



# Standard Terminology Relating to Rigid Wall Relocatable Shelters<sup>1</sup>

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## 1. Scope

1.1 This terminology covers terms and their definitions relevant to the materials and processes associated with the construction of rigid wall relocatable shelters.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- B 547/B 547M Specification for Aluminum and Aluminum-Alloy Formed and Arc-Welded Round Tube<sup>2</sup>
- C 273 Test Method for Shear Properties in Flatwise Plane of Flat Sandwich Constructions or Sandwich Cores<sup>3</sup>
- C 274 Terminology of Structural Sandwich Constructions<sup>3</sup>
- C 364 Test Method for Edgewise Compressive Strength of Flat Sandwich Constructions<sup>3</sup>
- C 393 Test Method for Flexural Properties of Flat Sandwich Constructions<sup>3</sup>
- C 460 Terminology for Asbestos-Cement<sup>4</sup>
- C 582 Specification for Contact-Molded Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion Resistant Equipment<sup>5</sup>
- D 123 Terminology Relating to Textiles<sup>6</sup>
- D 883 Terminology Relating to Plastics<sup>7</sup>
- D 907 Terminology of Adhesives<sup>8</sup>
- D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials<sup>9</sup>
- D 1356 Terminology Relating to Sampling and Analysis of Atmospheres<sup>10</sup>
- D 1566 Terminology Relating to Rubber<sup>11</sup>
- D 1781 Test Method for Climbing Drum Peel for Adhesives<sup>8</sup>

- D 2240 Test Method for Rubber Property—Durometer Hardness<sup>11</sup>
- D 2730 Method for Sag Flow of Highly Viscous Materials<sup>12</sup>
- D 3167 Test Method for Floating Roller Peel Resistance of Adhesives<sup>8</sup>
- E 492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine<sup>13</sup>
- E 864 Practice for Surface Preparation of Aluminum Alloys to Be Adhesively Bonded in Honeycomb Shelter Panels<sup>14</sup>
- E 874 Practice for Adhesive Bonding of Aluminum Facings to Nonmetallic Honeycomb Core for Shelter Panels<sup>14</sup>
- F 412 Terminology Relating to Plastic Piping Systems<sup>15</sup>
- G 15 Terminology Relating to Corrosion and Corrosion Testing<sup>16</sup>
- E 1925 Specification for Engineering and Design Criteria for Rigid Wall Relocatable Structures<sup>14</sup>

## 3. Terminology

**absolute sealing**—a level of sealing that requires all seams, slots, holes, and fasteners passing through the seal plane to be sealed.

*accelerated test*—See **test, accelerated**.

**adhesive**—a substance capable of holding materials together by means of surface attachment. **D 907**

*cold setting adhesive*—an adhesive which sets at temperatures below 20°C (68°F). **D 907**

*contact pressure adhesive*—a resinous adhesive which is aggressively and permanently tacky at room temperature and adheres to a variety of surfaces upon contact with a minimum of pressure required. (Syn. **pressure-sensitive adhesives**.)

*core splice adhesive*—a film adhesive, capable of expansion of at least 175 % of its original thickness, used primarily to join or splice together two or more separate sections of core material in sandwich constructions.

*foamed adhesive*— an adhesive, the apparent density of which

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 02.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 15.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.05.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 08.04.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 07.01.

<sup>7</sup> *Annual Book of ASTM Standards*, Vol 08.01.

<sup>8</sup> *Annual Book of ASTM Standards*, Vol 15.06.

<sup>9</sup> *Annual Book of ASTM Standards*, Vol 04.04.

<sup>10</sup> *Annual Book of ASTM Standards*, Vol 11.03.

<sup>11</sup> *Annual Book of ASTM Standards*, Vol 09.01.

<sup>12</sup> Discontinued. See 1986 *Annual Book of ASTM Standards*, Vol 08.02.

<sup>13</sup> *Annual Book of ASTM Standards*, Vol 04.06.

