently used in place of bond strength.

*dry strength, n*—the strength of an adhesive joint determined immediately after drying under specified conditions or after a period of conditioning in a standard laboratory atmosphere.

*wet strength, n*—the strength of an adhesive joint determined immediately after removal from a liquid in which it has been immersed under specified conditions of time, temperature, and pressure.

DISCUSSION—The term is commonly used alone to designate strength after immersion in water. In latex adhesives the term is also used to describe the joint strength when the adherends are brought together with the adhesive still in the wet state.

**B-stage, n**—in polymer chemistry, an intermediate stage in a thermosetting resin reaction in which the material softens when heated, and swells but does not dissolve in certain liquids. (Compare **A-stage** and **C-stage.**) (1991) (R)

DISCUSSION—Some of the solvents that will dissolve resins in the A-stage will not dissolve resins in the B-stage.

**built-up laminated wood, n**—See *built-up laminated wood* under **wood laminate.**

**bulk adherend, n**—as related to *interphase*, the adherend, unaltered by the adhesive. (Compare to **bulk adhesive.**) (1988) (A)

**bulk adhesive, n**—as related to *interphase*, the adhesive, unaltered by the adherend. (Compare to **bulk adherend.**) (1988) (A)

**casein adhesive, n**—an aqueous colloidal dispersion of casein that may be prepared with or without heat, may contain modifiers, inhibitors, and secondary binders to provide specific adhesive properties, and includes a subclass, usually identified as *casein glue*, that is based on a dry blend of casein, lime, and sodium salts, mixed with water and prepared without heat. (1989) (A)

**catalyst, n**—a substance that initiates or changes the rate of chemical reaction, but is not consumed or changed by the reaction. (See also **hardener.**) (Compare **inhibitor.**) (1990) (R)

**caul, n**—a sheet of material employed singly or in pairs in hot or cold pressing of assemblies being bonded.

DISCUSSION—A caul is used to protect either the faces of the assembly or the press platens, or both, against marring and staining to prevent sticking; to facilitate press loading; to impart a desired surface texture or finish; and to provide uniform pressure distribution.

DISCUSSION—A caul may be made of any suitable material such as aluminum, stainless steel, hardboard, fiberboard, or plastic; the length and width dimensions being generally the same as those of the plates of the press where it is used.

*cellular adhesive, n*—Synonym for **foamed adhesive.**

*cement, n*—See Discussion under **adhesive.**

*cement, v*—See **bond.**

**cleavage, n**—in an adhesively bonded joint, a separation in the joint caused by wedge or other crack-opening type action. (1994) (A)

**cleavage-peel strength, n**—the force per unit width of bondline required to produce progressive separation by wedge or other crack-opening type action of two adherends where one or both undergo significant bending. (1994) (A)

**cleavage strength, n**—the force per unit width of bondline required to produce progressive separation by wedge or other crack-opening type action of two adherends of sufficient thickness to produce no significant bending. (1994) (A)

**closed assembly time, n**—See *closed assembly time* under **assembly time** (1990) (R).

**cohesion, n**—the state in which the constituents of a mass of material are held together by chemical and physical forces. (1992) (R)

*cohesive blocking, n*— See **blocking.**

*cold flow, n*— See **creep.**

**cold pressing, n**—a bonding operation in which an assembly is subjected to pressure without the application of heat.

**cold-setting adhesive, n**—an adhesive that sets at temperatures below 20°C (68°F). (See also **hot-setting adhesive, intermediate-temperature-setting adhesive, and room-temperature adhesive.**)

*colophony, n*— See **rosin.**

**condensation, n**—a chemical reaction in which two or more molecules combine with the separation of water or some other simple substance. (See also **polymerization.**)

DISCUSSION—The process is called polycondensation if a polymer is formed.

*conditioning time, n*— See **joint conditioning time.** (See also **curing time** and **setting time.**)

**consistency, n**—that property of a liquid adhesive by virtue of which it tends to resist deformation. (See also **viscosity** and **viscosity coefficient.**)

DISCUSSION—Consistency is not a fundamental property but is comprised of viscosity, plasticity, and other phenomena.

