

**The NRCA Roofing Manual:
Architectural Metal Flashing,
Condensation Control and Reroofing**

2010



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Condensation Control and Reroofing

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Appendix 3—Glossary

abrasion resistance: The ability to resist being worn away by contact with another moving, abrasive surface, such as foot traffic, mechanical equipment, wind-blown particles, tree limbs, etc.

absorption: The ability of a material to accept within its body quantities of gases or liquid, such as moisture.

accelerated weathering: The exposure of a specimen to a specified test environment for a specified time with the intent of producing in a shorter time period effects similar to actual weathering.

acrylic coating: A liquid coating system based on acrylic binders dispersed in water (occasionally in solvents) with pigments and several proprietary additives that cures by coalescence and air drying.

acrylic resin: Polymers of acrylic or methacrylic monomers. Often used as a latex base for coating systems.

active metal (anodic): A metal or material that readily gives up electrons to a cathodic (noble) material. (See "anodic.") An active metal will corrode in the presence of moisture when in contact with a cathodic metal.

A-component (A-side): One component of a two-component polymer system; for polyurethane foam and coatings, the isocyanate component. See also "isocyanate" and "methylene diphenyl diisocyanate (MDI)."

adhere: To cause two surfaces to be held together by the combined strength of the molecular forces and the mechanical interlocking achieved between adhesive and the bonded surface. See "adhesion," "adhesive" and "bond."

adhesion: (1) The degree of attachment between two surfaces held together by interfacial forces—mechanical or chemical or both; (2) the degree of attachment or bonding between application of the same substance; (3) the combined ultimate strength of the molecular forces and the mechanical interlocking achieved between the adhesive and the surface bonded. Adhesion is measured in shear and peel modes.

adhesive: A cementing substance that produces a steady and firm attachment or adhesion between two surfaces.

adhesive bond break: A material to facilitate independent movement between two units that would otherwise bond together.

AFA: American Fiberboard Association.

AGC: Associated General Contractors of America.

aged R-value: Thermal resistance value established by using artificial conditioning procedures for a prescribed time period.

aggregate: (1) Crushed stone, crushed slag, water-worn gravel or marble chips used for surfacing a built-up or polymer-modified bitumen roof system; (2) any granular material.

aggregate, lightweight (LWA): Aggregate of low density; examples include coal bottom ash, pumice, scoria, volcanic cinders, tuff and diatomite; expanded or sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite or slag and bonded or sintered coal combustion products (CCPs) used to produce lightweight concrete or component products.

aging: (1) The effect on materials of exposure to an environment for an interval of time; (2) the process of exposing materials to an environment for an interval of time.

AIA: American Institute of Architects.

air barrier: The assembly of materials used in building construction to reduce or retard the uncontrolled passage of air into and out of the building.

air infiltration: Air leakage into the building.

air leakage: The unintended movement of air from a location where it is intended to be contained to another location.

air space: A cavity or unfilled space between two constituent parts in a roof assembly or other enclosure element of a building.

aliphatic polyurethane: An organic polymer containing straight or branched chain arrangements of carbon atoms. As compared to aromatic urethanes, coatings based on aliphatic urethane binders typically have better weathering characteristics.

aliphatic polyurethane coating: A polyurethane coating that contains a specific class of isocyanates based on a long straight chain molecular structure. Normally used in finish coats that are exposed to the elements. It is noted for its good weather resistance.

alkalinity: The capacity of water solutions to neutralize acids; a property imparted by the solution's content of carbonates, bicarbonates, hydroxides, and occasionally borates, silicates, and phosphates.

alligatoring: Cracking of a surfacing bitumen, asphalt, coating or mastic or coating on a spray polyurethane foam (SPF) roof system that occurs during the aging process in which the loss of volatile oils and the oxidation brought about by solar radiation produces a pattern or cracks similar to an alligator's hide; the cracks may or may not extend through the surfacing material.

aluminized steel: Sheet steel with a thin aluminum coating bonded to the surface to enhance weathering characteristics.

aluminum: A nonrusting, malleable metal sometimes used for metal roofing and flashing.

ambient temperature: The temperature of the air existing on all sides; air temperature.

analysis: (1) The determination of the nature or proportion of one or more constituents of a substance, whether separated or not; (2) a qualitative or quantitative determination of one or more components of a sample cut from an existing roof system.

anodic: A metal or material that readily gives up electrons to a cathodic material in the presence of an electrolyte (see "galvanic cell," "galvanic series" and "cathodic"). As a result, the anodic material oxidizes to protect the cathodic material from corrosion.

ANSI: American National Standards Institute.

APA: (Formerly) American Plywood Association. The full designation in current use is "APA—The Engineered Wood Association."

APC: (Formerly) American Plastics Council. The full designation in current use is "The Plastics Division of the American Chemistry Council (ACC)." "ACC Plastics Division" is the common-use form.

APP: See "atactic polypropylene."

application rate: The average quantity (mass, volume or thickness) of material applied per unit area.

application temperature: The temperature of a material, such as hot asphalt, when applied to the roof.

apron flashing: A term used for a flashing located at the juncture of the top of a sloped roof and a vertical wall, chimney or steeper-sloped roof.

APC/SPFA: (Formerly) American Plastics Council/Spray Polyurethane Foam Alliance. See "APC."

architect: A person technically qualified and professionally licensed to practice architecture; that is, designing and administering the construction of buildings.

architectural panel: A metal roof panel; usually requires solid decking underneath and relies on slope to shed water.

architectural shingle: See "dimensional shingle."

area divider: A raised, flashed assembly, typically a single- or double-wood member attached to a wood base plate, which is anchored to the roof deck. It is used to separate large roof areas or roof systems composed of different/incompatible materials and also may be used to facilitate installation of tapered insulation.

ARMA: Asphalt Roofing Manufacturers Association.

aromatic polyurethane: An organic polymer usually containing one or more benzene ring structures. As compared to aliphatic, coatings based on aromatic polyurethane usually have tougher physical properties.

asbestos: A group of natural, fibrous impure silicate materials.

ASC: Associated Specialty Contractors.

ASCE: American Society of Civil Engineering.

ASHI: American Society of Home Inspectors.

ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers.

asphalt: A dark brown to black cementitious material in which the predominating constituents are bitumens found in a natural state or more commonly left as a residue after evaporating or otherwise processing crude oil or petroleum. See "bitumen." Asphalt may be further refined to conform to various roofing grade specifications:

asphalt, dead-level: Roofing asphalt conforming to the requirements of ASTM D312, Type I.

asphalt, flat: Roofing asphalt conforming to the requirements of ASTM D312, Type II.

asphalt, steep: Roofing asphalt conforming to the requirements of ASTM D312, Type III.

asphalt, special steep: Roofing asphalt conforming to the requirements of ASTM D312, Type IV.

asphalt, waterproofing: A waterproofing asphalt conforming to the requirements of ASTM D449, Types I, II and III.

asphalt, air-blown: Asphalt produced by blowing air through molten asphalt at an elevated temperature to raise its softening point and modify other properties.

asphalt emulsion: A mixture of asphalt particles and emulsifying agent, such as bentonite clay or soap, and water.

asphalt felt: An asphalt-saturated and/or asphalt-coated felt. See "felt."

asphalt primer: See "primer."

asphalt roof cement: A trowelable mixture of solvent-based bitumen, mineral stabilizers, other fibers and/or fillers. It can be classified according to two available standards: ASTM D2822, applicable to asbestos-containing materials and ASTM D4586, applicable to asbestos-free materials. Both standards contain provisions for Type I and Type II materials.

Type I is sometimes referred to as "plastic cement" and is made from asphalt characterized as self-sealing, adhesive and ductile and conforming to ASTM D312, Type I; ASTM D449, Type I or Type II; or ASTM D946. See "plastic cement" and "flashing cement."

Type II is generally referred to as "vertical-grade flashing cement" and is made from asphalt characterized by a high softening point and relatively low ductility and conforming to the requirements of ASTM D312, Type II or Type III; or ASTM D449, Type III. See "plastic cement" and "flashing cement."

asphalt shingle: A shingle manufactured by coating a reinforcing material (paper felt or fiberglass mat) with an asphalt-based coating and having mineral granules on the side exposed to the weather. See "shingle."

ASTM International: The full designation in current use of the largest voluntary standards development organization in the world formerly known as the American Society for Testing and Materials.

atactic polypropylene: High-molecular-weight polymer formed by the polymerization of propylene and characterized by random arrangement of the side methyl groups around the chain backbone.

attic: The cavity or open space above the ceiling and immediately under the roof deck of a steep-slope roof.

AWPA: American Wood Protection Association; formerly American Wood-Preservers Association.

backnailing: The practice of nailing the concealed portion of a roofing ply, steep roofing unit or other components in a manner such that the fasteners are covered by the next ply, or course, and are not exposed to the weather in the finished roof system. Hot-mopped roofing felts and polymer-modified bitumen sheets may be backnailed to prevent slippage. Also referred to as "blindnailing."

backrolling: Rolling a coating by hand, normally behind the spray or power roller applicator, to ensure better coverage and adhesion.

backup plate: A rigid plate to support an end lap to provide uniform compression.

ballast: A material, such as minimum nominal #1-1/2 inch size or #4, or alternatively, #3, #24, #2 or #1—as specified in ASTM D448—smooth river stone, crushed stone, standard precast concrete pavers or interlocking, beveled, doweled or contoured fit lightweight concrete pavers, which employs its mass and the force of gravity to hold a roof membrane system in place.

bar joist: See "steel joist."

barrel vault: A building profile featuring a rounded profile to the roof on the short axis but with no angle change on a cut along the long axis.

base coat: The first coat of a multicoat system.

Bermuda seam: A metal panel profile featuring a step-down profile that runs perpendicular to the slope of the roof; has a shingled appearance and is water-shedding.

bitumen: (1) A class of amorphous, black or dark-colored, (solid, semi-solid or viscous) cementitious substances; natural or manufactured, composed principally of high-molecular-weight hydrocarbons, soluble in carbon disulfide, and found in asphalts, tars, pitches and asphaltites; (2) a generic term used to denote any material composed principally of bitumen, typically asphalt or coal tar.

bituminous: Containing or treated with bitumen, e.g., bituminous concrete, bituminous felts and fabrics, and bituminous pavement.

bituminous emulsion: (1) See "asphalt emulsion"; (2) a suspension of minute globules of bituminous material in water or in an aqueous solution; (3) a suspension of minute globules of water or of an aqueous solution in a liquid bituminous material (invert emulsion).

bituminous waterproofing: A waterproofing method available for positive-side waterproofing only; cold or hot bituminous application with reinforcing material.

black body: A theoretical, perfect emitter and absorber of thermal radiation. It emits radiant energy at each wavelength at the maximum rate possible for its temperature and absorbs all incident radiation.

blanket insulation: Fiberglass or other compressible fibrous insulation, generally available in roll form.

blast furnace slag: The nonmetallic product, consisting essentially of silicates and aluminosilicates of calcium and other bases, that is developed in a molten condition simultaneously with iron in a blast furnace.

blister: (1) A raised portion of a roofing membrane resulting from local internal pressure, such as an enclosed pocket of air, which may be mixed with water or solvent vapor, trapped between impermeable layers of felt or membrane or between the membrane and substrate; (2) the similarly formed surface swelling in coated prepared roofing such as asphalt shingles; (3) separation of a coating from a substrate; may be caused by water absorption and the resultant swelling or subsurface corrosion.

base flashing (membrane base flashing): Plies or strips of roof membrane material used to clossoff and/or seal a roof at the horizontal-to-vertical intersections, such as at a roof-to-wall juncture. Membrane base flashing covers the edge of the field membrane and extends up the vertical surface. See "flashing."

base ply: The bottom or first ply in a built-up or polymer-modified bitumen roof system when additional plies are to be subsequently installed.

base sheet: An impregnated, saturated or coated felt placed as the first ply in some low-slope roof systems.

basic wind speed: Three second gust wind speed in miles per hour at 33 feet above ground in Exposure C as defined in the latest edition of the American Society of Civil Engineers standard ASCE 7, "Minimum Design Loads for Buildings and Other Structures."

batten: (1) Cap or cover; (2) in a metal roof, a metal closure set over, or covering the joint between, adjacent metal panels; (3) in a steep-slope roof system, a strip of wood or metal usually set in or over the structural deck, used to elevate and/or attach a primary roof covering; (4) in a single-ply membrane roof system, a narrow plastic or metal bar that is used to fasten or hold the roof membrane and/or base flashing in place.

batten seam: A name applied to a common standing seam metal panel profile that may use a square- or rectangular-profile snap-on cap or may be attached to and formed around a beveled wood or metal batten.

B-component (B-side): One component of a two-component polymer system; for polyurethane foam and coatings, the resin component.

beam: A primary member, usually horizontal, that is subjected to bending loads. There are three types: simple, continuous and cantilever.

bearing plate: (1) A plate used to distribute fastener load in metal panel roof systems placed over rigid board insulation and through-fastened to the roof deck; (2) a steel plate that is set on the top of a masonry support on which a beam or purlin can rest.

bentonite: A porous clay formed by the decomposition of volcanic ash that swells five to six times its original volume in the presence of water.

blocking: (1) Sections of wood (which may be preservative-treated) built into a roof assembly, usually attached above the deck and below the membrane or flashing, used to stiffen the deck around an opening, act as a stop for insulation, support a curb, or serve as a nailer for attachment of the membrane and/or flashing; (2) wood cross-members installed between rafters or joists to provide support at cross-joints between deck panels.

blowing agent: An expanding agent used to produce a gas by chemical or thermal action or both in manufacture of hollow or cellular materials.

bond: (1) The adhesive and/or cohesive forces holding two components in positive contact; (2) a surety, typical types are: bid, performance and payment; (3) a guarantee relating to roof system performance.

bonding agent: A chemical substance applied to a suitable substrate to create bond between it and a succeeding layer. See "adhesive."

boot: (1) A covering made of flexible material that may be preformed to a particular shape, used to exclude dust, dirt, moisture, etc., from around a penetration; (2) a flexible material used to form a closure, sometimes installed at inside and outside corners.

bracing: Structural elements installed to provide restraint or support or both to other members so the complete assembly forms a stable structure; may consist of knee braces, cables, rods, struts, ties, shores, diaphragms, rigid frames, etc.

bridging: (1) An instance of a membrane or base flashing unsupported at a juncture; (2) occurs in steep-slope roofing when the nesting method is not used in re-covering, such as roofing over standard-size asphalt shingles with metric-size asphalt shingles.

