



**SPRI**  
SINGLE PLY ROOFING INDUSTRY

# Glossary of Terms

## **INTRODUCTION**

The principal purpose of the following glossary is to serve as a useful and usable reference for those in the roofing industry who may be unfamiliar with flexible roofing materials and the terminology associated with the design and construction of membrane roofing systems. It is hoped that more experienced and knowledgeable individuals will also find it useful, particularly as a handy reference for solving occasional problems of nomenclature. It may also be used as a practical manual for instructing new or inexperienced personnel. It contains a comprehensive list of the more important terms associated with membrane roofing, with a brief definition and appropriate examples, cross-references, and other explanatory data.

## **HOW TO USE THE GLOSSARY**

The terms or main entries in the glossary are listed in simple and strict alphabetical order, and are essentially self-explanatory. Many entries are cross-referenced to related, similar, or sharply dissimilar terms. These are indicated at the end of the definition. Some of the longer and more complex definitions may contain a number of additional terms, abbreviations, or symbols which also appear as main entries elsewhere in the glossary. Such terms are marked with an asterisk.

**ABRASION RESISTANCE**

The ability of a membrane to resist being worn away by contact with a moving, abrasive surface, such as foot traffic, mechanical equipment, wind-blown particles, etc.

**ACCELERATED WEATHERING**

The process in which materials are exposed to a controlled environment where various phenomena, such as heat, water, condensation, and light are altered to magnify their effects, thereby accelerating the weathering process. The physical properties that result from this exposure are then measured and compared to those of the original unexposed material.

**ADHERE**

To cause two surfaces to be held together by adhesion.\* Flexible membranes are often “partially-“\* or “totally adhered” \* to a substrate\* with the use of contact cements\* or other similar adhesives\*. See ADHESION, ADHESIVE, BOND.

**ADHESION**

The combined ultimate strength of the molecular forces and the mechanical interlocking achieved between the adhesive and the surfaces bonded. See ADHERE, ADHESIVE, BOND.

**ADHESIVE**

A substance capable of holding materials together by surface attachment. These substances may be used to adhere\* or attach various roofing materials and components, such as membranes, flashings, \* insulation boards, etc. Before adhesives are applied, their compatibility with other roofing materials and components should be ensured through consultation with the membrane supplier. Failure to do so could result in the degradation of these materials and in poor

adhesion\*. See ADHERE, ADHESION, BOND.

**AGGREGATE**

An inert material, such as water-worn gravel, crushed stone or rock, crushed slag, etc., used as a protective surface or as ballast\* to anchor loose-laid\* or “protected membrane roof assemblies.”\* See BALLAST, ROOF SYSTEM ASSEMBLIES.

**ALBEDO**

The fraction of solar radiation reflected by a surface.

**ALLOY**

Any combination of two or more chemically different polymers\* which have been reformed through processing into a new material from which the original materials cannot be separated. See ELASTOMERIC MEMBRANES, NITRILE ALLOY.

**APP**

See Atactic Polypropylene.

**AROMATIC HYDROCARBON**

A hydrocarbon\* compound characterized by a molecular structure involving one or more of six carbon atom rings (benzene rings). See HYDROCARBON.

**ASPHALT**

A dark brown or black substance found in a natural slate or, more commonly, left as a residue after evaporating or otherwise processing crude oil or petroleum. Asphalt is then further refined to conform to various roofing grade specifications.

**ASTM**

American Society for Testing Materials. ASTM provides a “management system” in which “voluntary consensus standards” may

be developed. These standards (i.e. test methods, specifications, definitions, practices).

### **ATATIC POLYPROPYLENE**

A high molecular weight polymer, formed by the polymerization of polypropylene. Typically used as a modifier of asphalt in modified bitumen membranes.

### **BALLAST**

An anchoring material, such as aggregate, or precast concrete pavers, which employ the force of gravity to hold (or assist in holding) sheet membranes in place.