**contact adhesive, n**—an adhesive having the property of autohesion. (Also called *contact bond adhesive* and *dry-bond adhesive.*) (1990) (A)

DISCUSSION—When a contact adhesive is applied to two substrates and allowed to dry or cool until it loses its tack to the touch, it will instantly adhere to itself when the two adhesive surfaces are joined, even when only enough pressure is applied to result in good contact between the adhesive surfaces. The bond, even under light pressure, is

strong enough to hold the adherends together without further clamping, pressing, or airing. However, the strength of the joints with some types of contact adhesives increases with greater pressure, due to increased contact area, and with time, due to diffusion and cross-linking agents that are sometimes present. (1990) (A)

*contact bond adhesive, n*—Synonym for **contact adhesive**.

*copolymer, n*— See **polymer**.

*copolymerization, n*— See **polymerization**.

**coupling agent, n**—a molecule, having different or like functional groups, that is capable of reacting with surface molecules of two different substances, thereby chemically bridging the substances.

**cracking, n**—fine cracks that may extend in a network on or under the surface of or through a layer of adhesive.

**creep, n**—*in an adhesive*, the time-dependent increase in strain resulting from a sustained stress. (1991) (A)

**creep strain, n**—the total strain, at any given time, produced by the applied stress during a creep test. (1992) (A)

**D 2990, D-20; D 4680, D-14**

*cross laminate, n*— See *cross laminate* under **laminate, n**.

**crosslink, v**—to form chemical bonds between molecules to produce a three-dimensional network. (1991) (A)

**C-stage, n**—*in polymer chemistry*, the final stage in a thermosetting resin reaction in which the material does not soften when heated, and is essentially insoluble in most liquids. (Compare **A-stage** and **B-stage**.) (1991) (R)

**cure, v**—to change the physical properties of an adhesive by chemical reaction, which may be condensation, polymerization, or vulcanization; usually accomplished by the action of heat and catalyst, alone or in combination, with or without pressure. (See also **dry** and **set**.)

**curing agent, n**—*relative to adhesives*, a substance or mixture of substances that is part of an adhesive and is used to promote curing by taking part in the reaction. (Compare **catalyst**.) (Compare **blocked curing agent**.) (Synonym **hardener**.) (1991) (A)

**curing temperature, n**—the temperature to which an adhesive or an assembly is subjected to cure the adhesive. (See also **drying temperature**, **setting temperature**.)

DISCUSSION—The temperature attained by the adhesive in the process of curing (adhesive curing temperature) may differ from the temperature of the atmosphere surrounding the assembly (assembly curing temperature.)

**curing time, n**—the period of time during which an assembly is subjected to heat or pressure, or both, to cure the adhesive. (See also **joint-conditioning time**, **setting time**.)

DISCUSSION—Further cure may take place after removal of the assembly from the conditions of heat or pressure, or both.

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

**diluent, n**—an ingredient added to an adhesive, usually to reduce the concentration of bonding materials. (See also **extender**, **thinner**.)

*dispersion, n*— See **adhesive dispersion**.

**doctor-bar or blade, n**—A scraper mechanism that regulates the amount of adhesive on the spreader rolls or on the surface being coated.

**doctor-roll, n**—a roller mechanism that is revolving at a different surface speed, or in an opposite direction, resulting in a wiping action for regulating the adhesive supplied to the spreader roll.

**double spread, n**—See *double spread* under **spread**.

**dry, v**—to change the physical state of an adhesive on an adherend by the loss of solvent constituents by evaporation or absorption, or both. (See also **cure**, **set**.)

*dry bond adhesive, n*—Synonym for **contact adhesive**.

**drying temperature, n**—the temperature to which an adhesive on an adherend or in an assembly or the assembly itself is subjected to dry the adhesive. (See also **curing temperature**, **setting temperature**.)

DISCUSSION—The temperature attained by the adhesive in the process of drying (adhesive drying temperature) may differ from the temperature of the atmosphere surrounding the assembly (assembly drying temperature).

**drying time, n**—the period of time during which an adhesive on an adherend or an assembly is allowed to dry with or without the application of heat or pressure, or both. (See also **curing time**, **joint-conditioning time**, and **setting time**.)