British thermal unit (Btu): The heat energy required to raise the temperature of one pound of water one degree Fahrenheit.

broadcast: To cast or distribute granular or aggregate surfacing material.

brooming: Embedding a ply or membrane by using a broom or squeegee to smooth it out and ensure contact with the adhesive under the ply or membrane.

Btu: See "British thermal unit."

buck: A sheet (membrane, felt, etc.) lap facing upslope allowing water to hit against the edge of it rather than facing downslope to allow water to run over it smoothly.

buckle: An upward, elongated displacement of a roof membrane frequently occurring over insulation or deck joints. A buckle may be an indication of movement within the roof assembly.

building code: The minimum construction requirements established generally by national organizations and adopted completely or in altered form by local governing authorities. Building code controls design, construction, quality of materials, use and occupancy, location, and maintenance of buildings and structures within the area for which the code was adopted.

building envelope: Exterior of a building.

built-up roof (BUR): A continuous, semi-flexible roof membrane consisting of multiple plies of saturated felts, coated felts, fabrics or mats assembled in place with alternate layers of bitumen and surfaced with mineral aggregate, bituminous materials, a liquid-applied coating or a granule-surfaced cap sheet.

butt edge: The lower, exposed edge of a shingle, tile or shake.

butt joint: A joint formed by adjacent, separate sections of material, such as where two neighboring pieces of insulation abut.

button punch: A process of indenting two or more thicknesses of metal that are pressed against each other to prevent slippage between the metal.

butyl rubber: A synthetic elastomer based on isobutylene and a minor amount of isoprene. It can be vulcanized and features low permeability to gases and water vapor. Butyl rubber is manufactured into various sheet goods, blended with other rubber materials, and is often used to make sealant.

butyl tape: A sealant tape sometimes used between metal roof panel seams and/or end laps; also used to seal other types of sheet metal joints and in various sealant applications.

calendering: A manufacturing process by which some polymeric membranes and other sheetings are produced.

camber: A slight convexity, arching or curvature (as of a beam, roof deck or road).

cant strip: A beveled strip used to modify the angle at the point where the roofing or waterproofing membrane meets any vertical element.

cap flashing: (1) Usually composed of metal, used to cover or shield the upper edges of the membrane base flashing or wall flashings; (2) a flashing used to cover the top of various buildings components, such as parapets or columns. See "flashing" and "coping."

cap sheet: A sheet, often granule-surfaced, used as the top ply of some built-up or polymer-modified bitumen roof membranes and/or flashings.

capillary action: (1) The action by which the surface of a liquid where it is in contact with a solid is elevated or depressed depending on the relative attraction of the molecules of the liquid for each other and for those of the solid; (2) the siphoning of liquid into a joint or void between two adjacent surfaces.

catalyst: An ingredient that initiates a chemical reaction or increases the rate of a chemical reaction when combined with another chemical.

cathodic: A metal or material that readily attracts electrons from an anodic material in the presence of an electrolyte. See "galvanic series"

caulking: (1) The physical process of sealing a joint or juncture; (2) sealing and making weathertight the joints, seams or voids between adjacent surfaces by filling with a sealant.

cavitation: The formation of a partial vacuum or cavity in a liquid.

c-channel: A structural framing member.

cellular concrete: A poured-in-place roof deck material composed of Portland cement, water, a foaming agent or pregenerated foam and air. It's oven-dry density is about 24 to 32 pounds per cubic foot.

cellular glass insulation: A rigid closed-cell insulation board made from crushed glass and hydrogen sulfide gas.

cementitious waterproofing: Heavy cement-based compounds and various additives that are mixed and packaged for use in a dry form; the packaged mixture is then mixed with water and liquid bonding agents to a workable concrete-like consistency.

cementitious-wood fiber decks: Treated wood fibers bonded together with Portland cement or other resins or cementitious-type binder that are compressed and molded to form a structural material. Examples of product trade names are Tectum and Insul-rock.

centimeter (cm): A metric unit of measurement equal to one-hundredth (0.01) of a meter, or 0.393 inches.

centipoise (cP or cPs): A unit of measure of dynamic viscosity in the centimeter-gram-second system of units equal to one one-hundredth of a poise ($1 \text{ P} = 100 \text{ cP} = 1 \text{ g}\cdot\text{cm}^{-1}\cdot\text{s}^{-1}$). (The viscosity of water at 70 F is one centipoise. The lower the number, the less viscous the material.)

centistokes (cSt): A unit of kinematic viscosity in the centimeter-gram-second system of units equal to one one-hundredth of a stokes ($1 \text{ St} = 100 \text{ cSt} = 1 \text{ cm}^2\cdot\text{s}^{-1}$); the ratio of a liquid's dynamic viscosity to its density.

chalk: A powdery residue on the surface of a material.

chalking: The formation of a friable powder on the surface caused by the disintegration of the binding medium by weather factors.

channel flashing: In steep-slope roof construction, a type of flashing used at roof-to-wall junctures and other roof-to-vertical plane intersections where an internal gutter is needed to handle runoff. Commonly used with profile tile.

checking: In coatings, slight breaks in the film that do not penetrate to the previously applied coating or substrate; also termed "weather checking."

chemical resistance: The ability to withstand contact with specified chemicals without a significant change in properties.

chimney: Stone, masonry, prefabricated metal or wood-framed structure containing one or more flues projecting through and above a roof.

chlorinated polyethylene (CPE): A thermoplastic material used for single-ply roof membranes composed of high-molecular-weight polyethylene that has been chlorinated with a process that yields a flexible rubber-like material. CPE can be vulcanized but usually is used in a nonvulcanized state.

chlorosulfonated polyethylene (CSPE or CSM): Probably best known by the DuPont trade name Hypalon, a synthetic, rubber-like thermoset material, based on high-molecular-weight polyethylene with sulphonyl chloride, usually formulated to produce a self-vulcanizing membrane. Membranes in vulcanized and nonvulcanized forms are used; classified by ASTM D5019.

chord: (1) A principal member of a truss, which extends from one end to the other, primarily to resist bending; (2) the straight line between two points on a curve; (3) the span of an arch.

cladding: A material used as the exterior wall enclosure of a building.

cleat: A continuous metal strip, or angled piece, used to secure metal components. See "clip."

clerestory: (1) An upward extension of enclosed space created by carrying a setback vertical wall (typically glazed) up and through the roof slope; (2) two intersecting shed roofs on different planes.

clip: A noncontinuous metal component or angle piece used to secure a metal panel to a substrate or two or more metal components together. See "cleat."

closed-cut valley: A method of valley application in which shingles from one side of the valley extend across the valley while shingles from the other side are trimmed back approximately 2 inches from the valley centerline.

coal tar: A dark brown- to black-colored, semisolid hydrocarbon produced by the distillation of coal. Coal-tar pitch is further refined to conform to the following roofing grade specifications:

coal-tar pitch: A coal tar used as the waterproofing agent in dead-level or low-slope built-up roof membranes and membrane waterproofing systems, conforming to ASTM D450, Type I.

coal-tar roof cement: A trowelable mixture of processed coal-tar base, solvents, mineral fillers and/or fibers. Classified by ASTM D4022, "Coal Tar Roof Cement, Asbestos Containing."

coarse orange-peel surface texture: In spray polyurethane foam (SPF) roofing, a surface showing a texture where nodules and valleys are approximately the same size and shape. This surface is acceptable for receiving a protective coating because of the roundness of the nodules and valleys.

coated base sheet: A coated felt intended to be used as a base ply in a built-up or polymer-modified bitumen roof membrane.

coated felt (sheet): (1) An asphalt felt that has been coated on both sides with harder, more viscous asphalt; (2) a fiberglass felt that has been simultaneously impregnated and coated with asphalt on both sides.

coating: A fluid material applied in the field as a film to the roof surface to provide weather protection to the original roof substrate.

code: A collection of laws (regulations, ordinances or statutory requirements) adopted by an authority having jurisdiction. See "building code."

coefficient of thermal expansion: The coefficient of change in dimension of a material per unit of dimension per degree change in temperature.

coil coating: The application of a finish to a coil of metal using a continuous mechanical coating process.

cold-applied: Designed for or capable of being applied without heating as contrasted to hot-applied. Cold-applied materials are furnished in liquid state, whereas hot-applied materials are furnished as solids that must be heated to liquefy before application.

cold forming: The process of shaping metal into desired profiles without the application of heat.

cold rolled: The process of forming steel into sheets, panels or shapes on a series of rollers at room temperature.

collar: A metal cap flashing around a vent pipe projecting above a roof deck.

color retention: The measurement of performance for paint systems testing the ability to resist fading.

conditioning: The storage of a material specimen under specified temperature, humidity, etc., for a specified time prior to testing.

conductance, thermal (C): The thermal transmission in unit time through unit area of a particular body or a assembly having defined surfaces, when unit average temperature difference is established between the surfaces. $C = Btu/h \cdot ft^2 \cdot F$.

conductivity (electrical): A measure of the ability of a material to conduct electrical current; the reciprocal of electric resistance.

conductivity, thermal (k): See "thermal conductivity (k)."

conductor: See "downspout."

conductor head: An enlargement or catch basin at the top of a downspout or leader to receive rainwater from a gutter or scupper.

contamination: The process of making a material or surface unclean or unsuited for its intended purpose, usually by the addition or attachment of undesirable foreign substances.

control joint: A groove that is formed, sawed or tooled in a concrete or masonry structure to regulate the location and amount of cracking and separation resulting from the dimensional change of different parts of the structure, thereby avoiding the development of high stresses.

cool roof: A roof system that uses products made of highly reflective and emissive materials for its top surface. Cool roof surfaces can remain at markedly lower temperatures when exposed to solar heat in service than surfaces of roofs constructed with traditional non-reflective roofing products.

coping: The covering piece on top of a wall exposed to the weather, usually made of metal, masonry or stone.

copper: A soft, malleable, naturally weathering metal used in metal roofing or flashing.

cornice: The decorative horizontal molding or projected roof overhang.

counter-battens: Vertical wood or metal strips installed on steep-slope roofs over which horizontal battens are secured. The primary roof covering is attached or secured to these horizontal battens.

color stability: The ability of a material to retain its original color after exposure to weather.

column: In structures, a relatively long, slender structural compression member such as a post, pillar or strut; usually vertical with the compression load acting in (or near) the direction of its longitudinal axis.

combing ridge: A term used to describe an installation of finishing slate shingles or wood roofing at the ridge of a roof whereby the shingles on one side project beyond to the apex of the ridge.

combustible: Capable of burning.

combustion: An act or instance of burning.

compatible materials: Two or more substances that can be mixed, blended or attached without separating, reacting or affecting the materials adversely.

composite board roof insulation: Rigid board insulation generally composed of perlite or wood fiberboard factory-bonded to polyisocyanurate or polystyrene.

compound: In polymer processing and applications, an intimate admixture of polymer(s) with all the materials necessary for the properties required of the finished product.

compression: (1) Subjecting a material to a load that will tend to compress or push the material together; (2) a decrease in length produced on a test specimen during a creep test.

compressive strength: The property of a material that relates to its ability to resist compression loads.

concealed plate: See "splice plate."

condensate: The liquid resulting from the condensation of a gas.

condensation: The conversion of water vapor or other gas to liquid phase as the temperature drops or atmospheric pressure rises; the act or process of condensing. See "dew point."

condense: To make denser or more compact, as when a material (e.g., water vapor) changes from its gas phase to its liquid phase.

counterflashing: Formed metal or elastomeric sheeting secured on or into a wall, curb, pipe, rooftop unit or base flashing and protect the upper edge of a base flashing and its associated fasteners.

course: (1) The term used for a row of roofing material that forms the roofing, waterproofing or flashing system; (2) one layer of a series of materials applied to a surface (e.g., a live-course wall flashing is composed of three applications of roof cement with one ply of felt or fabric sandwiched between two layers of roof cement).

coverage: The surface area uniformly covered by a specific quantity of a particular material at a specific thickness.

cover board: An insulation board used over closed cell plastic foam insulation (e.g., polyisocyanurate) to prevent blistering when used in conjunction with hot bituminous membranes. Suitable cover-board insulations are glass-faced siliconized gypsum board, fiberglass board, perlite board, wood fiberboard or mineral fiberboard. Cover boards are also recommended between polyisocyanurate insulation and single-ply membranes to protect the polyisocyanurate.

cover plate: A metal strip sometimes installed over or under the joint between formed metal pieces.

CPA: Copolymer alloy.

crack: A nonlinear separation or fracture occurring in a material.

cracking: In coatings, visible breaks in the film thickness that extend to the surface and the previously applied coating or substrate

crazing: Fine, random cracks forming a network on the surface of a membrane, coating or film.

cream time: Time in seconds (at a given temperature) when the A and B components of polyurethane foam will begin to expand after being mixed; recognizable as a change in color of the materials.

creep: The time-dependent part of a strain resulting from stress.

cricket: A relatively small area of a roof constructed to divert water from a horizontal intersection of the roof with a chimney, wall, expansion joint or other projection.