<sup>14</sup> *Annual Book of ASTM Standards*, Vol 04.11.

<sup>15</sup> *Annual Book of ASTM Standards*, Vol 08.04.

<sup>16</sup> *Annual Book of ASTM Standards*, Vol 03.02.

has been decreased substantially by the presence of numerous gaseous cells dispersed throughout its mass. **D 907**

**supported film adhesive**—an adhesive material incorporating a carrier that remains in the bond when the adhesive is employed; carrier support material is usually composed of organic/inorganic fibers which may be in woven (knit) or nonwoven (mat) form.

**unsupported film adhesive**—an adhesive material in film form without a carrier support.

**adhesive, contact**—an adhesive that is apparently dry to the touch and that will adhere to itself instantaneously upon contact.

**alclad sheet and plate**—composite sheet (and plate) having on both surfaces a metallurgically bonded aluminum or aluminum alloy coating that is anodic to the core alloy to which it is bonded, thus electrolytically protecting the core alloy against corrosion. **B 547**

**angle ply**—any filamentary lamina orientated in a direction other than that specified as 0° (that is, the reference axis) within a composite assembly.

**anisotropic**—not isotropic; having mechanical or physical properties, or both, that vary with direction relative to natural reference axes in a material.

**A-stage**—an early stage in the reaction of certain thermosetting resins in which the material is fusible and still soluble in certain liquids. (Syn. *resol.*) (Compare with **B-stage** and **C-stage**.)

**autoclave**—a closed vessel for producing an environment of fluid pressure, with or without heat, to an enclosed object undergoing a chemical reaction or other operation.

**autoclave molding**—a process where the lay-up or other assembly is covered by a vacuum bag and placed in an autoclave capable of providing heat and pressure for curing the part.

DISCUSSION—The vacuum bag is normally vented to the outside of the autoclave.

**bag molding**—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 a rigid die, completely encloses the material to be bonded. (Compare with **vacuum bag molding**.)

**balanced laminate**—a composite laminate in which all laminae occur in pairs symmetric about the midplane (but not necessarily adjacent to each other). See **symmetrical laminate**.

**batch**—the quantity of material that has been formulated in a single continuous operation and subjected to chemical processing or physical mixing to produce a homogeneous material.

**beam shear**—a term describing the stresses developed in planes parallel to facing planes of flat sandwich constructions when subjected to flatwise flexure in such a manner that the applied moments produce curvature of the plane of a sheet of the sandwich construction (see Test Method C 393).

**bleeder cloth**—a nonstructural layer of material used in the manufacture of composite assemblies to allow the escape of excess gas and resin during cure.

DISCUSSION—The bleeder cloth absorbs much of the excess resin and is removed after the curing process and is not part of the final composite.

**block**—*in a honeycomb core material*, a single production unit of honeycomb before slicing.

**block flow**—the distance an adhesive, sealant, or coating will sag on a vertical surface in a given period of time. Also referred to as *slump*.

**breakout**—fiber separation or break on surface plies at drilled, machined, etc., edges.

**breather**—a loosely woven cloth (such as glass fabric) which serves as a continuous vacuum path over a part but does not come in contact with the resin.

**bridging**—spanning a feature without full contact, such as tape or fabric spanning a radius, step, core edge, etc., or vacuum bagging material spanning tool or part surfaces.

**brittleness**—the tendency of a material to break at a very low strain, elongation, or deflection, and to exhibit a clean fracture surface with no indications of plastic deformation.

**broadgoods**—non-preimpregnated or uncured preimpregnated materials wider than 12 in. (300 mm).

DISCUSSION—These include unidirectional tape (precollimated) and woven cloths or fabrics of various constructions.

**brush coat**—*in sealants*, a thin layer of Class A curing type sealant used alone or in conjunction with a Type B sealant.