*dry strength, n*— See **bond strength**.

*dry tack, n*—See *dry tack* under **tack**.

**durability, n**—*as related to adhesive joints*, the endurance of joint strength relative to the required service conditions. (1990) (A)

DISCUSSION—Service conditions may include water and other chemicals, temperature, stress, radiation, microorganisms, and other environmental factors.

*edge joint*—See **joint**.

**elastomer, n**—a macromolecular material that returns rapidly to approximately the initial dimensions and shape after substantial deformation by a weak stress and release of the stress. (1999) (R)

**emulsion, n**—a two-phase liquid system in which small droplets of one liquid (the internal phase) are immiscible in, and are dispersed uniformly throughout, a second continuous liquid phase (the external phase). (See also **adhesive dispersion**.) (1988) (A)

DISCUSSION—The *internal phase* is sometimes described as the *disperse phase*. **D 2507, F-7; D 4317, D-14**

**extender, n**—substance, generally having some adhesive action, added to an adhesive to reduce the amount of the primary binder required per unit area. (See also **binder**, **diluent**, **filler**, and **thinner**.)

*failure, n*—See **adhesive-joint failure**, **adhesion failure**, **cohesion failure** and **substrate failure**.

**fiber-reinforced plastic (FRP), n**—a plastic that contains fibers in various forms such as cloth, mat, strands, or chopped to enhance properties.

**fiber tear**, *n*—in an FRP adhesively bonded joint, failure occurring exclusively within the fiber reinforced plastic matrix, characterized by the appearance of reinforcing fibers on both ruptured surfaces. (Also called *fiber tear failure*.) (1994) (A)

*fiber-tear failure*, *n*—in an FRP adhesively bonded joint—see **fiber tear**. (1994) (A)

**filler**, *n*—a relatively nonadhesive substance added to an adhesive to improve its working properties, permanence, strength, or other qualities. (See also **binder** and **extender**.)

**filler sheet**, *n*—a sheet of deformable or resilient material that, when placed between the assembly to be bonded and the pressure applicator, or when distributed within a stack of assemblies, aids in providing uniform application of pressure over the area to be bonded.

**fillet**, *n*—that portion of an adhesive which fills the corner or angle formed where two adherends are joined.

**finger joint**, *n*—see *finger joint* under **joint**.

**flow**, *n*—movement of an adhesive during the bonding process, before the adhesive is set.

**foamed adhesive**, *n*—an adhesive, the apparent density of which has been decreased substantially by the presence of numerous gaseous cells dispersed throughout its mass. (Synonym **cellular adhesive**.)

**gap-filling adhesive**, *n*—an adhesive capable of forming and maintaining a bond between surfaces that are not close-fitting.

DISCUSSION—Close-fitting is relative to a given material and industry; for example, standards in construction differ from standards in electronics. Some adhesives will bond by bridging without completely filling the gap, others by filling the gap completely. (1990) (A); (1994) (R)

**gel**, *n*—a semisolid system consisting of a network of solid aggregates in which liquid is held.

**gelation**, *n*—formation of a gel.

**glue**, *n*—originally, a hard gelatin obtained from hides, tendons, cartilage, bones, etc., of animals, and also an adhesive prepared from this substance by heating with water. (See also **adhesive**, **gum**, **mucilage**, **paste**, **resin**, and **sizing**.)

DISCUSSION—Through general use the term is now synonymous with the term “adhesive.”

*glue*, *v*—See **bond**, *v*.

**glue-laminated wood**, *n*—See *glue-laminated wood* under **wood laminate**.

*glue line*, *n*—Synonym for **bondline**.

**GLULAM**, *n*—Synonym for **structural-glued-laminated timber**. (1993) (A)

**gum**, *n*—any of a class of colloidal substances, exuded by or prepared from plants, sticky when moist, composed of complex carbohydrates and organic acids, which are soluble or swell in water. (See also **adhesive**, **glue**, *n*, and **resin**.)

DISCUSSION—The term gum is sometimes used loosely to denote various materials that exhibit gummy characteristics under certain conditions, for example, gum balata, gum benzoin, and gum asphaltum. Gums are included by some in the category of natural resins.