CRREL: Cold Regions Research and Engineering Laboratory.

crushed stone: The product resulting from the artificial crushing of rocks, boulders or large cobbles, substantially all faces of which have resulted from the crushing operation.

crystalline waterproofing: A compound of cement, quartz or silica sand and other active chemicals that are mixed and packaged for use in a dry powder form. The packaged mixture is then mixed with water and applied to a concrete surface where it penetrates into the pores of concrete.

CSI: Construction Specifications Institute.

CSPE: See "chlorosulfonated polyethylene."

curb: (1) A raised member used to support roof penetrations, such as skylights, mechanical equipment, hatches, etc., above the level of the roof surface; (2) a raised roof perimeter relatively low in height.

cure: A process whereby a material is caused to form permanent molecular linkages by exposure to chemicals, heat, pressure and/or weathering.

cure time: The time required for a material to reach its desirable long-term physical characteristics.

cured concrete: Concrete that has attained its intended design performance properties.

curing agent: An additive in a coating or adhesive that results in increased chemical activity between the components with an increase or decrease in rate of cure.

cutback: Solvent-thinned bitumen used in cold-process roof adhesives, roof cements and roof coatings.

cutoff: A permanent detail designed to prevent lateral water movement in an insulation system and used to isolate sections of a roof system. (A cutoff is different from a tie-in, which may be a temporary or permanent seal.) See "tie-in."

cutout: The open portions of a strip single between the tabs; sometimes referred to as a keyway.

damp-proofing: Treatment of a surface or structure to resist the passage of water in the absence of hydrostatic pressure.

dead level: Absolutely horizontal or zero slope. See "slope."

dead-level asphalt: See "asphalt, dead-level."

dead load: The weight of a structure itself, including the weight of fixtures or equipment permanently attached to it.

decks: A structural component of the roof of a building. The deck must be capable of safely supporting the design dead and live loads, including the weight of the roof system, and the additional live loads required by the governing building codes and provide the substrate to which the roof or waterproofing system is applied. Decks are either noncombustible (e.g., corrugated metal, concrete or gypsum) or combustible (e.g., wood plank or plywood).

deflection (bowing, sagging): (1) The deformation of a structural member as a result of loads acting on it; (2) any displacement in a body from its static position or from an established direction or plane as a result of forces acting on the body.

deformation: Any change of form, shape or dimensions produced in a body by a stress or force, without a breach of the continuity of its part.

degradation: A deleterious change in the chemical structure, physical properties or appearance of a material from natural or artificial exposure (e.g., exposure to radiation, moisture, heat, freezing, wind, ozone and oxygen).

delamination: Separation of the laminated layers of a component or system.

dew point temperature: The temperature at which air becomes saturated with water vapor; the temperature at which air has a relative humidity of 100 percent.

DFT: See "dry film thickness."

diaphragm: A floor slab, metal wall panel, roof panel or the like having a sufficiently large in-plane shear stiffness and sufficient strength to transmit horizontal forces to resisting systems.

differential movement: In roofing and waterproofing, dimensional changes in dissimilar interfacing materials characterized by different and incompatible rates of change of dimensions, such as membranes and flashing materials, resulting from a temperature change or change in loading. See "thermal movement."

diffusion: (1) The movement of water vapor from regions of high concentration (high water vapor pressure) toward regions of lower concentration; (2) spreading of a constituent in a gas, liquid or solid tending to make the composition of all parts uniform; (3) the spontaneous movement of atoms or molecules to new sites within a material.

dimensional stability: The degree to which a material maintains its original dimensions when subjected to changes in temperature and humidity.

DOE: U.S. Department of Energy.

dormer: A structure projecting from a sloping roof usually housing a window or ventilating louver.

double coverage: Application of asphalt, slate or wood roofing such that the lapped portion is at least 2 inches wider than the exposed portion, resulting in two layers of roofing material over the deck.

double-lock standing seam: In a metal roof panel or metal cap, a standing seam that uses a double overlapping interlock between two metal panels. See "standing seam."

double tees: Structural precast, prestressed concrete members of characteristic cross-section used as roof and floor deck systems.

downspout: A vertical pipe or conduit used to carry runoff water from a scupper, conductor head or gutter of a building to a lower roof level or to the ground or storm water runoff system; also called a conductor or leader.

drag load: The external force, for example, from the weight of ice and snow, applied to a steep-slope roof system component forcing the component downslope.

drain: An outlet or other device used to collect and direct the flow of runoff water from a roof area.

drainage mat: A fabric composite or a nondegradable plastic configured to allow drainage of water, typically with adhered filter fabric to prevent growth medium and fines from blocking the drainage path.

drainage course: A separate layer of material that provides a location for moisture to move laterally through a protected-membrane roof system. A drainage course relieves hydrostatic pressure from a material's surface and the associated weight of water.

drip edge: A metal flashing or other overhanging component, with an outward projecting lower edge intended to control the direction of dripping water and help protect underlying building components.

dry: (1) Free or relatively free from a liquid, especially water; (2) to remove water or moisture.

dry bulb temperature: The temperature of air as measured by an ordinary thermometer.

dry film thickness: The thickness, expressed in mils, of an applied and cured coating or mastic. For comparison, see "wet film thickness."

dry-in (or dry-in felt): Usually the underlayment or the process of applying the underlayment for steep-slope roofing. In low-slope roofing, it is usually called a temporary roof.

drying time: The time required for the loss of volatile components so that the material will no longer be adversely affected by weather conditions such as dew, rain or freezing.

durability: The ability to withstand physical, chemical or environmental abuse.

dynamic load: Any load that is nonstatic, such as a wind load or moving live load.

eave: The lower edge of a sloping roof; that part of a roof which projects beyond the wall.

ECH: Epichlorohydrin, commonly referred to as epichlorohydrin. See "epichlorohydrin."

edge venting: The practice of providing regularly spaced or continuously protected (louvered or otherwise shielded) openings along a roof edge or perimeter, used as part of a ventilation system to dissipate heat and moisture vapor.

efflorescence: An encrustation of soluble salts, commonly white, deposited on the surface of stone, brick, plaster or mortar; usually caused by free alkalis leached from mortar or adjacent concrete as moisture moves through it.

EIFS: See "exterior insulation and finish system."

EIP: See "ethylene interpolymers."

elasticity: The property of a body that causes it to tend to return to its original shape after deformation (such as stretching, compression or torsion).

elastomer: A macromolecular material that returns rapidly to its approximate initial dimensions and shape after substantial deformation by a weak stress and subsequent release of that stress.

elastomeric coating: A coating that is capable of being stretched at least twice its original length (100 percent elongation) and recovering to its original dimensions.

electro-galvanized: A method of application of corrosion-resistant zinc coatings for fasteners.

elongation: The ratio of the extension of a material to the length of the material prior to stretching. Usually, elongation is expressed as a percentage of the original length.

embedment: (1) The process of pressing/positioning a felt, aggregate, fabric, mat or panel into hot bitumen or adhesive to ensure contact at all points; (2) the process of pressing/positioning granules into coating in the manufacture of factory-prepared roofing, such as shingles.

embrittlement: The loss of flexibility or elasticity of a material.

emissivity: (1) Infrared emissivity is a measure of the ability of a surface to shed some of its absorbed heat (in the form of infrared radiation) away from the surface; emissivity is expressed as a percentage or a decimal factor; (2) the ratio of radiant energy emitted from a surface under measurement to that emitted from a black body (the perfect emitter and absorber) at the same temperature.

emulsion: (1) A bituminous emulsion is a mixture of asphalt and water with uniform dispersion of the bitumen or water globules, usually stabilized by an emulsifying agent (clay or soap) or system; (2) a relatively stable mixture of two immiscible liquids held in suspension by small amounts of emulsifiers.

end lap: The distance of overlap where one ply, pane or piece extends beyond the end of the immediately adjacent underlying ply, panel or piece.

envelope (bitumen-stop): A continuous membrane edge seal formed at the perimeter and at penetrations by folding the base sheet or ply over the plies above and securing it to the top of the membrane. The envelope prevents bitumen seepage from the edge of the membrane.

EPDM: Ethylene propylene diene M-class rubber, also called ethylene propylene diene terpolymer. See "ethylene propylene diene terpolymer."

epichlorohydrin (ECH): A synthetic rubber including two epichlorohydrin-based elastomers. It is similar to and compatible with EPDM.

epoxy: A class of synthetic, thermosetting resins that produce tough, hard, chemical-resistant coatings and adhesives.

EPS: See "expanded polystyrene."

equiviscous temperature (EVT): The temperature at which a bitumen attains the proper viscosity for built-up membrane application.

equiviscous temperature (EVT) application range: The recommended bitumen application temperature range. The range is approximately 25° F above or below the EVT, thus giving a range of approximately 50° F. The EVT range temperature is measured in the mop cart or mechanical spreader just prior to application of the bitumen to the substrate.

equiviscous temperature (EVT) for asphalt: The recommended EVT for roofing asphalt (ASTM D312, Type I, II, III or IV) is as follows:

mop application: the temperature at which the asphalt's apparent viscosity is 125.

mechanical spreader application: The temperature at which the asphalt's apparent viscosity is 75 centipoise.

Note: To avoid the use of two kettles if there are simultaneous mop and mechanical spreader applications, the EVT for mechanical spreader application can be used for both application techniques.

equiviscous temperature (EVT) for coal tar: The recommended EVT for roofing coal tar (ASTM D450, Type I or III) is the temperature at which the coal tar's apparent viscosity is 25 centipoise.

erosion: (1) Weathering, wearing away or degradation; (2) wearing away of a coating by chalking or the abrasive action of water or windborne particles or grit.

ethylene interpolymers (EIPs): A group of thermoplastic compounds generally based on PVC polymers from which certain single-ply roofing membranes can be formulated.

ethylene propylene diene terpolymer (EPDM): A terpolymer of ethylene, propylene and diene with the residual unsaturated portion of the diene in the side chain to provide for vulcanization. It is a thermosetting synthetic elastomer. EPDM is an acronym for "ethylene propylene diene M-class rubber," which is a name assigned to this material within the classification established in ASTM D1418.

EVT: See "equiviscous temperature."

expanded polystyrene (EPS): A type of plastic foam insulation product having predominately closed-cell structure manufactured from expanded polystyrene beads in a molding process; boards or blocks are formed. See "insulation."

expansion: The increase in length or volume of a material or body caused by temperature, moisture or other environmental conditions.

expansion joint: A structural separation between two building elements that allows free movement between the elements without damage to the roof or waterproofing system.

exposure: (1) The transverse dimension of a roofing element or component not overlapped by an adjacent element or component in a roof covering. For example, the exposure of any ply in a built-up roof membrane may be computed by dividing the felt width, minus 2 inches, by the number of shingled plies; thus, the exposure of 36-inch-wide felt in a shingled, four-ply membrane should be approximately 8½ inches; (2) the dimension of side-wall or roof covering that is not covered or overlapped by the up slope course of component. The typical exposure for a standard-size, three-tab shingle is 5 inches. This varies depending on manufacturer specifications.

exterior insulation and finish system (EIFS): A non-load-bearing outdoor wall finish system consisting of a thermal insulation board, attachment system, reinforcement system and compatible finish.

extruded polystyrene (XPS): A type of plastic foam insulation product manufactured by a continuous extrusion process as the resin foams. This forms a tight and complete skin on each side of the board. See "insulation."

extrusion: A process in which heated or unheated material is forced through a shaping orifice (a die) in one continuously formed shape, as in film, sheet, rod or tubing.

fabric: (1) A woven cloth or material of organic or inorganic filaments, threads or yarns used for reinforcement in certain membranes and flashings; (2) geotextile membranes used as a protective or separating layer in roof and waterproofing systems.

facers: The outermost adhered top or bottom, or both, sheet (or layer) of an insulation board that is composed of a different material than the insulation itself. It is commonly composed of organic paper, glass mat or a combination thereof; generally impregnated or coated, or both, with asphalt, latex, or other like material; or metal foil.

fading: Any lightening of initial color.

fallbacks: A reduction in bitumen softening point sometimes caused by refluxing or overheating in a relatively closed container. See "softening point drift."

fascia: (1) In steep-slope roofing, a board that is nailed to the ends of a roof rafter; sometimes supports a gutter; (2) in low-slope roofing, the vertical or steeply sloped roof or trim located at the perimeter of a building. Typically, it is a border for a low-slope roof system.

fastener: Any of a wide variety of mechanical securing devices and assemblies, including nails, staples, screws, cleats, clips and bolts, that may be used to secure various components of a roof assembly.

felt: A flexible sheet manufactured by the interlocking of fibers with a binder or through a combination of mechanical work, moisture and heat. Felts are manufactured principally from wood pulp and vegetable fibers (organic felts), asbestos fibers (asbestos felts), glass fibers (fiberglass felts or ply sheets) or polyester fibers.

fiberboard: Insulation composed principally of cellulose fibers usually derived from paper, paperboard stock or wood, with or without binders. See "insulation."

fiberglass base sheet: A fiberglass-reinforced base sheet for built-up roof system construction, impregnated and coated with asphalt and surfaced with mineral matter; classified by ASTM D4601 as Type I or Type II.

fiberglass insulation: Blanket or rigid board insulation composed of glass fibers bound together with a binder, faced or unfaced, used to insulate roofs and walls.

fiberglass mat: An asphalt roofing reinforcement manufactured from glass fibers.

filler: A relatively inert ingredient added to modify physical characteristics. See "stabilizer."

filler: A heavy bead of waterproofing compound or sealant material generally installed at the point where vertical and horizontal surfaces meet to obtain a more gradual transition through the 90-degree angle at the base of a vertical flashing.

film: Sheet having a nominal thickness not greater than 10 mils (0.010 inch).

film thickness: The thickness of a membrane or coating. Wet film thickness is the thickness of a coating as applied. Dry film thickness is the thickness after curing. Film thickness is usually expressed in mils (thousandths of an inch).

filter fabric: A tightly woven fabric, typically polyester or polyethylene/polypropylene, used to restrict the flow of fine particles and other contaminants while allowing water to pass freely through. It is used to protect drainage systems from clogging.

fin: A term used to describe a deck surface condition. A sharp raised edge (generally in concrete) capable of damaging a roof membrane or vapor retarder.

fine mineral surfacing: Water-insoluble, inorganic material, more than 50 percent of which passes through a No. 35 sieve. Used on the surface of various roofing materials and membranes to prevent sticking.

fireproofing: Materials used to limit the spread of fire.

fire rating: Grade based on standard testing procedures of various materials.

fire resistance: The property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

fire-retardant-treated (FRT) plywood: Plywood that has been impregnated under pressure with mineral salts; in the event of fire, the burning wood and salts emit noncombustible gases and water vapor instead of the usual flammable vapors.

flood test: A membrane-integrity test conducted by temporarily plugging or otherwise closing any drains and erecting temporary dams where required to retain water on the surface of a waterproofing membrane and then flooding the surface to a maximum depth of 2 inches at the high point and retaining the water for a minimum of 24 hours or as required by the manufacturer. See "water testing."

flowing-water test: A membrane integrity test conducted by applying continuously flowing water over a waterproofing membrane's surface without closing drains or erecting dams for a minimum of 24 hours or as required by the manufacturer. See "water testing."

flow properties: The ability of a coating to move freely as a liquid, allowing it to achieve a level surface.

fluorocarbon films: Fluorine-substituted ethylene polymers, featuring outstanding formability, heat resistance, color retention, and resistance to solvents and chalking.

flute: In metal decking, the space corresponding to the rib depth bound by the web sections.

flux: A bituminous material used as feed stock for further processing and as a material to soften other bituminous materials.