**B-stage**—an intermediate stage, in the reaction of certain thermosetting resins in which the material softens when heated and swells in contact with certain liquids, but may not entirely fuse or dissolve. The resin in an uncured thermosetting adhesive is usually in this stage. Sometimes referred to as *resitol*. **D 907**

**burn rate**—the rate at which a material burns after removal of the ignition heat source.

**button sample**—*in sealants*, an identified small amount of sealant extruded from a mixed sealant cartridge.

*carrier*—See **scrim**.

**catalyst**—a substance that increases the rate of a chemical reaction; used extensively in polymerization reactions.

**caul**—a sheet of material employed singly or in pairs in hot or cold pressing of assemblies being bonded. **D 907**

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 texture or finish; and to provide uniform pressure distribution.

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.

**CBR**—an abbreviation for *chemical, biological, radiological*.

**chemical resistance**—the ability to resist chemical attack. **F 412**

**DISCUSSION**—The attack is dependent on the method of test, and its severity is measured by determining the changes in physical properties. Time, temperature, stress, and reagents may all be factors that affect chemical resistance.

**CIAP**—an abbreviation for *corrosion inhibiting adhesive primer*.

*climbing drum peel test*— See **test, climbing drum peel**.

**close out**—enclosure of honeycomb or other core material within a structure that may contain hard edges or attachment points, or both.

**cocuring**—the act of curing a composite laminate and simultaneously bonding it to some other hard detail during the same cure cycle (for example, curing a skin laminate and bonding it to honeycomb core simultaneously).

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

**collimate**—to render fibers parallel.

*compacting*—See **debulking**.

**composite, filamentary**—a major form of advanced composites in which the fiber constituent consists of continuous filaments.

**DISCUSSION**—Filamentary composites are defined here as composite materials composed of laminae in which the continuous filaments are nonwoven, parallel, uniaxial arrays. Individual uniaxial laminae are combined into specifically oriented multiaxial laminates for application to specific envelopes of strength and stiffness requirements.

**composite material**—a material consisting of any combination of high-strength, high-modulus fibers, whiskers, or particles in a homogeneous matrix.

*compressive strength*— See **strength, compressive**.

**conduit**—a solid or flexible tube, pipe, or channel through which insulated electrical wires are run or through which water or some other fluid flows.

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

**contact pressure**—an imprecise term denoting the minimum amount of pressure necessary to ensure an essentially void-free area between two mating surfaces.

**controlled flow**—a characteristic of a resin system with elevated viscosity during cure.

**core**—a generally centrally located layer or composite component of a sandwich construction, usually low density, which separates and stabilizes the facings and transmits shear between them and provides most of the shear rigidity of the construction. **C 274**

**core compressive modulus**—the ratio of the compressive load (below the proportional limit of the core) per unit of original area to the corresponding deformation per unit of original thickness.

**core shear**—the shear stress applied to the core material used in sandwich panel construction.

**core shear modulus**—the ratio of the shear stress to the corresponding shear strain for stresses below the proportional limit in shear of the core.

*core splice adhesive*— See **adhesive, core splice**.

**core stabilization**—a process to rigidize honeycomb core materials to prevent distortion during machining or curing.

**crazing**—the development of a multitude of very fine cracks in

a material such as ceramic glaze, varnish, paint, etc., often the result of exposure to sunlight, weathering, or certain solvents.

**C-stage**—the final stage in the reaction of certain thermosetting resins in which the material is relatively insoluble and infusible. Certain thermosetting resins in a fully cured adhesive layer are in this stage. Sometimes referred to as *resite*. **D 907**

**cure**—to change the properties of a polymeric system into a more stable, usable condition by the use of heat, radiation, or reaction with chemical additives. **D 883**

**DISCUSSION**—Cure may be accomplished, for example, by removal of solvent or crosslinking.

**debulking**—the application of a temporary vacuum bag, bleeder, vacuum, or pressure, with or without heat, to remove trapped air and possibly some resin, in order to compact a composite lay-up. (Syn. **pre-bleeding, compacting**.)