**hardener**, *n*—synonym for **curing agent**. (1991) (R)

**heat-activated adhesive**, *n*—a dry adhesive film that is rendered tacky or fluid by application of heat or heat and pressure to the assembly. (Compare **hot-melt adhesive**.)

**hot-melt adhesive**, *n*—an adhesive which is rendered fluid by heat and forms a bond upon cooling.

DISCUSSION—A hot-melt adhesive may be applied in any of the following states—molten, powder, or dry film. (1991) (R)

**hot-setting adhesive**, *n*—an adhesive that requires a temperature at or above 100°C (212°F) to set it. (Compare **cold-setting adhesive**, **intermediate-setting adhesive**, and **room-temperature-setting adhesive**.)

**impact strength**, *n*—as related to adhesives, the kinetic energy per area absorbed by an adhesively-bonded joint when fractured by an impacting body. (1995) (A)

**inhibitor**, *n*—a substance that slows down chemical reaction. Inhibitors are sometimes used in certain types of adhesives to prolong storage or working life. (Also *retarder*.) (Compare **catalyst** and **hardener**.)

**initial tangent modulus**, *n*—the slope of the stress-strain curve at the origin. (1992) (A) **D 3983, D-14; E 6, E-28**

**intermediate-temperature-setting adhesive**, *n*—an adhesive that sets in the temperature range from 31 to 99°C (87 to 211°F). (Synonym *warm-setting adhesive*.) (Compare **cold-setting adhesive**, **hot-setting adhesive**, and **room-temperature-setting adhesive**.)

**interphase**, *n*—in an adhesive joint, a region of finite dimension extending from a point in the adherend where the local properties (chemical, physical, mechanical, and morphological) begin to change from the bulk properties of the adherend to a point in the adhesive where the local properties equal the bulk properties of the adhesive. (1990) (A); (1999) (R)

**joint**, *n*

*adhesive joint*, *n*—location at which two adherends are held together with a layer of adhesive. (See also **bond**, *n*.)

*edge joint*, *n*—in wood bonding, a joint made by bonding adherends edge to edge (with grain directions parallel) to form wider stock. (1992) (A)

*finger joint*, *n*—a joint formed by bonding two precut members shaped like fingers. (See Fig. 1.) (1990) (A)

*laminated joint*, *n*—in wood bonding, a joint made by bonding layers of adherends face to face to form thicker stock. (1992) (A)

*lap joint*, *n*—a joint made by placing one adherend partly over another and bonding together the overlapped portions.

*scarf joint*, *n*—a joint made by cutting away similar angular segments of two adherends and bonding the adherends with the cut areas fitted together.

*starved joint*, *n*—a joint that has an insufficient amount of

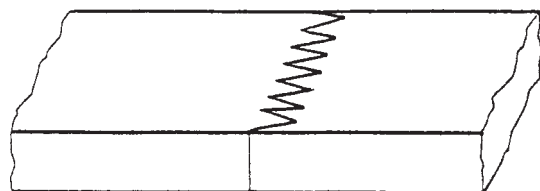


FIG. 1 Finger Joint

adhesive to produce a satisfactory bond.

**DISCUSSION**—This condition may result from too thin a spread to fill the gap between the adherends, excessive penetration of the adhesive into the adherend, too short an assembly time, or the use of excessive pressure.

*joint aging time, n*—synonym for **joint conditioning time**.

**joint-conditioning time**—the time interval between the removal of the joint from the conditions of heat or pressure, or both, used to accomplish bonding and the attainment of approximately maximum bond strength. (Synonym *joint-aging time*.) (See also **curing time, drying time, and setting time**.)

**laminated, n**—a product made by bonding together two or more layers of material or materials. (See also **wood laminates**.)

*cross laminate, n*—a laminate in which some of the layers of material are oriented at right angles to the remaining layers with respect to the grain or strongest direction in tension. (Compare **parallel laminate**.)

**DISCUSSION**—Balanced construction of the laminations above the center line of the thickness of the laminate is normally assumed.

*parallel laminate, n*—a laminate in which all the layers of material are oriented approximately parallel with respect to the grain or strongest direction in tension. (Compare **cross laminate**.)