FM Approvals: Commonly referred to as FM, a research and testing business unit of FM Global (a commercial and industrial property insurer) that classifies roofing components and assemblies for their fire, traffic, impact (hail), weathering and wind-uplift resistance.

foam stop: The roof edge treatment upon which spray polyurethane foam (SPF) is terminated.

force: A strength or energy exerted or brought to bear; cause of motion or change.

FPL: Forest Products Laboratory.

freeze-thaw cycle: The freezing and subsequent thawing of material.

freeze-thaw resistance: Resistance to cycles of freezing and thawing that could affect applications, appearance or performance.

friability: The tendency of material or product to crumble or break into small pieces easily.

fishmouth: (1) A half-cylindrical or half-conical shaped opening or void in a lapped edge or seam, usually caused by wrinkling or shifting of ply sheets during installation (also referred to as an edge wrinkle); (2) in shingles, a half-conical opening formed at a cut edge.

flame spread: The propagation of a flame away from its source of ignition.

flammable: Subject to easy ignition and rapid flaming combustion.

flammability: Those characteristics of a material that pertain to its relative ease of ignition and ability to sustain combustion.

flange: The projecting edge of a rigid or semirigid component, such as an edge metal flashing flange.

flash point: The lowest temperature at which vapors above a combustible substance ignite in air when exposed to an ignition source.

flashing: Components used to weatherproof or seal roof system edges at perimeters, penetrations, walls, expansion joints, valleys, drains and other places where the roof covering is interrupted or terminated. For example, membrane base flashing covers the edge of the field membrane, and cap flashings or counterflashings shield the upper edges of the base flashing.

flashing cement: A travelable mixture of solvent-based bitumen and mineral stabilizers that may include asbestos or other inorganic or organic fibers. Generally, flashing cement is characterized as vertical-grade, which indicates it is intended for use on vertical surfaces. See "asphalt roof cement" and "plastic cement."

flat lock: A method of interlocking metal panels in which one panel edge is folded back on top of itself and the other panel is folded under, after which the two panels are hooked together.

fleece: Mats or felts composed of fibers, sometimes used as a membrane backer.

flood (pour) coat: The surfacing layer of bitumen into which coating aggregate is embedded on an aggregate-surfaced built-up roof.

G-60 and G-90: Designations for galvanized metal sheet, indicating 0.60 ounces and 0.90 ounces of zinc per square foot, respectively; a combined measure of zinc coating on both sides.

gable: The vertical triangular portion of the end of a building having a double-sloping roof from the level of the eaves to the ridge of the roof.

Galvalume®: A BEC International Inc.-trademarked name for a metal alloy coating that is composed of 55 percent aluminum, 43.4 percent zinc and 1.6 percent silicon. It is also known by various other trade names such as Zincalume,™ Zintro-Alum™ and Galval.™

galvanic action: An electrochemical action that generates electrical current between two metals of dissimilar electrode potential.

galvanic series: A list of metals and alloys arranged according to their relative electrolytic potentials in a given environment.

galvanized steel: Steel coated with zinc for corrosion resistance.

gambrel: (1) A roof that has two pitches on each side of a central ridge where the upper roof areas have less slope than the lower roof areas; (2) a roof with two inclines on each slope.

gauge: A metal thickness measurement; a smaller gauge number indicates a thicker metal.

geocomposite: A prefabricated water drainage material used to relieve hydrostatic pressure against waterproofing and promote drainage.

geotextile: A tightly woven fabric used to restrict the flow of fine soil particles and other contaminants while allowing water to freely pass through; used to protect drainage systems from clogging.

girt: A horizontal beam that supports wall cladding between columns.

glass felt: Glass fibers bonded into a sheet with resin and suitable for impregnation with asphalt in the manufacture of bituminous waterproofing, roof membranes and shingles.

glass fiber insulation: See "fiberglass insulation."

glass mat: A thin mat of glass fibers with or without a binder.

glaze coat: (1) The top layer of asphalt on a smooth-surfaced built-up roof membrane; (2) a thin protective coating of bitumen applied to the lower plies or top ply of a built-up roof membrane when application of additional felts or the flood coat and aggregate surfacing are delayed.

gloss: The shine, sheen or luster of a dried film or another surface.

grade: (1) The term used when referring to the ground elevation around a building; (2) the classification of materials by quality or specific type.

gradient: (1) The change in a variable quantity, as temperature or pressure per unit distance; may be represented by a curve of such a rate of change; (2) the rate of change of a variable with respect to a measured quantity.

graded slate roof: A slate roof system in which successive slate courses diminish in length and/or thickness from eave to peak.

grain: A unit of measure in the English System of units equal to 1/7,000 lb.; used in measuring atmospheric water vapor content.

granules: Opaque, natural or synthetically colored aggregate commonly used to surface cap sheets, shingles and other granule-surfaced roof coverings; also referred to as mineral or ceramic granules.

gravel: Coarse granular aggregate resulting from the natural erosion of rock.

gravel stop: A flanged device, frequently metallic, designed to prevent loose aggregate from washing off the roof and to provide a continuous finished edge for the roofing.

groundwater level: At a particular site, the level below which the subsoil and rock masses of the earth are fully saturated with water.

grout: A mixture of cement, sand and water used to fill cracks and cavities in masonry.

gussets: (1) Used at the bottom of a steep-slope roof system valley, a large flat metal piece(s) wider than the valley to help prevent buildup at the base of the valley either from debris or ice-dam formations. (2) A plate used to connect two or more members or to reinforce a joint.

heat welding: A method of melting and fusing together the overlapping edges of separate sheets or sections of polymer-modified bitumen, thermoplastics or some uncured thermoset roofing membranes by the application of heat (in the form of hot air or open flame) and pressure.

hem: The edge created by folding metal back on itself.

hip: The sloping line along the outer angle formed by the meeting of two sloping sides of a roof with eaves that meet at a right angle.

hip roof: A roof that rises by inclined planes from all four sides of a building to form hips at the intersection of adjacent roof slopes.

hood: A cover, usually of light-gauge metal, over piping or other rooftop equipment.

humidity: The condition of the atmosphere with respect to water vapor. See "relative humidity."

HVAC: Heating, ventilating and air-conditioning equipment.

hydration: The chemical reaction by which a substance (such as Portland cement) combines with water, giving off heat to form a crystalline structure in its setting and hardening.

hydrocarbon: An organic chemical compound primarily containing the elements carbon and hydrogen. Hydrocarbons are divided into two general classes—aliphatic and aromatic—differentiated by the type of carbon-carbon bonds they contain. Aliphatic hydrocarbons are straight chain compounds. Aromatic hydrocarbons contain one or more benzene ring or naphthalene ring structure.

hydrostatic pressure: The pressure equivalent to that exerted on a surface by a column of water of a given height.

hygroscopic: Attracting, absorbing and retaining atmospheric moisture.

Hypalon®: A registered trademark of E.I. du Pont de Nemours & Co. for chlorosulfonated polyethylene (CSPE). See "chlorosulfonated polyethylene."

IBC: International Building Code. A model building code published by the International Code Council (ICC); applies to all construction except detached one- and two-family dwellings and townhouses.

gutter: A channeled component installed along the downslope perimeter of a roof to convey runoff water from the roof to the drain leaders or downspouts.

gypsum board panels: Cementitious board stock with noncombustible core primarily comprised of gypsum that is commonly used as a barrier board, thermal barrier or cover board in a roof assembly.

gypsum deck: A mixture of calcined gypsum binder and wood chips or other aggregate; when mixed with water, sets to a conglomerate mass; used for poured gypsum roof decks.

hand-tapping: A method of spot-applying asphalt-based adhesive to shingles for securement and wind resistance. Also termed "hand-sealing."

hardboard: Common name for asphaltic protection board used in waterproofing applications. Hardboard products may consist of a combination of asphalt-saturated organic (cellulosic) felt and coated or saturated nonwoven glass felt or may be entirely glass-felt-based; classified by ASTM D6506.

header: A horizontal framing structural member of a door, window or other framed opening.

head lap: (1) The distance of overlap measured from the uppermost ply or course to the point where it laps over the undermost ply or course; (2) the head lap area.

heat flow: The quantity of heat transferred to or from a system in a unit of time.

heat flux: The heat flow rate through a surface of unit area perpendicular to the direction of heat flow.

heat-fused: To be installed by heating the underside of the sheet with a propane torch or other heating device, melting the polymer-modified bitumen on the bottom-side and adhering the sheet in the molten material.

heat transfer: The transmission of thermal energy from a location of higher temperature to a location of lower temperature. This can occur by conduction, convection or radiation.

ICC: International Code Council. A nonprofit organization dedicated to developing and maintaining a single set of comprehensive, coordinated national building codes (I-Codes[®]); established in 1994 by three major U.S. model building code bodies: Building Officials and Code Administrators International Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International Inc. (SBCCI).

ice dam: A mass of ice formed at the transition from a warm to a cold roof surface, frequently formed by refreezing meltwater at the overhang of a steep roof causing ice and water to back up under roofing materials.

impact resistance: Resistance to fracture under the sudden application of an exerted force.

impregnate: In roofing materials manufacture, to completely surround the fibers in a felt or mat with bitumen with the spaces between the fibers partially or completely filled without a continuous coating of bitumen on the surface.

incline: The slope of a roof expressed in percent or in units of vertical rise per units of horizontal run.

inorganic: Being or composed of materials other than hydrocarbons and their derivatives, or matter that is not of plant or animal origin.

in-service R-value: Thermal resistance value established under installed conditions and measured during the expected service life of the material.

insulation: Any of a variety of materials designed to reduce the flow of heat from or into a building. See "thermal insulation."

interlayment: A felt, metal or membrane sheet material used between courses of steep-slope roofing to improve the weather- and water-shedding characteristics of the primary roof covering during times of wind-driven precipitation; typically used with wood shakes.

interlocking shingles: Individual shingles that mechanically attach to one another to provide enhanced wind resistance without reliance on sealing strips.

IRC: International Residential Code; a model building code published by the International Code Council (ICC); applies to detached one- and two-family dwellings and townhouses.

ISANTA: International Staple, Nail & Tool Association.

isocyanate: A highly reactive organic chemical containing one or more isocyanate groups. A basic component in spray polyurethane foam (SPF) systems and some polyurethane coating systems. See "A-component (A-side)" and "methylenediphenyl diisocyanate (MDI)."

isolation sheet: See "slip sheet."

joist: Any of the small timbers, metal or wood beams arranged parallel to one another and spanning from wall to wall to support a floor, ceiling or roof of a building.

joule: A unit of energy or work in the SI system; equals the work done by a force of 1 newton, which acts over a distance of 1 meter in the direction of the force.

k or k-value: Thermal conductivity; the time rate of heat flow through a unit area of a homogeneous material in a direction perpendicular to isothermal planes induced by a unit temperature gradient. In English (inch-pound) units of measurement, it is the number of Btu that pass through a 1-inch thickness of a 1-square-foot sample of material in one hour with a temperature difference between the two surfaces of 1 degree Fahrenheit. It is expressed as $Btu \cdot in/hr \cdot ft^2 \cdot F$.

kick-out: A lower downspout section used to direct water away from a wall.

kick-out flashing (diverter): A metal flashing detail installed at the eave end of a roof-to-wall transition designed to direct runoff away from the wall or wall cladding.

laitance: A weak layer of cement and aggregate fines on a concrete surface that is usually caused by an overwet mixture, overworking the mixture, improper or excessive finishing, or combination thereof.

laminates: To join layers of materials together using fusion; the process of joining layers of materials together using adhesion.

laminated shingles: See "dimensional shingles."

lightweight or insulating concrete fill (LWIC): Concrete made with or without aggregate additions to Portland cement, water and air to form a hardened material that when oven dried will have a unit weight of 50 lb/ft³ or less.

liquid-applied: Application of bituminous cements, adhesives or coatings installed at ambient or slightly elevated temperatures.

liquid-applied built-up roof: A continuous, semi-flexible roof membrane consisting of multiple plies of felts, mats or fabrics laminated together with alternate layers of roof cements and surfaced with a liquid-applied coating with or without aggregate surfacing.