**degradation**—damage by weakening or loss of some property, quality, or capability.

**delamination**—the separation of the layers (lamina) of material in a laminate. **C 582, D 883**

**density**—weight per unit volume, usually expressed in pounds per cubic inch, pounds per cubic foot, or kilograms per cubic metre. **C 460**

*destructive test*—See **test, destructive**.

*dry strength*—See **strength, dry**.

**durability**—the measure of the ability of a material or structure to endure and maintain its essential and distinctive characteristics of strength, resistance to decay, and appearance, with relation to a specific environment of use.

**ECA**—an abbreviation for *environmentally controlled area*; an area whose temperature and humidity is controlled within specified limits; the presence of grease, dirt, chemical contaminants, etc., are excluded.

**edge closures**—structural members framing the periphery of a sandwich panel providing support and a means of attachment to the panel as well as an environmental seal.

**edgewise compressive strength**—a term describing the load carrying capacity of flat sandwich constructions when a compressive load is applied uniformly to each facing, usually defined in terms of developed facing stresses as compared to the yield stress of the facings (see Test Method C 364).

*electromagnetic interference*—See **EMI**.

*electromagnetic pulse*— See **EMP**.

**EMI**—an abbreviation for *electromagnetic interference*; caused by electric and magnetic fields that emanate from a wide range of electrical circuitry.

**EMP**—an abbreviation for *electromagnetic pulse*; a sudden intense discharge of electromagnetic energy that occurs naturally as a result of lightning discharge and can be induced by near-surface or high-altitude nuclear explosions.

*environmentally controlled area*—See **ECA**.

**excessive corrosion**—corrosion that is not removed by cleaning as described in Practice E 864.

**exotherm**—the temperature rise resulting from the liberation of heat by any process of chemical reaction.

**facing**—the outermost layer or composite component of a sandwich construction, generally thin and of high density, that resists most of the edgewise loads and flatwise bending moments (Syn. *face*; *skin*). **C 274**

**fairing**—a shape that produces a smooth transition from one direction to another. Also referred to as a *feathering*.

**fasteners:**

*self-sealing fastener*—a fastener that provides a tight seal without the need for sealant material nor the use of a mechanical seal (for example, an interference fit fastener).

*wet-installed fastener*—a fastener that is coated on the shank and under the head with a curing-type sealant to provide a corrosion barrier and a secondary seal.

**faying surface**—the surface that makes contact with another surface.

DISCUSSION—In bonding or sealing applications, faying surfaces have adhesive or sealant applied between.

**faying surface seal**—a seal installed between two overlapping surfaces.

*feathering*—See **fairing**.

**fiber content**—the amount of fiber present in a composite, usually expressed as volume percent of the composite.

**fiber orientation**—the direction or alignment of the longitudinal axis of the fiber with respect to a stated reference axis.

**filament**—a variety of fibers characterized by extreme length. Also known as *fibers* and used interchangeably.

DISCUSSION—Filaments are used in filamentary composites and are also used in filament winding processes, which require long continuous strands. There are normally no filament ends within such composites except at geometric discontinuities.

*filamentary composites*— See **composite, filamentary**.

**fillet seal**—a seal applied at the juncture of two adjoining parts or surfaces and along the edges of faying surfaces as a continuous bead of sealing material.

**film weight**—*in the classification of film adhesives*, weight per unit area of film adhesive usually expressed in pounds per square foot, kilograms per square metre, etc.

**flame resistance**—the property of a material whereby flaming combustion is prevented, terminated, or inhibited following application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source. **D 123**

DISCUSSION—Flame resistance can be an inherent property of the basic material or product, or it may be imparted by specific treatment. The degree of flame resistance exhibited by a specific material during testing may vary with different test conditions.

**flash**—excess material that forms at the parting line of a mold or die, or the overflow of excess adhesive outside the area of attachment in a bonded assembly.