**laminated, v**—to unite layers of material with adhesive. (Compare **bond, v**.)

*laminated joint*—See **joint**.

**laminated veneer lumber (LVL), n**—lumber made by laminating veneers in which the grain of all the veneers is essentially parallel to the lengthwise dimension.

*laminated wood product, n*—See under **wood laminates**.

**lamination, n**—1) the process of preparing a laminate. 2) any layer in a laminate. (Compare **laminated, n** and **wood laminate**.)

**lap joint, n**—See *lap joint* under **joint**.

**latex, n**—a stable dispersion of polymeric substance in an essentially aqueous medium. (1988) (A) **D 4317, D-14**

**layer, n**—*as related to veneer and plywood*, a single veneer ply or two or more plies laminated with grain direction parallel. (1990) (A)

**DISCUSSION**—A parallel laminated layer is two or more plies laminated with grain direction parallel.

**legging, n**—the drawing of filaments or strings when adhesive-bonded substrates are separated. (See also **stringiness** and **webbing**.) (Compare **teeth**.)

**manufactured unit, n**—a quantity of finished adhesive or finished adhesive component, processed at one time. (Compare **batch**.)

**DISCUSSION**—The manufactured unit may be a batch or a part thereof.

*mastic, n*—See **mastic adhesive**.

**mastic adhesive, n**—a gap-filling adhesive applied as a paste or putty-like material. (Also called *mastic*.) (1992) (A)

**matrix, n**—the part of an adhesive which surrounds or engulfs

embedded filler or reinforcing particles and filaments.

**maturing temperature, n**—the temperature, as a function of time and bonding condition, that produces desired characteristics in bonded components.

**DISCUSSION**—The term is specific for ceramic adhesives.

**mechanical adhesion, n**—See *mechanical adhesion* under **adhesion**.

**modifier, n**—any chemically inert ingredient added to an adhesive formulation to change its properties. (Compare **filler, plasticizer, extender**.)

**monomer, n**—a relatively simple compound which can react to form a polymer. (Compare **polymer**.)

**mucilage, n**—an adhesive prepared from a gum and water, and also in a more general sense, a liquid adhesive which has a low order of bonding strength. (See also **adhesive, glue, paste, and sizing**.)

**multiple-layer adhesive, n**—a dry-film adhesive, usually supported, with a different adhesive composition on each side; designed to bond dissimilar materials such as the core to face bond of a sandwich composite.

**Newtonian behavior, n**—the property of a liquid in which its viscosity is constant over a stated range of strain rates. (Compare **non-Newtonian behavior**.) (1994) (A)

**nominal stress, n**—the stress at a point calculated on the net cross section by simple elastic theory without taking into account the effect on the stress produced by discontinuities such as holes, grooves, fillets, or any combination of them. (1992) (A) Taken in part from **E 6, E-28; D 3983, D-14**

**non-Newtonian behavior, n**—the property of a liquid in which its viscosity is not constant over a stated range of strain rates. (1994) (A)

**nonvolatile content, n**—the portion of a material that remains after volatile matter has been evaporated under specified ambient or accelerated conditions. (See **solids content**.)

**DISCUSSION**—The measured percentage of nonvolatile matter in an adhesive will vary according to the analytical procedure. A standard test method must be used to obtain consistent results. (1994) (A)

**novolak, n**—a phenolic-aldehydic resin that, unless a source of methylene groups is added, remains permanently thermoplastic. (See also **thermoplastic, n**.) (Compare **resinoid**.)

**open assembly time, n**—See *open assembly time* under **assembly time** (1999) (R).

*parallel laminate, n*— See *parallel laminate* under **laminated, n**.

**paste, n**—an adhesive composition having a characteristic plastic-type consistency, that is, a high order of yield value, such as that prepared by heating a mixture of starch and water and subsequently cooling the hydrolyzed product. (Compare **adhesive, glue, mucilage, and sizing**.)

**peak load, n**—maximum force recorded during a strength test. (1994) (A)

**peel strength, n**—the average load per unit width of bondline required to separate progressively a flexible member from a rigid member or another flexible member. (1993) (A)

**DISCUSSION**—Flexible has different meanings in different peel tests,