live loads: Temporary loads that the roof structure must be designed to support, as required by governing building codes. Live loads are generally moving and/or dynamic or environmental (e.g., people, installation equipment, snow, ice, rain).

lot: In roofing: (1) production lot—all material produced in one eight-hour shift of the same type (and color when applicable); (2) delivery lot—all material of the same type delivered at one time by one truck or railroad car.

low-slope roofs: A category of roofs that generally includes weatherproof membrane types of roof systems installed on slopes at or less than 3:12.

low-temperature flexibility: The ability of a membrane or other material to resist cracking when flexed after it has been cooled to a low temperature.

mansard: A decorative steep-sloped roof on the perimeter of a building.

marine-grade plywood: Plywood that is made entirely of Douglas fir or western larch with all veneer plies being Grade B or better and is sanded on both faces or includes medium- or high-density overlay with maximum core-gap sizes of $\frac{1}{8}$ inch; is exterior-rated with fully waterproof structural adhesive glue; and is not treated with decay-resistance chemicals. Where decay is a concern, it should be preservative-treated.

masonry: Construction, usually set in mortar, of natural building stone or manufactured units, such as brick, concrete block, adobe, glass block, tile, manufactured stone or gypsum block.

lap: That part of a roofing, waterproofing or flashing component that overlaps or covers any portion of the same or another type of adjacent component.

lap cement: An asphalt-based roof cement formulated to adhere overlapping plies or asphalt roll roofing.

lap seam: Occurs where overlapping materials are seamed, sealed or otherwise bonded.

leaching: (1) The action of removing soluble constituents from a solid into a solution; (2) the dissolving out of soluble substances when water seeps through a roof system.

lead: A soft, malleable, naturally weathering heavy metal; has low melting point and a high coefficient of thermal expansion.

leeward: The direction opposite that from which the wind is blowing. The side sheltered from the wind. For comparison, see "windward."

life-cycle assessment (LCA): A method of evaluating a product or system by reviewing the ecological effect over its entire life. Life stages include extraction of raw materials, processing and fabrication, transportation, installation, use and maintenance, and reuse, recycling and disposal. At each stage, the product or system and its components are evaluated based on materials and energy consumed and the pollution and waste produced. LCA is an environmental review methodology.

life-cycle cost analysis: A technique of economic evaluation that sums up the costs of a product or system during its entire life including raw materials extraction, processing and fabrication, transportation, installation, use and maintenance, and reuse, recycling or disposal. At each stage the product or system and its components are evaluated based on the costs of materials and energy consumed and pollution and waste produced.

lift: The spray polyurethane foam (SPF) that results from a pass. It usually is associated with a certain pass thickness and has a bottom layer, center mass and top skin in its makeup.

lightweight aggregate: See "aggregate, lightweight."

lightweight concrete: (1) Concrete with a density of less than 115 lb/ft³; (2) Poured deck fill composed of a combination of two or more of the following: gypsum, vermiculite, perlite, wood fibers and air-entrained concrete.

mastic: A thick adhesive material used as a cementing agent for holding waterproofing membrane in place.

mat: A thin layer of woven, nonwoven or knitted fiber that serves as reinforcement to a material or membrane.

material safety data sheet (MSDS): A written description of the chemicals in a material or product and other pertinent data, including such things as safe handling and emergency procedures. In accordance with OSHA regulations, it is the manufacturer's responsibility to produce MSDSs and the employer's responsibility to communicate their contents to employees.

mechanical damage: In roofing, physical damage to a roof system not caused by normal wear and tear.

mechanically fastened membrane: Generally used to describe a membrane that has been attached to the substrate at defined intervals.

membrane: A flexible or semiflexible roof covering or waterproofing whose primary function is to exclude water.

memory: Tendency of a material to regain its previous configuration.

metals: Any of various opaque, fusible, ductile and typically lustrous substances that are good conductors of electricity and heat.

metal flashing: See "flashing"; frequently used as through-wall-, step-, cap- or counterflashing.

metal rain collar: A metal counterflashing used to wrap a penetration and prevent water infiltration through the top of the penetration base flashing.

metal roof panel: A sheet-metal product having an installed weather exposure less than 3 square feet per sheet.

meter: Unit of length measurement in the SI system; 1 meter is equal to 39.37 inches.

metal roof panel: A sheet-metal product having a minimum installed weather exposure of 3 square feet per sheet.

methylene diphenyl diisocyanate (MDI): The "A-component" in spray polyurethane foam (SPF). An organic chemical compound having two reactive isocyanate groups. It is mixed with the "B-component" to form polyurethane in a chemical reaction.

mil: A unit of measure, one mil is equal to 0.001 inches; often used to indicate the thickness of a roof membrane.

mildew: A superficial growth produced on organic matter or living plants by fungi.

mineral fiber: Insulation composed principally of fibers manufactured from rock, slag or glass, with or without binders.

mineral granules: See "granules."

mineral-surfaced roofing: Roofing materials with a surface or top layer consisting of a granule-surfaced sheet.

modified bitumen: See "polymer-modified bitumen."

mold: A surface growth of fungus on damp or decaying matter. The term has no taxonomic significance and is used only in a general sense of visible fungal growth on organic matter. See "mildew."

monomer: A low-molecular-weight substance consisting of molecules capable of reacting with like or unlike molecules to form a polymer.

mop and flop: An application procedure in which roofing elements (insulation boards, felt plies, cap sheets, etc.) are initially placed upside down adjacent to their ultimate locations; coated with adhesive or bitumen; and turned over and adhered to the substrate.

mopping: The application of hot bitumen with a mop or mechanical applicator to the substrate or plies of a bituminous membrane. There are two types of mopping as follows:

mopping, solid: A continuous coating.

mopping, spot: Bitumen is applied roughly in circular areas, leaving a grid of unmopped perpendicular areas.

MSDS: See "material safety data sheet."

NAHB: National Association of Home Builders.

nailer: (Sometimes referred to as "blocking"); a piece or pieces of dimensional lumber and/or plywood secured to a structural deck or walls that provides a receiving medium for the fasteners used to attach membrane or flashing. See "blocking (1)."

nonferrous metal: Metal that is not an iron alloy and is nonmagnetic (e.g., aluminum, copper).

nonwoven fabric: A textile structure produced by bonding or interlocking of fibers, or both, accomplished by mechanical, chemical, thermal, or solvent means and combinations thereof.

NRCA: National Roofing Contractors Association.

nylon: Generic name for a family of polyamide polymers used as a scrim in some fabric-reinforced sheeting.

off-ratio foam: Spray polyurethane foam (SPF) that has excess isocyanate or resin. Off-ratio SPF will not exhibit the full physical properties of correctly prepared SPF.

olefin: An unsaturated open-chain hydrocarbon containing at least one double bond: ethylene or propylene.

open time: The period of time after an adhesive has been applied and allowed to dry during which an effective bond can be achieved by joining the two surfaces.

open valley: A method of valley construction in which the steep-slope roof-covering materials on both sides are trimmed along each side of the valley, exposing the metal valley flashing.

orange-peel surface texture: In spray polyurethane foam (SPF) roofing, a condition of the foam in which the surface shows a fine texture and is compared to the exterior skin of an orange. This surface is considered acceptable for receiving a protective coating.

organic: Being or composed of hydrocarbons or their derivatives; matter of plant or animal origin.

organic felt: An asphalt roofing base material manufactured from cellulose fibers. See "felt."

oriented strand board (OSB): A mat-formed panel product with oriented layers resulting in directional properties. OSB is comprised primarily of wood strands bonded with exterior adhesive formulations under heat and pressure. Design capacities are referenced to the primary and secondary structural axes, which typically correspond to the manufacturing machine and cross-machine directions, respectively. The primary direction is often referred to as the strength direction.

ORNL: Oak Ridge National Laboratory.

nailing strips: A member, usually of wood, set into or secured to nonnailable roof decks or walls to allow for positive anchorage by nailing of roofing felts, insulation or flashings.

NBP: Acrylonitrile butadiene polymer blend. One proprietary NBP membrane is commonly referred to as nitrile-butadiene copolymer.

negative-side waterproofing: An application wherein the waterproofing system and source of hydrostatic pressure are on opposite sides of the structural element.

neoprene: A synthetic rubber (polychloroprene) used in liquid- or sheet-applied elastomeric roof membranes or flashings.

nesting: (1) The installation of new metal roof deck directly on top of existing metal roof decks. (2) A method of reroofing with new asphalt shingles over existing shingles in which the top edge of the new shingle is buried against the bottom edge of the existing shingle; also known as "butt-and-run method."

newton (N): SI unit of measure for force.

NEPA: National Fire Protection Association; an international nonprofit organization. Its mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education. NFPA publishes the NFPA 70, "National Electrical Code" (NEC).

NIST: National Institute of Standards and Technology.

nitrile alloy: An elastomeric material of synthetic nonvulcanizing polymers.

NOAA: National Oceanic and Atmospheric Administration.

noble metal: A metal that readily receives electrons from an anodic metal (see "galvanic series") but does not readily give up its own electrons; characterized by a marked resistance to chemical reaction, particularly to oxidation and to solution by inorganic acids.

nondestructive testing (NDT): A method to evaluate the disposition, strength or composition of materials or systems without damaging the object under test. Typically used to evaluate moisture content in roofing assemblies, the three common test methods are electrical capacitance, infrared thermography and nuclear back-scatter.

OSHA: Occupational Safety and Health Administration; a government agency in the U.S. Department of Labor. Its mission is to maintain a safe and healthy work environment.

overburden: Any material installed on top of a waterproofing assembly.

overflow drainage: Component(s) in a roof or waterproofing drainage system used to protect it against damage from a water load imposed by blocked or partially blocked primary drainage systems; e.g., overflow scupper, overflow interior drain.

overhang: See "roof overhang."

overspray: Undesirable depositions of airborne spray.

oxidation: (1) A weathering mechanism of materials exposed to the elements; can be promoted by elevated temperature, ultraviolet radiation, galvanic action and other agents; (2) loss of electrons by a constituent of a chemical reaction; sometimes, more specifically the combination of oxygen with a reactant.

ozone: A triatomic form of oxygen that is a bluish gas of pungent odor, chemically very active; formed naturally in the upper atmosphere by a photochemical reaction with solar ultraviolet radiation.

pallet: A platform (typically wooden) used for storing and shipping materials.

pan: The bottom flat part of a roofing panel that is between the ribs of the panel.

parapet wall: The part of a perimeter wall that extends above a roof.

parting agent: A material applied to one or both surfaces of a sheet to prevent sticking. Examples include fine mineral aggregate such as sand or crushed blast furnace or boiler slag and applications of silicone oils or surfactants; also called "release agent."

psf: SI unit of measure for force per unit area (load, shear stress); $1 \text{ Pa} = 1 \text{ N/m}^2 = 0.2089 \text{ lb/ft}^2$.

pass: (1) A layer of material, usually applied by the spray method, that is allowed to reach cure before another layer ("pass") is applied; (2) a term used to explain a spray motion of the foam gun in the application of the spray polyurethane foam (SPF) material. The speed of the pass controls the thickness of the SPF.

paste: Typically used in reference to aluminum-based coatings; for aluminum coatings, the amount of aluminum flake typically is less than the amount of paste.

pedestal: A support or base for rooftop components such as pavers, pipes and small rooftop units.

peel strength: The average load per unit width required to separate progressively a flexible member from a rigid member or another flexible member.

penetration: (1) Any construction (e.g., pipes, conduits, HVAC supports) passing through a roof; (2) the consistency of a bituminous material expressed as the distance, in tenths of a millimeter (0.1 mm), that a standard needle penetrates vertically into a sample of material under specified conditions of loading, time and temperature (ASTM D5 is the test method used for bituminous materials). A cone is sometimes used for special purposes instead of a needle.

perforated felt: Bitumen-saturated felt perforated with closely spaced small holes to allow air and moisture to escape during application of built-up roofing; depending on the type of material or specific use, can be classified in accordance with ASTM D226, D2626 or D4897 requirements.

perlite: An aggregate used in lightweight insulating concrete and expanded perlite insulation boards, formed by heating and expanding siliceous volcanic glass.

perm: See "permeance."

permeability: (1) The time rate of vapor transmission through unit area of flat material of unit thickness (values in reference sources are quoted for unit thicknesses) induced by unit vapor pressure difference between two specific surfaces under specified temperature and humidity conditions. The English (inch•pound) unit of measurement for permeability is (grains•in.)/(h•ft²•in. Hg), which is commonly referred to as "perm•inch" units; (2) The property of a porous material that permits a fluid (or gas) to pass through it; commonly refers to water vapor; permeability of a sheet material or assembly and is defined as water vapor permeance per unit thickness.

permeance: (1) The time rate of water vapor transmission through unit area of flat material or construction induced by unit vapor pressure difference between two specific surfaces (values in reference sources are quoted for specific material thicknesses) under specified temperature and humidity conditions. The English (inch•pound) unit of measurement for permeance is (grains)/(h•ft²•in. Hg), which is commonly referred to as "perm" units.

phased application: (1) The installation of a roof or waterproofing system during two or more separate time intervals or different days. Applications of surfacings at different time intervals are typically not considered phased application. See "surfacing." (2) A roof system not installed in a continuous operation.

phenolic foam: A closed-cell, rigid, thermosetting foam insulation product with an orange or light-red foam core. Facer materials include corrugated cellulose, aluminum foil and fiberglass mat. See "insulation." Phenolic foam roof insulation can contribute to corrosion of steel roof decks because of leaching out of acidic compounds that takes place when the phenolic foam roof insulation contacts moisture.

pigment: An insoluble compounding material used to impart color.