*floating roller peel test*— See **test, floating roller peel**.

**foam core**—a lightweight cellular structure (rigid foam) ma-

terial used in sandwich panel construction; innermost portion of a multilayer adherend assembly.

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

*forest products laboratory etch*—See **FPL etch and sulfochromate etch**.

**FPL etch**—an abbreviation for *forest products laboratory etch*; an etchant used for preparing the surface of aluminum alloys for adhesive bonding. (Syn. **sulfochromate etch**.)

**fungus resistance**—the ability of a sandwich construction to withstand fungi growth or their metabolic products, or both, under normal conditions of service or laboratory test simulating such conditions.

**fuzz balls**—broken or abraded filaments which have collected as loose bundles or balls during the manufacture of impregnated material, occasionally incorporated into the impregnated material.

**gage pressure**—the difference in pressure existing within a system and that of the atmosphere. Zero gage pressure is equal to atmospheric pressure. **D 1356**

**galvanic corrosion**—accelerated corrosion of a metal because of an electrical contact with a more noble metal or nonmetallic conductor in a corrosive electrolyte. **G 15**

**gouge**—a surface defect in which material has been removed (scooped out by a sharp instrument) that causes a decrease in strength in a highly stressed area. **E 874**

**hard edge**—an edge reinforcement used to either maintain edge integrity under load or at attachment points.

**hard points**—reinforced points within a sandwich construction to distribute stresses, resist concentrated compression loads, and maintain integrity of an attachment.

**heat sealing adhesive tape**—a strip of material (usually fabric, metal foil, paper, or plastic film) coated with an adhesive activated with the application of heat.

**HOBE**—an abbreviation for *honeycomb before expansion*; honeycomb made by layering sheets, usually of thin aluminum or paper, containing adhesive at the cell nodes.

DISCUSSION—HOBES are stacked layer upon layer to form a block that is subsequently expanded to the desired cell configuration by pulling the outer layer perpendicular to the ribbon direction.

*honeycomb before expansion*— See **HOBE**.

**honeycomb core**—a sheet material, formed into cell structure (usually hexagonal) similar to honeycomb and used as core material in the construction of sandwich panel assemblies.

DISCUSSION—Honeycomb core materials exhibit anisotropic behavior; therefore the following notation is used:

*L* = ribbon direction or longitudinal direction of core,

*W* = expanded direction or transverse direction of core, and

*T* = core thickness or depth.

**honeycomb sandwich panel**—sandwich constructions consisting of honeycomb core adhesively clad with face sheets.

**hot pressing**—the curing of thermosets by heat and pressure application.

**hygroscopic**—attracting, absorbing, and retaining atmospheric moisture. **D 1079**



**injection seal**—a seal accomplished by injecting sealant into holes, joggles, channels, grooves, and other voids caused by buildup of structure boundaries.

DISCUSSION—This seal is used to provide continuity where fillet seals are interrupted by the structure and also to fill cavities completely.

**integrally mold**—to join and cure two or more uncured (B-staged) composite details to create an assembly during a single autoclave cure cycle.

**interference seal**—a seal produced between a fastener and its hole when a fastener of a given diameter is driven into a hole of a smaller diameter. An interference seal is also produced when a fastener shank is expanded by the installation process.

**interlaminar**—descriptive term pertaining to some object (voids), event (fracture), or potential field (shear stress) referenced as existing or occurring between two or more adjacent laminae.

**isotropic**—having uniform properties in all directions. The measured properties of an isotropic material are independent of the axis of testing.

**joggle**—a displacement machined or formed in a structural member to accommodate the base of an adjacent member.

DISCUSSION—Although joggles are sealed by prepacking during preassembly whenever possible, in some cases they must be sealed by injection during post-assembly operations.