PIMA: Polyisocyanurate Insulation Manufacturers Association.

pinhole: A tiny hole in a coating, film, foil, membrane or laminate comparable in size to one made by a pin.

pitch: See "coal tar" or "roof slope."

pitch-pocket (pitch-pan): A flanged, open-bottomed enclosure made of sheet metal or other material placed around a penetration through the roof, properly stripped-in to the roof membrane and filled with grout and bituminous or polymeric sealants to seal the area around the penetration.

plank deck: A wood deck of planks usually $1\frac{1}{2}$ inches to $3\frac{1}{2}$ inches thick and 6 inches to 8 inches wide laid on the flat tongued-and-grooved or splined edges and spiked together.

plastic cement: A roofing industry generic term used to describe asphalt roof cement that is a trowelable mixture of solvent-based bitumen, mineral stabilizers, and other fibers and/or fillers; generally it is intended for use on relatively low slopes, not vertical surfaces. See "asphalt roof cement" and "flashing cement."

plasticizer: Liquid or solid additives used to impart flexibility to a hard, rigid polymer such as PVC or nitrocellulose.

plasticizer migration: In some thermoplastic roof membranes, the loss of plasticizer chemicals from the membrane resulting in shrinkage and embrittlement of the membrane.

pliability: The material property of being flexible or moldable.

ply: A layer of felt or ply sheet in a built-up roof membrane or roof system.

plywood: A flat panel built up of sheets of wood called veneers, united under pressure by a bonding agent to create a panel with an adhesive bond between plies as strong as or stronger than the wood. Plywood is constructed of an odd number of layers with grain of adjacent layers perpendicular. Layers may consist of a single ply or two or more plies laminated with parallel grain direction. Outer layers and all odd-numbered layers generally have the grain direction oriented parallel to the long dimension of the panel.

PMR: See "protected membrane roof (PMR)."

polyester: A polymer in which the repeated structural unit in the chain is of the ester type.

polyisobutylene (PIB): A product formed by the polymerization of isobutylene; may be compounded for use as a roof membrane material.

polyisocyanurate foam: A cellular, unfaced, preformed rigid thermal insulation produced by the polymerization of polyisocyanates in the presence of polyhydroxyl compounds, catalysts, cell stabilizers, and blowing agents; classified in accordance with ASTM C591.

polyisocyanurate foam board: A thermal insulation composed of polyisocyanurate foam with adhered facers; commonly called iso or isoboard; classified in accordance with ASTM C1289.

polymer: A macromolecular material formed by the chemical combination of monomers having the same or different chemical composition.

polymer-modified bitumen: (1) A bitumen modified by including one or more polymers (e.g., atactic polypropylene, styrene butadiene styrene); (2) composite sheets consisting of a polymer-modified bitumen often reinforced with various types of mats or films and sometimes surfaced with films, foils or mineral granules.

polymeric methylene diphenyl diisocyanate (PMDI): See "methylene diphenyl diisocyanate (MDI)."

polymerization: A chemical reaction in which monomers are linked together to form polymers.

polyol: A polyhydric alcohol (one containing three or more hydroxyl groups); the main ingredient of the resin component (B-component or B-side) of polyisocyanurate and polyurethane compounds. See "resin (1)."

polypropylene: A polymer prepared by the polymerization of propylene as the sole monomer.

polyurethane: A polymer prepared by the reaction of an organic diisocyanate with compounds containing hydroxyl groups (polyols). Polyurethanes, or urethanes as they are sometimes called, may be thermosetting, thermoplastic, rigid or soft and flexible, cellular or solid; they can be aliphatic or aromatic. See "aliphatic polyurethane" and "aromatic polyurethane."

polyurethane foam (cellular polyurethane): Insulation composed principally of the catalyzed reaction product of polyisocyanate and polyhydroxy compounds, processed usually with fluorocarbon gas to form a rigid foam having a predominately closed-cell structure. It is sprayed in place or preformed into boards. See "insulation."

polyurethane coating: A one- or two-part solvent-based coating that contains polyisocyanate monomer and a hydroxyl containing resin, that reacts during cure to form elastomeric coating.

polyvinyl chloride (PVC): A synthetic thermoplastic polymer prepared from vinyl chloride. PVC can be compounded into flexible and rigid forms through the use of plasticizers, stabilizers, fillers and other modifiers. Rigid forms are used in pipes; flexible forms are used in the manufacture of sheeting and roof membrane materials.

polyvinylidene fluoride (PVDF): A highly nonreactive thermoplastic fluoropolymer. PVDF known by the registered trade names of Kynar 500® and Hylar 5000® is used as the principal ingredient in high-quality paints and protective coatings for metals, including architectural sheet metal and metal roofing applications. PVDF coatings have good gloss and color retention and are reported to resist chalking, cracking and fading.

polystyrene: A polymer prepared by the polymerization of styrene as the sole monomer.

ponding: The excessive accumulation of water at low-lying areas on a roof that remains after 48 hours after precipitation under conditions conducive to drying.

popcorn surface texture: In spray polyurethane foam (SPF) roofing, the condition in which the foam surface shows a coarse texture where valleys form sharp angles. This surface is unacceptable for proper coating and protection.

Portland cement: A hydraulic (sets and hardens by chemical reaction with water and is capable of doing so under water) cement used for making concrete and grout. Portland cement is a mixture that consists of calcium carbonate and clay-like minerals or other silica-, alumina- and iron-oxide bearing materials; various types are formulated and manufactured.

positive drainage: The drainage condition in which consideration has been made during design for all loading deflections of the deck and additional roof slope has been provided to ensure drainage of the roof area within 48 hours of precipitation.

pot life (working life): The period of time during which a reacting composition remains suitable for its intended processing after mixing with reaction initiating agents.

pour coat: See "flood (pour) coat."

pourable sealer: A type of sealant often supplied in two parts and used at difficult-to-flash penetrations, typically in conjunction with penetration pockets to form a seal.

pressure-sensitive: A term used to describe a category of adhesives that in dry (solvent-free) form are tacky at room temperature and adhere to a variety of dissimilar surfaces when contact is promoted by application of pressure. Pressure-sensitive adhesives do not require activation by an energy source such as heat.

prestressed concrete: Concrete in which the reinforcing cables, wires or rods are tensioned before there is load on the structural member, holding the concrete in compression for greater strength.

pre-tinning: Coating a metal with solder or tin alloy prior to soldering or brazing it.

primary drainage: Drainage devices, such as drains or sumpers, that provide for the direct removal of water from a waterproofing system.

primer: (1) A thin, liquid-applied solvent-based bitumen that may be applied to a surface to improve the adhesion of subsequent applications of bitumen; (2) a material that is sometimes used in the process of seaming single-ply membranes to prepare the surfaces and increase the strength (in shear and peel) of the field splice; (3) a thin liquid-applied material that may be applied to the surface of spray polyurethane foam (SPF) to improve the adhesion of subsequent application of SPF protective coatings.

protected membrane roof (PMR): An insulated and ballasted roof assembly in which the insulation and ballast are applied on top of the membrane (sometimes referred to as an inverted roof assembly).

protection course: (1) A sacrificial material used to shield a waterproofing material from damaging external forces; (2) a separate layer of material installed on top of the membrane to protect a vegetative roof waterproofing membrane from damage.

protection mat: A sacrificial material used to shield one roof system component from another.

psi: Pounds per square inch.

psychrometric chart: A chart showing the relationship between dew point temperature, dry bulb temperature, wet bulb temperature and relative humidity.

puncture resistance: The ability of a material to withstand the action of a penetrating or puncturing object.

purlin: A horizontal secondary structural member that transfers loads to the primary structural framing.

PVC: See "polyvinyl chloride (PVC)."

PVDF: See "polyvinylidene fluoride (PVDF)."

R-value: See "thermal resistance (R)."

racking: A method of asphalt shingle application also referred to as the "straight-up method," whereby shingle courses are applied vertically up the roof rather than laterally or across and up; requires placing a part of a shingle under product already in place every other course, which may result in a less-than-recommended number of nails being used for fastening.

rafter: One of a series of sloped structural members that extend from the ridge or hip to the downslope perimeter or eave designed to support the roof deck or secondary horizontal structural members such as purlins and the associated loads.

raggle: A groove or slot often cut in a masonry wall or other vertical surface adjoining a roof for inserting an inset flashing component such as a reglet.

rakes: The sloped edge of a roof at or adjacent to the first or last rafter.

RCI: Roof Consultants Institute. The former name of RCI Inc.—The Institute of Roofing, Waterproofing & Building Envelope Professionals, an international nonprofit association of roofing, waterproofing, and building envelope specification and design consultants.

RCMA: Roof Coatings Manufacturers Association.

receiver: A component in a two-piece counterflashing that may be surface-mounted to a wall, inset into a raggle or embedded behind cladding. It is used for ease of installation and future maintenance and repair or replacement. See "reglet."

re-cover: The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

reflectance: Solar reflectance is the fraction of the solar energy (flux) that is reflected by the surface; reflectivity is expressed as a percentage or a decimal value between 0.00 and 1.00.

reflectivity: Defined as the reflectance of an opaque, optically flat surface or coating of thickness sufficient to be a completely opaque. Reflectivity is a property of a material, while "reflectance" is a property of a sample of the material.

reglet: A sheet-metal receiver for the attachment of counterflashing. A reglet may be surface-mounted, inset into a rafter or embedded behind cladding.

reinforced membrane: A roof or waterproofing membrane that has been strengthened by the addition or incorporation of one or more reinforcing materials, including woven or nonwoven glass fibers, polyester mats or scrim, nylon or polyethylene sheeting.

relative humidity (RH): The ratio of the pressure of water vapor present in a given volume of air to the pressure of fully saturated water vapor at the same temperature, expressed as a percentage.

replacement: The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering, also known as "tear-off and replacement."

reroofing: The process of recovering or replacing an existing roof covering. See "re-cover" and "replacement."

resin: (1) In spray polyurethane foam (SPF) roofing, the B-component (B-side). This component contains a catalyst, blowing agent, fire retardants, surfactants and polyol. It is mixed with the A-component (A-side) to form polyurethane; (2) in plastics manufacturing, any polymer that is a basic material for plastics; (3) in grouting, a material that usually constitutes the base of an organic grout system.

retrofit: The modification of an existing building or facility to include new systems or components.

ridge: Highest point on a roof, represented by a horizontal line where two roof areas intersect, running the length of the area.

ridge board: A horizontal board in wood frame construction at the upper end of the common rafters to which the rafters are nailed.

ridge cap: A material or covering applied over the ridge of a roof.

ridge course: The last or top course of roofing materials, such as tile, roll roofing, shingles, that covers the ridge and overlaps the intersecting field roofing.

ridge vent: A ventilator located at the ridge that allows the escape of warm and/or moist air from the attic area or rafter cavity.

ridging: See "buckle."

roll materials: A general term applied to rolls of roofing felt, ply sheet, etc., that are typically furnished in rolls.

roll roofing: Coated felts, either smooth or mineral-surfaced.

roof: (1) The cover of a building; (2) to cover with a roof.

roof area divider: See "area divider."

roof assembly: An assembly of interacting roof components including the roof deck, vapor retarder (if present), insulation and membrane or primary roof covering designed to weatherproof.

roof cement: See "asphalt roof cement" and "coal-tar roof cement."

roof covering: The exterior roof cover or skin of the roof assembly consisting of membrane, panels, sheets, shingles, tiles, etc.

roof curb: Raised frame used to mount mechanical units such as air conditioning units, exhaust fans, skylights, etc., on a roof.

roof slope: The angle a roof surface makes with the horizontal, expressed as a ratio of the units of vertical rise to the units of horizontal length (sometimes referred to as run). For English units of measurement, when dimensions are given in inches, slope may be expressed as a ratio of rise to run, such as 4:12, or as an angle in degrees.

roof system: A system of interacting roof components generally consisting of a membrane or primary roof covering and roof insulation (not including the roof deck) designed to weatherproof and sometimes improve the building's thermal resistance.

rosin paper (specifically rosin-sized sheathing paper):

A nonasphaltic paper used as a sheathing paper or slip sheet in some roof systems.

rubber: A material that is capable of recovering from large deformations quickly and forcibly.

run: Horizontal dimension of a slope.

sealant foam: One- or two-component polyurethane foam applied as a bead and used to control air leakage; for example, at deck-to-wall transitions and/or as part of an air barrier system within the building envelope.

sealer: A coating designed to prevent excessive absorption of finish coats into porous surfaces; a coating designed to prevent bleeding.

seam: A joint formed by mating two separate sections of material. Seams can be made or sealed in a variety of ways, including adhesive bonding, hot-air welding, solvent welding, using adhesive tape and sealant.

secondary drainage: See "overflow drainage."

self-adhering membrane: A membrane that can adhere to a substrate and to itself at overlaps without the use of an additional adhesive. The undersurface of a self-adhering membrane is protected by a release paper or film, which prevents the membrane from bonding to itself during shipping and handling.

self-adhesive: A term used to describe materials that have the ability to adhere to a variety of surfaces when contact is promoted by application of pressure but that require no substances to form the bond. See "pressure-sensitive."

self-drying roof assembly: A term used for an existing low-slope roof assembly that tolerates small amounts of moisture vapor gain during times of vapor drive into the roof assembly from a building's interior and dries downward during times of vapor drive into the building's interior without noticeable harm to the roof assembly's components.

self-flashing: The ability of a material to be applied around a penetration or at a roof transition without the need for other flashing materials.

self-healing: Refers to bitumen that softens with the heat from the sun and flows to seal cracks that formed in the bitumen from other causes.

self-tapping screw: A fastener that forms receiving threads when turned in a previously drilled hole.

selvage: (1) An edge or edging that differs from the main part of a fabric, granule-surfaced roll roofing or cap sheet, or other material; (2) a specially defined edge of the material (lined for demarcation), which is designed for some special purpose, such as overlapping or seaming.

rust: (1) A reddish material, primarily hydrated iron oxide; a corrosion product formed on iron or its alloys, resulting from exposure to a humid atmosphere or chemical attack; (2) a special case of corrosion that deteriorates or alters the original surface condition.

sacrificial protection: The form of corrosion protection whereby one metal corrodes in preference to another, thereby protecting the latter from corrosion; galvanic protection. See "anodic."

saddle: A small tapered/sloped roof area structure that helps to channel surface water to drains; frequently located in a valley. A saddle is often constructed like a small hip roof or pyramid with a diamond-shaped base.

saturant: A bitumen of low softening point for impregnating dry felts in the manufacture of saturated roofing felts. See "asphalt, dead level" and "asphalt, flat."

saturated felt: A felt that has been immersed in hot bitumen; the felt absorbs as much bitumen as it can retain under the processing conditions but remains porous and contains voids.

SBS: See "styrene butadiene styrene copolymer (SBS)."

scarfing: In spray polyurethane foam (SPF) roof systems, shaping by grinding.

screeding: The process of striking off excess concrete to bring the top surface of the concrete to the proper finish and elevation.

scrim: A woven, nonwoven or knitted fabric composed of continuous strands of material used for reinforcing or strengthening membranes.

scupper: A drainage device in the form of an outlet through a wall, parapet wall or raised roof edge typically lined with a sheet-metal sleeve.

scuttle: A hatch that provides access to the roof from the interior of the building; also called a "roof hatch."

SDI: Steel Deck Institute.

sealant: (1) A material that has the adhesive and cohesive properties to form a seal; (2) a mixture of polymers, fillers and pigments used to fill and seal joints where moderate movement is expected; unlike caulking, it cures to a resilient solid.

separator layer: See "slip sheet."

service life: (1) The period of time a building component or system will function successfully without replacement or excessive repair assuming reasonable or expected periodic maintenance is performed; (2) the number of years of service a material, system or structure will provide before rehabilitation or replacement is required.

shading: Slight differences in surfacing color, such as shingle granule coloring, that may occur as a result of manufacturing operations.

shear strength: The resistance to forces that cause or tend to cause two contiguous parts of a body to slide relative to each other in a direction parallel to their contact plane.

shelf life: The maximum time interval during which a material may be stored and remain in a usable condition according to the material manufacturer; usually related to storage conditions.

shingle: (1) A small unit of prepared roofing designed for installation with similar units in overlapping rows or courses on inclines normally exceeding 3:12 slope; (2) to cover with shingles; (3) to apply any sheet material in succeeding overlapping rows like shingles.

shrinkage: A decrease in one or more dimensions of an object or material.

SI: An abbreviation for the International System of Units (*Le Systeme International d'Unites*).

side lap: The continuous longitudinal overlap of neighboring like materials.

side-lap fastener: A fastener used to connect adjacent panels together at the side lap.

siding: The finish covering of an exterior wall of a frame building; the siding may be a cladding material such as wood, aluminum or vinyl (but not masonry).

sieve: An apparatus with square apertures for separating sizes of material.

silicone coating: A liquid-applied elastomeric coating; the principal polymer in the dispersion contains more than 95 percent silicone resin.

single-component (coating or foam): Polyurethane or silicone material that does not require mixing of "A-component" and "B-component."

single-ply membranes: Roof membranes that are field-applied using just one layer of membrane material (either homogeneous or composite) rather than multiple layers.

single-ply roofing: A roof system in which the principal roof covering is a single-layer flexible thermoset or thermoplastic membrane.

single tees: Structural precast prestressed concrete members of a T-shaped cross-section used as precast roof and floor deck systems.

SJI: Steel Joist Institute.

skin: The dense film portion on the surface of a liquid coating or mastic.

skinning: Function of the time necessary to form a dense film on the surface of a liquid coating or mastic to the extent that the material is unaffected by a water spray.

skylight: An opening in a roof that is covered with a transparent or translucent material; used to admit diffuse light to the space below; commonly mounted on a framed curb.

slab: A layer of reinforced concrete, generally flat and horizontal (or minimally sloped), usually of uniform thickness, placed on prepared earth or supported by beams, columns or walls.

slab below grade: A slab on grade below the elevation of the exterior earth grade. See "slab on grade."

slab on grade: A horizontal placement of concrete placed directly over a prepared earth substrate.

slag: A hard aggregate that is left as a residue from blast furnaces; may be used as a surfacing material on certain (typically bituminous) roof membrane systems. See "blast furnace slag."

slate: A hard, brittle metamorphic rock consisting mainly of clay minerals used extensively as dimensional stone for steep roofing and in granular form as surfacing on some other roofing materials.

slip sheet: Sheet material, such as reinforced kraft paper, rosin-size paper, polyester scrim or polyethylene sheeting, placed between two components of a roof assembly (such as between membrane and insulation or deck) to ensure no adhesion occurs between them and to prevent possible damage from chemical incompatibility, wearing or abrasion of the membrane; also called a "separator layer" and "separator sheet."

slippage: Relative lateral movement of adjacent components of a roof membrane. It occurs mainly in roofing membranes on a slope, sometimes exposing the lower plies or even the base sheet to the weather.

slit sample: In spray polyurethane foam (SPF) roofing, a small cut about 1 inch by ½ inch by ½ inch in a half-moon shape used to measure coating film thickness.

slope: The angle of incline, usually expressed as a ratio of rise to run, or as an angle. See "roof slope."

SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

smooth surface texture: In spray polyurethane foam (SPF) roofing, the condition of the foam in which the surface shows spray undulation and is ideal for receiving a protective coating.

smooth-surfaced roof: A membrane roof system that includes a weathering surface without mineral granule or aggregate surfacing.

snap-on cap: A separate cap that snaps on over the vertical legs of some single standing or batten seam metal roof systems.

snow guard: A series of devices attached to the roof in a pattern that attempts to hold snow in place, thus preventing sudden snow or ice slides from the roof; any device intended to prevent snow from sliding off a roof.

snow load: The live load due to the weight of snow on a roof (expressed in lb/ft²) included in design calculations.

soffit: The exposed undersurface of any exterior overhanging section of a roof eave.

soffit vent: A manufactured or custom built air inlet source located at the downslope eave or in the soffit of a roof assembly.

softening point: The temperature at which bitumen becomes soft enough to flow as determined using test methods defined in ASTM D36 (ring-and-ball) or D3461 (Mettler cup-and-ball).

soil stack: A sanitation pipe that penetrates the roof; used to vent plumbing fixtures.

solder: A lead and tin mixture that is melted and used to bond two pieces of some types of metals together.

solids content: The percentage by weight of the non-volatile matter in an adhesive.

solubility: A measure of the extent to which a material can be dissolved in a given solvent under specified conditions.

solvent: Any liquid used to dissolve another material.

solder welding: A process where a liquid solvent is used to chemically weld or join together two or more layers of certain membrane materials (usually thermoplastic).

spalling: The breaking off of plate-like pieces from a concrete, rock or masonry surface.

span: The distance between supports or beams, girders or trusses.

spangle: In hot-dip coatings, the crystalline structure that develops on a metallic-coated surface when the molten coating metal solidifies, especially on steel sheet and articles coated after fabrication.

special steep asphalt: See "asphalt, special steep."

specification: A precise statement of a set of requirements to be satisfied by a material, product, system or service.

SPF: See "spray polyurethane foam (SPF)."

SPFA: Sprayed Polyurethane Foam Alliance; a trade association of SPF applicators, manufacturers and distributors of polyurethane foam, equipment and protective coatings and providers of inspections, surface preparations and other services. It is an educational and technical resource and voice of the spray polyurethane industry.

SPF compound: A term used to describe the raw materials (isocyanate and resin) used to make spray polyurethane foam.

splice: Bonding or joining of overlapping materials. See "seam."

splice plate: A metal plate placed underneath the joint between two pieces of metal.

splice-tape: Cured or uncured synthetic rubber tape used for splicing membrane materials.

split: A membrane tear resulting from tensile stresses.

split slab: A term used to describe two separate concrete slabs. The first is placed as a slab on grade or suspended slab and covered with waterproofing and a drainage system. The second slab, also referred to as a topping slab, is then placed over the underlying slab and waterproofing.

spot mopping: See "mopping, spot."

spray polyurethane foam (SPF): A foamed plastic material, formed by mixing and spraying two components, methylene diphenyl diisocyanate (MDI) ("A-component") and resin containing a polyol ("B-component") to form a rigid, fully adhered, water-resistant and insulating membrane.

SPRI: Single Ply Roofing Industry.

sprinkle mopping: See "mopping, sprinkle."

square: (1) A unit used in measuring roof area equivalent to 100 square feet; (2) a quantity of material sufficient to cover 100 square feet of a roof deck.

squeegee: (1) A blade of leather or rubber set on a handle and used for spreading, pushing or wiping liquid material on, across or off a surface; (2) to smooth, wipe or treat with a squeegee.

staining: Temporary or permanent discoloration to the surface of a roof membrane, coating or other covering caused by foreign material on the surface.

stainless steel: An alloy of steel that contains chromium and also may contain nickel or copper generally, has good resistance to corrosion.

standing seam: In metal roofing, a type of seam between adjacent sheets of material made by turning up the edges of two adjacent metal panels and then folding or interlocking them in a variety of ways.

starter course: The first layer of roofing, applied along a line adjacent to the downslope perimeter of the roof area; with steep-slope water-shedding roof coverings, the starter course is covered by the first course.

starter sheet: (1) Felt, ply sheet or membrane strip that is made or cut to a width narrower than the standard width of the roll material and used to start the shingling pattern at a roof edge; (2) particular width sheet designed for perimeters in some mechanically attached and fully adhered single-ply systems.

starter strip: Roll roofing or shingle strips applied along the downslope eave line before the first course of roof covering and intended to fill spaces between cutouts and joints of the first course.

steel: A malleable alloy of iron and carbon produced by melting and refining pig iron and/or scrap steel; graded according to the carbon content (in a range from 0.02 percent to 1.7 percent); other elements, such as manganese and silicon, may be included to provide special properties.

steel joist (open web steel joist): Normally used as a horizontal supporting member between beams or other structural members; suitable for the support of some roof decks.

steep asphalt: See "asphalt, steep."

steep-slope roofs: A category of roofing that generally includes water-shedding types of roof coverings installed on slopes exceeding 3:12.

step flashing: Individual pieces of sheet-metal material used to flash walls, around chimneys, dormers and such projections along the slope of a roof. Individual pieces are overlapped and stepped up the vertical surface.

strapping (felts): A method of installing roofing rolls or sheet good materials parallel with the slope of the roof.

stress: (1) A measure of the load on a structural member in terms of force per unit area; (2) the force acting across a unit area in solid material in resisting the tension, compression or shear that tends to be induced by external forces; (3) the ratio of applied load to the initial cross-sectional area.

strip flashing: Membrane flashing strips used for sealing or flashing metal flashing flanges into the roof membrane.

strip shingles: Asphalt shingles that are manufactured in strips approximately three times as long as they are wide with or without cutouts.

stripping in: Application of membrane stripping ply or plies.

structural panel: A metal roof panel designed to be applied over open framing rather than a continuous or closely spaced roof deck.

styrene butadiene styrene copolymer (SBS): High molecular weight copolymer with thermoset and thermoplastic properties (thermoplastic elastomer), formed by the block copolymerization of styrene and butadiene monomers; used as the modifying compound in SBS polymer-modified asphalt roofing membranes to impart rubberlike qualities to the asphalt.

substrate: The surface upon which a roofing or waterproofing membrane is applied (e.g., in roofing, the structural deck or rigid board insulation).

sump: An intentional depression around a roof drain or scupper that promotes drainage.

sump pan: A metal pan used to create a depression around a drain or scupper to enhance drainage.

surface texture: The resulting surface from the final pass of spray polyurethane foam (SPF). The following terms are used to describe the different SPF surface textures: smooth orange peel, coarse orange peel, verge of popcorn, popcorn, trechak and oversprayed.

surfacing: The top layer or layers of a roof covering specified or designed to protect the underlying roofing from direct exposure to the weather.

synthetic rubber: Any of several elastic substances resembling natural rubber, prepared by the polymerization of butadiene, isoprene and other unsaturated hydrocarbons. Synthetic rubber is widely used in the fabrication of single-ply roofing membranes.

tab: A section of the exposed portion of a strip shingle defined by cutouts.

tack-free time: In spray polyurethane foam (SPF) roofing, a curing phase of polyurethane foam when the material is no longer sticky. When the polyurethane foam is tack-free, it can be sprayed over with another pass, referred to as a "lift." With some care, the polyurethane foam can be walked on soon after it is tack-free. See "lift."

talc: Whittish powder applied at the factory to the surface of some roofing materials (e.g., vulcanized EPDM membranes), used as a release agent to prevent adhesion of the membrane to itself. Talc is a naturally occurring mineral.

tapered insulation: A system of precur or premolded insulation boards or a poured insulation fill designed to provide slope to the roof deck before installing the roof membrane.

taping: (1) The technique of connecting joints between insulation boards or deck panels with tape; (2) the technique of using self-adhering tape-like materials to seam or splice single-ply membranes.

tar: A brown or black bituminous material, liquid or semisolid in consistency in which the predominating constituents are bitumens obtained as condensates in the processing of coal, petroleum, oil-shale, wood or other organic materials.

tear resistance: The load required to tear a material when the stress is concentrated on a small area of the material by the introduction of a prescribed flaw or notch.

tear strength: The maximum force required to tear a specimen.

tensile strength: The strength of a material under tension as distinct from torsion, compression or shear.

termination: The treatment or method of anchoring and/or sealing the free edges of a membrane in a roof or waterproofing system.

terne: An alloy of lead and tin used to coat sheets of carbon steel or stainless steel for use as metal roofing sheet.

test cut: See "core cut."

test method: A definitive procedure for the identification, measurement and evaluation of one or more qualities, characteristics or properties of a material, product, system or service that produces a test result.

textural slate roof system: A term used to designate a slate roof system with a range of slate thicknesses mixed throughout; usually slates with rougher texture than standard slate with uneven tails or butts.

thermal barrier: In torched membrane applications over combustible substrates, an above-deck barrier incorporated into a roof system before torching as a fire-safety practice. Acceptable thermal barriers include: minimum $\frac{1}{8}$ -inch-thick perlite board insulation, minimum $\frac{1}{4}$ -inch-thick fiberglass or mineral wool board insulation, or minimum $\frac{1}{8}$ -inch-thick glass-faced gypsum board.

thermal conductance (C): The time rate of steady-state heat flow through a unit area of a material or construction induced by a unit temperature difference between the body surfaces. In English (inch $\cdot$ pound) units of measurement, the number of Btu that pass through a specified thickness of a one-square-foot sample of material in one hour with a temperature difference between the two surfaces is 1 degree Fahrenheit. In English (inch $\cdot$ pound) units, it is expressed as $\text{Btu}/h \cdot ft^2 \cdot F$.