**laminate**—a product made by bonding together two or more layers of material or materials. **D 883**

**laminate, symmetrical**—a composite laminate in which the ply orientation is symmetrical about the laminate midplane.

**lay-up**—a process of fabrication involving the placement of successive layers of materials.

**leak exit**—the point where a leak appears.

**leak path**—the path a leak follows from the leak source to the leak exit.

**leak source**—the point where a leak starts.

**lot**—a batch or fraction thereof, in which each unit is identical in chemical composition, physical properties, and dimensions.

**mandrel**—a form, fixture, or male mold used in the production of a part by lay-up or filament winding.

**markoff**—an indentation or imprinting of the skin surface due to any cause (such as foreign matter between mating parts, improper tooling, mismatch of detail parts, etc.).

**mat**—a random arrangement of fine fibers uniformly distributed to form a thin, highly porous, felt-like material.

**matrix**—the essentially homogeneous phase in a composite material in which reinforcements such as fibers, filaments, particles, etc., are embedded.

**mold form**—the cavity or shape that uncured composite laminae are placed into or onto and from which they derive their form.

**net molded edge**—an edge, not physically altered after molding, in final form ready for use.

**node**—the bonded portion of the honeycomb flat sheet material; the honeycomb cell's double wall.

**nominal pressure**—the intended operating pressure.

**nominal temperature**—the intended operating temperature.

**nondestructive test**— See **test, nondestructive**.

**normalize**—by calculation, to revert a given thickness (actual) of cured composite to a standard thickness (that is, a specific per ply thickness standard) to yield equivalent fiber stress (based upon the standard).

DISCUSSION—Normalization is applicable only to fiber dominated properties (for example, tension), not matrix dominated properties (for example, shear).

**oil canning**—a form of buckling; *in flat sandwich constructions*, a defect occasioned by excessive compressive loads and represented by waviness of the product.

**orthotropic**—having three mutually perpendicular planes of elastic symmetry.

**P2 etch**—an etchant used for preparing the surface of aluminum alloys for adhesive bonding. (Syn. **sulfoferric etch**.)

**peel ply**—a removable ply molded onto the surface of a laminate to provide a chemically clean surface for bonding or painting after removal.

**plate shear**—a term describing the stresses associated with shear distortion of planes parallel to the edge plane of a sandwich construction or core material when loaded in shear parallel to the plane of the facings (see Test Method C 273).

**post cure**—heat or radiation treatment, or both, to which a cured or partially cured thermosetting plastic or rubber composition is subjected to enhance the level of one or more properties. **D 1566**

**pot-life**—See **working life**.

**prebleeding**—See **debulking**.

**prefit**—a process to check the fit of mating detail parts in an assembly prior to adhesive bonding in order to ensure proper bondlines.

DISCUSSION—Mechanically fastened structures are also prefit sometimes to establish shimming requirements.

**prepack seal**—a preassembly seal installed to fill voids or provide a support seal for subsequent fillet sealing.

**prepreg**—a combination of mat, fabric, nonwoven material, or roving with resin usually advanced to the B-stage, ready for curing.

**pressure sensitive adhesive**—See **adhesive, contact pressure**.

**primary seal**—a seal that in combination with the structure and optional brush coat or secondary seal forms a continuous, durable, and absolute seal in the sealing plane and requires no additional seals.

**primer**—a coating applied to a surface prior to the application of an adhesive, sealant, or paint to improve the adhesive bonding characteristics or corrosion resistance, or both, of the surface.

**pultrusion**—a process to continuously fabricate composite structural shapes or flat sheet by drawing prepreg materials through forming dies to produce the desired constant cross-sectional shape and simultaneously curing the resin.

**resin batch**—the quantity of resin that has been formulated in a single continuous operation and subjected to chemical processing or physical mixing to produce a homogeneous material.

**resin content**—the amount of matrix present in a composite usually expressed in units of weight percent.

*resite*—See **C-stage**.

*resitol*—See **B-stage**.

*resol*—See **A-stage**.

**REX hardness**—in *sealants*, the hardness of a sealant as measured by a REX hardness gage.

*sag flow test*—See **test, sag flow**.