Note 1: A thermal conductance (C) value applies to a specific thickness of a specific material.

Note 2: It is mathematically incorrect to multiply or divide the thermal conductance (C) value for a specific thickness of a material to determine the thermal conductance value of a different thickness of the same material.

Note 3: It is mathematically incorrect to add thermal conductance (C) values to determine overall thermal performance. If it is necessary to determine the overall thermal performance of a construction, it is appropriate to convert the individual thermal conductance (C) values to thermal resistance (R) values (i.e., $R = 1/C$) and then add the thermal resistance values (i.e., $R_1 = R_1 + R_2 + \dots$).

thermal conductivity (k): The time rate of steady state heat flow through a unit area of a homogeneous material induced by a unit temperature gradient in a direction perpendicular to that unit area. In English (inch $\cdot$ pound) units of measurement, it is the number of Btu that pass through a 1-inch thickness of a 1-square-foot sample of material in one hour with a temperature difference between the two surfaces of 1 degree Fahrenheit. In English (inch $\cdot$ pound) units, it is expressed as $\text{Btu} \cdot \text{inch}/h \cdot ft^2 \cdot F$.

Note 1: A thermal conductivity (k) value applies to 1-inch thickness of a specific material.

Note 2: It is mathematically incorrect to add, multiply or divide the thermal conductivity (k) value of a material to determine the thermal performance value of a different thickness of the same material. If it is necessary to determine the thermal performance of a specific thickness of a material, it is appropriate to convert the thermal conductivity (k) of the material to a thermal resistance (R) value (i.e., $R = 1/k$) and then perform the mathematical calculation.

thermal cycling: A fluctuation in material, system component or system stress mode, such as a change from tension to compression and back to tension, and any related displacements caused by recurring temperature fluctuations.

thermal expansion: The increase in the dimension or volume of a body because of temperature variations.

thermal insulation: A material applied to reduce the flow of heat.

thermal movement: Changes in dimension of a material as a result of temperature changes.

thermal resistance (R): The quantity determined by the temperature difference at steady state between two defined surfaces of a material or construction that induces a unit heat flow rate through a unit area. In English (inch $\cdot$ pound) units, it is expressed as $ft^2 \cdot ft^2 \cdot h/\text{Btu}$.

Note 1: A thermal resistance (R) value applies to a specific thickness of a material or construction.

Note 2: The thermal resistance (R) of a material is the reciprocal of the thermal conductance (C) of the same material (i.e., $R = 1/C$).

Note 3: Thermal resistance (R) values can be added, subtracted, multiplied and divided by mathematically appropriate methods.

thermal shocks: The stress-producing phenomenon resulting from sudden temperature changes in a roof membrane when, for example, a cold rain shower follows brilliant sunshine.

thermal stress: Stress introduced by uniform or nonuniform temperature change in a structure or material that is contained against expansion or contraction.

thermal transmittance (U or U-factor): The heat transmission in unit time through unit area of a material or construction and the boundary air films induced by unit temperature difference between the environments on each side. In English (inch $\cdot$ pound) units, it is expressed as $\text{Btu}/h \cdot ft^2 \cdot F$.

Note 1: A thermal transmittance (U) value applies to the overall thermal performance of a system (e.g., roof assembly).

Note 2: Thermal transmittance (U) is sometimes called the overall coefficient of heat transfer.

Note 3: Thermal transmittance (U) is the reciprocal of the overall thermal resistance (R) of a system (i.e., $U = 1/R$).

thermoplastic: A material that softens when heated and hardens when cooled. This process can be repeated provided the material is not heated above the point at which decomposition occurs.

thermoplastic elastomer: A material having the general properties of an elastomer and capable of being repeatedly softened by heat and hardened to shape by cooling without significant degradation of the polymer system; typically more thermally and pressure-sensitive and more sensitive to solvents than thermoset elastomers.

thermoplastic olefin membrane (TPO): A blend of polypropylene and ethylene-propylene polymers, colorant, flame retardants, ultraviolet radiation absorbers and other proprietary substances that may be blended with the TPO to achieve the desired physical properties. The membrane may or may not be reinforced.

thermoset: A class of polymers that when cured using heat, chemical or other means change into a substantially infusible and insoluble material.

thinner: (1) A volatile liquid added to an adhesive or coating material to modify the consistency or other properties; (2) a liquid used to clean equipment or other surfaces.

through-wall flashing: A water-resistant membrane or material assembly extending totally through a wall and its cavities positioned to direct water within the wall to the exterior, usually through weep holes.

tie-back head: The nut and bolt assembly attached to the tie-back rod, which stabilizes the shoring or lagging.

tie-in: In roofing and waterproofing, the transitional seal used to terminate a roofing or waterproofing application at the top or bottom of flashings or by forming a watertight seal with the substrate, membrane, or adjacent roof or waterproofing system.

T-joint: The condition created by the overlapping intersection of three or four sheets in the membrane; also termed a "T-joint."

toggle bolt: A bolt having a nut with pivoted, flanged wings that close against a spring when it is pushed through a hole and open after emerging from the hole; used to fasten objects to a hollow wall or to a wall that is accessible only from one side.

tongue-and-groove planks: One of the oldest types of dimensional structural wood used as roof decking. The sides are cut with convex and concave grooves so adjacent planks may join in alignment with each other to form a uniform roof deck.

topping slab/surface: Set "wear course."

torch-applied: Method used in the installation of polymer-modified bitumen membranes characterized by using open flame propane torch equipment.

TPO: thermoplastic olefin.

traffic bearing: In waterproofing, a membrane formulated to withstand a predetermined amount of pedestrian or vehicular traffic with separate protection and a wear course.

treeshark surface texture: In spray polyurethane foam (SPF) roofing, the surface condition of the foam that shows a coarse texture where valleys form sharp angles. This surface is unacceptable for proper coating and protection.

TRI: Tile Roofing Institute; originally founded in 1971 as the National Tile Roofing Manufacturers Association (NTRMA); also was the Roof Tile Institute (RTI).

truss: A structure made up of three or more members usually in some triangular arrangement with each member designed to carry a tension or compression force. The entire structure in turn acts as a beam.

tuckpointing: The process of removing deteriorated mortar from an existing masonry joint and troweling new mortar or other filler into the joint.

two-component system: In spray polyurethane foam (SPF) roofing, a coating of polyurethane foam formed by the mixing and reaction of two different materials.

UL: See "Underwriters Laboratories Inc. (UL)."

UL label: An identification label or seal affixed to a roofing product or package with the authorization of Underwriters Laboratories Inc. The presence of the label indicates the product has met certain performance criteria.

ultraviolet (UV): Invisible electromagnetic radiation adjacent to the violet end of the visible spectrum with wavelengths from about 200 to 400 nm (nanometers [$1 \text{ nm} = 1 \times 10^{-9} \text{ m}$]).

underlayment: An asphalt-saturated felt or other sheet material (may be self-adhering) installed between a roof deck and roof covering, usually used in a steep-slope roof construction. Underlayment is primarily used to separate a roof covering from the roof deck, shed water and provide secondary weather protection for the roof area of the building.

Underwriters Laboratories Inc. (UL): An independent product safety certification organization that tests products and writes standards for safety worldwide. UL tests, rates and classifies roof assemblies for their resistances to fire, impact, leakage, corrosion of metal components and wind uplift.

unforeseen conditions: (1) Unusual situation not reasonably anticipated based on contract documents; (2) unknown physical condition of an unusual nature that differs materially from those ordinarily encountered.

uplift: See "wind uplift."

urethane: See "polyurethane."

UV degradation: Damage done by the ultraviolet rays of the sun.

valley: The internal angle formed by the intersection of two sloping roof planes.

vapor barrier: See "vapor retarder."

vapor migration: The movement of water vapor from a region of high vapor pressure to a region of lower vapor pressure.

vapor pressure: The pressure exerted by a vapor of a solid or liquid when in equilibrium with the liquid or solid.

vapor retarder: Layer(s) of material or a laminate used to appreciably reduce the flow of water vapor into a roof assembly.

veneer: (1) A single wythe of masonry for facing purposes that may not be structurally connected; (2) any of the thin layers of wood glued together to form plywood.

vent: An opening designed to convey air, heat, water vapor or other gas from inside a building or a building component to the atmosphere.

verge-of-popcorn texture: In spray polyurethane foam (SPF) roofing, the verge-of-popcorn surface texture is the roughest texture suitable for receiving the protective coating on an SPF roof. The surface shows a texture where nodules are larger than valleys with the valleys relatively cured. This surface is acceptable for receiving a protective coating only because of the relatively cured valleys. However, the surface is considered undesirable because of the additional amount of coating material required to protect the surface properly.

vermiculite: An aggregate used in lightweight insulating concrete formed by heating and expanding a micaceous material.

viscosity: The resistance of a material to flow under stress. For bitumen, viscosity measurements are reported in centipoise (cP or cPs) at a specific temperature; as viscosity increases, flow rate decreases.

viscous: Resistant to flow under stress. See "equiviscous temperature (EVT)"

void: An open space or break in consistency.

volatile: A relative term expressing the tendency to form vapor.

waffle slab: Structurally reinforced concrete roof deck construction cast with wafflelike arrangements of perpendicular ribs on the ceiling side. Standard configurations include 6-inch-wide ribs on 36-inch centers cast using square 30-inch forms and 5-inch-wide ribs on 24-inch centers formed using square 19-inch forms.

walkways: (1) High traffic and high-service-frequency areas on a rooftop, particularly those leading and adjacent to vents, hatches and heavy duty air-conditioning units; (2) materials or accessories such as traffic mats or pavers installed on rooftop surfaces to provide wearing surfaces for traffic and/or protect a roof system from damage resulting from rooftop traffic.

wash coat: A primer typically provided on the back side of painted metal products to help protect the underlying metal from wear and corrosion.

water cutoff: See "cutoff."

water-shedding: The ability of individual, overlapping components to resist the passage of water without hydrostatic pressure.

water-shedding roof system: A roof system that depends on gravity for quick drainage via water shedding to prevent water entry into or through the system.

water and ice-dam protection membrane: A continuous membrane installed under steep-slope roofing materials in areas subject to ice damming or wind-driven rain that prohibits water that gets through the roof covering from getting into the structure; ice- and water-protection membranes classified by ASTM D1970 must also seal around fasteners.

water table: The level within the ground below which the soil is saturated with water.

water testing: A flood test (often minimum 24 hour) or flowing-water test to evaluate the watertight integrity of a waterproofing system (not a damp-proofing system) under hydrostatic (standing water) or nonhydrostatic (flowing water) conditions. See "flood test" and "flowing-water test."

water vapor pressure: The pressure of water vapor at a given temperature; the component of atmospheric pressure contributed by the presence of water vapor. See "vapor pressure."

water vapor transmission: A measure of the rate of transmission of water vapor through a material under controlled laboratory conditions of temperature and humidity. Customary units are grains/(h·ft²). See "water vapor diffusion."

waterproof: The quality of a membrane, membrane material or other component to prevent water entry.

waterproofing: Treatment of a surface or structure to prevent the passage of water under hydrostatic pressure.

waterproofing assembly: An assembly of interacting waterproofing components including the deck, membrane and protection/drainage/insulation course.

waterproofing membrane: The part of a waterproofing system that has the primary function of excluding water; it does not include accessories such as drainage materials or protection boards. See "membrane."

waterproofing system: A system of interacting waterproofing components consisting at a minimum of a membrane but may also include protection, drainage and insulation courses, as well as waterstops, expansion and control joints, various flashings and counterflashings and overburden such as pavers, cast concrete and wire mesh or rebars. It does not include the substrate.

waterstop: A diaphragm used across a joint as a sealant usually to prevent the passage of water.

weatherproof: The ability of a membrane or roof covering to prevent the passage of water with a limited amount of hydrostatic pressure.

weld: To join pieces of material together by heat fusion.

wet: A condition in which free water is present in a substance.

wet film gauge: A gauge for measuring the thickness of wet coating as applied to a flat smooth surface.

wet film thickness: The thickness, expressed in mils, of a coating or mastic as applied but not cured. For comparison, see "dry film thickness."

wicking: The process of moisture movement by capillary action.

wind screen: In spray polyurethane foam (SPF) roofing, a device to keep the SPF from drifting or being blown away by the wind from the spray area.

wind uplift: The force caused by the deflection of wind at roof edges, roof peaks or obstructions causing a drop in air pressure immediately above the roof surface.

woven valley: A method of valley construction in which shingles or roofing from both sides of the valley extend across the valley and are woven together by overlapping alternate courses as they are applied.

yield: In spray polyurethane foam (SPF) roofing, the volume of foam per unit weight normally expressed as board feet per pound or board feet per 1,000 pounds.

zinc: A soft, self-healing metal that reacts with the environment to produce a soft blue-gray zinc carbonate patina that protects the underlying metal from corrosion. Zinc is commonly used as sacrificial (galvanized) coating for a base metal such as sheet steel and iron, in various metal alloys and in oxide form as a white pigment.