**sandwich panel**—a structure consisting of relatively dense high-strength facing(s) bonded to a less dense low-strength intermediate material or core.

**scrim**—a reinforcing fabric woven into an open mesh construction, used in the processing of tape or other B-stage material to facilitate handling and control bondline thicknesses. Also referred to as a *carrier*.

**seal**—the closure of a structure to make it leakproof by the application of sealant to fasteners, seams, and any other possible leak path.

*sealing, absolute*— See **absolute sealing**.

**seal plane**—all surfaces of a shelter that establish seal continuity and are in immediate contact with the environment.

DISCUSSION—These surfaces may be composed of structure, fastener, or sealing materials, or combination thereof.

**secondary bonding**—the joining together, by the process of adhesive bonding, of two or more cured composite parts, during which the only chemical (or thermal) reaction taking place is the curing of the adhesive itself.

**secondary seal**—a seal that alone cannot provide a dependable absolute seal.

**separator cloth**—a fabric, coated with TFE-fluorocarbon or similar release agent, placed between the lay-up assembly and the bleeder system to facilitate subsequent bleeder-system removal from the laminate after it has been cured.

**sheet**—in *honeycomb core material*, a slice of honeycomb cut from a production block.

*shelf life*—See **storage life**.

#### **shelters:**

*expandable shelters*—those shelters that are expanded from the transport size to a larger size, at expansion ratios of three-to-one or less and perhaps to a different shape. (See Specification PS 27.)

*highly expandable shelters*—as classified by the U.S. Department of Defense (MIL-STD-907B), those shelters that have expansion ratios greater than three-to-one from their transport size.

*knockdown shelters*—as classified by the U.S. Department of Defense (MIL-STD-907B), those shelters that are reduced in height and nested with identical items for transportation.

*large area shelters*—as classified by the U.S. Department of Defense (MIL-STD-907B), those shelters that are disassembled and packed in dedicated or general-purpose containers for shipment.

*nonexpandable shelters*—as classified by the U.S. Department of Defense (MIL-STD-907B), those shelters that are used in the same size and shape in which they are transported.

**shielding effectiveness**—the ability of a sandwich panel of suitable thickness and physical characteristics to exclude

(protect) sensitive components or units from electromagnetic radiation (interference).

**Shore A hardness**—a measurement of hardness for rubbers and plastics using a Shore A hardness gage (durometer).

DISCUSSION—The gage has a dial, a foot, and a pin that protrudes slightly through a hole in the face of the foot. The procedure for determining Shore A hardness of rubbers and plastics is described in Test Method D 2240.

*skin*—See **facing**.

*slump*—See **block flow**.

**stacking sequence**—the order in which each individual ply is laid up, or stacked, on the tool.

DISCUSSION—Such information is commonly given on the engineering drawing.

**storage life**—the length of time that a packaged adhesive, sealant, or other product can be stored under specified temperature conditions and remain suitable for use (Syn. **shelf-life**.)

**D 907**

#### **strength:**

*compressive strength*—the maximum compressive strength that a material is capable of sustaining. Compressive strength is calculated from the maximum load during a compressive test and the original cross-sectional area of the specimen.

DISCUSSION—Materials that fail in an abrupt manner typically produce well-defined endpoints for calculating compressive strength. For other materials, the value may be arbitrary depending upon the degree of distortion that is regarded as indicating complete failure of the material.

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

*wet strength*— the strength of an adhesive bond or composite measured after exposing the test specimen to moisture/water vapor until saturated.

**sulfochromate etch**—etchant used for preparing the surface of aluminum alloys for adhesive bonding (sulfuric acid/sodium dichromate). Also known as the *Forest Products Laboratory (FPL) etch*.

**sulfoferric etch**—etchant used for preparing the surface of aluminum alloys for adhesive bonding (sulfuric acid/ferric sulfate). Also known as the *P2 etch*.

*supported film adhesive*— See **adhesive, supported film**.

**surface preparation**—a physical or chemical preparation, or both, of an adherend surface to render it suitable for adhesive joining.

**D 907**

**symmetrical laminate**—See **laminate, symmetrical**.

**tape**—materials in which the reinforcing filaments or fibers are laid in a single direction within a resin matrix in the B-stage.

*tap test*—See **test, tap**.

**tempest**—term used to describe techniques used to reduce emanation of electronic data or intelligence from a tactical shelter.

**DISCUSSION**—Tempest requirements attempt to minimize signals given off by any electronic system by shielding and careful attention to signal paths.

**test:**

*accelerated test*— the testing of materials by exposure to intensified simulation of service conditions, for example, weathering, radiation, etc.

*climbing drum peel test*—a method of determining the relative peel resistance of adhesive bonds between a relatively flexible adherend and a rigid adherend, and the relatively flexible facing of a sandwich structure and its core (see Test Method D 1781-).

*destructive test*— a test involving the destruction of assemblies or parts in order to evaluate the maximum performance of the assembly or part.

*floating roller peel test*—a method of determining the relative peel resistance of adhesive bonds between one rigid and one flexible adherend (see Test Method D 3167).

*nondestructive test*—an inspection test for the evaluation of structural quality without damaging the assembly, for example, ultrasonics, visual inspection, etc.

*sag flow test*— a method of determining the maximum thickness to which a material can be applied without sagging and that provides a means of measuring the amount of sag flow at a given thickness (for highly viscous resins) (see Test Method D 2730).

**test, tap**—a nondestructive evaluation procedure for detecting areas of panel delamination in sandwich or other composite constructions; outer surface of the panel is tapped with a hammer or coin. Changes in acoustic emissions (sound) resulting from tapping are used to distinguish between delaminated and nondelaminated sections of the panel (see Test Method E 492).

**thermoplastic**—a polymer material that will repeatedly soften when heated and harden when cooled. **D 907**

**thermoset**—a polymer material that will undergo or has undergone a chemical reaction by the action of heat, catalysts, ultraviolet light, etc., leading to a relatively infusible state. **D 907**

**thixotropy**—a property of nonsag materials that display a reduction in viscosity when a shearing action is applied but resist seeking their own level when left undisturbed.

**tooling**—a term used to describe the shaping of a fillet bead of applied sealant to a feathered edge where it meets the substrate(s).

**DISCUSSION**—The goal is to ensure good surface contact at feathered edges, to eliminate voids, trapped air, and reentrant edges, and to produce a contour of the correct thickness and shape over the area being sealed.

**unit**—the smallest single portion of material received in any one lot (for example, a single roll of material).

*unsupported film adhesive*— See **adhesive, unsupported film**.

**vacuum bag molding**—a process in which an adhesive or composite assembly is cured under pressure generated by drawing a vacuum in the space between the lay-up and a flexible sheet placed over it and sealed at the edge. (Compare with **bag molding**.)

**volatility**—the capability of evaporating into a gas.

**VOC**—an abbreviation for *volatile organic compound*; an organic compound with the tendency to become vapor at specified conditions of temperature and pressure.

**void**—*in structural members*, any opening, small crack, or crevice occurring at the juncture of structural members (such as chambers, reliefs, joggles, butt joints, or fasteners).

**DISCUSSION**—Voids may also occur in adhesive bondlines or within laminated composites.

*volatile organic compound*— See **VOC**.

**water migration resistance**—the ability of either facing or core materials to prevent migration of water in sandwich panels.

*wet strength*—See **strength, wet**.

**working life:**

*adhesive working life*—the period of time during which an adhesive, after mixing with catalyst, solvent, or other compounding ingredients, remains suitable for use. **D 907**

*sealant working life*—the amount of time faying surfaces can be left open once sealant has been applied and still squeeze out excess sealant on closure to a thickness of 0.005 in. (0.13 mm) or less.

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