### **BITUMEN**

(1) A class of amorphous, black or dark colored (solid, semisolid, or viscous) cementitious substances, comprised primarily of high molecular weight hydrocarbons. Typically asphalts, coal tars and coal tar pitches. (2) A generic term used to denote any material composed principally of bitumen, typically asphalt or coal tar.

### **BOND**

The adhesion \* of a membrane to itself or its substrate achieved through the use of an adhesive or other bonding agent\*. See ADHERE, ADHESION, ADHESIVE, CONTACT CEMENTS.

### **BONDING AGENTS**

Essentially synonymous with adhesives\*. See ASHERE, ADHESION, BOND, CONTACT CEMENT.

### **BUILT-UP ROOF**

A continuous roof assembly, consisting of piles of saturated felts, coated felts, fabrics, or mats between which layers of bitumen\* are applied. A BUR is generally surfaced with mineral aggregate\*, bituminous materials, or a granular-surfaced roofing sheet.

### **BUR**

Abbreviated for “built-up roof.”\*

### **BUTT JOINT (BUTT SPLICE)**

A joint or seam\* formed by joining separate sections of membrane at the edges without overlap (i.e. edge to edge). Once the edges have been joined, the seam is usually covered and sealed with a narrow strip of membrane material or compatible tape. See SEAM.

### **BUTYL**

A rubber material produced by copolymerizing\* isobutylene with a small amount of isoprene. Butyl is variously manufactured into sheet goods, blended with other rubber materials, and is often used to make sealants\* and adhesives\*.

### **CALENDERING**

A manufacturing process by which polymeric\* membranes and sheeting are produced. The finished material is formed by passing it between the nips of a series of large counter-rotating steel rollers which produce a film or sheet of uniform thickness. The device used for this purpose is a calendar. See EXTRUSION, MEMBRANE, PLY, FLEXIBLE MEMBRANE, SPREAD COATING.

### **CALIFORNIA ENERGY COMMISSION**

CEC\* The California Energy Commission is the state's primary energy policy and planning agency. Created by the Legislature in 1974 and located in Sacramento, the Commission has five major responsibilities:

- Forecasting future energy needs and keeping historical energy data
- Licensing thermal power plants 50 megawatts or larger
- Promoting energy efficiency through appliance and building standards

- Developing energy technologies and supporting renewable energy
- Planning for and directing state response to energy emergency

### **CANT STRIP**

A beveled or triangular shaped strip of wood, wood fiber, or other material, designed to serve as a gradual transitional plane between the horizontal surface of a roof deck and any vertical service. The angle of the cant strip is usually 135°.

### **CAST SHEETING**

A manufacturing process in which a liquid is poured into a mold, cured\*, and removed from the mold. Cast films are also made by depositing the material, either by solution or in a hot melt form, against a highly polished supporting surface. See CALENDERING, EXTRUDING, SPREADCOATING.

### **CEC**

Abbreviation for “California Energy Commission.”\*

### **CHLORINATED POLYETHYLENE (CPE)**

A thermoplastic\* material used for flexible membranes which is composed of high molecular weight polyethylene which has been chlorinated – a process which yields a flexible rubber-like material. See PLASTOMERIC MEMBRANES.

### **CHLOROSULFONATED POLYETHYLENE (CSPE)**

A synthetic, rubber-like thermoset\*, based on high molecular weight polyethylene with pendant sulphonyl chloride groups, usually formulated to produce a self-vulcanizing\* membrane. Chlorosulfonated polyethylene (CSM or CSPE) is marketed by DuPont under the trade name HYPALON\*. See ELASTOMERIC MEMBRANES.

### **COAL TAR**

A semi-solid black, opaque liquid obtained by the destructive distillation (i.e. the conversion into coke) of bituminous coal, which yields coal tar – a substance which is then further refined or fractionated to meet various roofing specifications. See ASPHALT, BITUMEN.

### **COEFFICIENT OF THERMAL EXPANSION**

The change in length of a material as a function of temperature. A dimensionless coefficient, it is usually reported in inches per inch x °F or millimeter x °C.

### **COLD ADHESIVE**

A material often modified asphalt, used to bond modified bitumen sheets together or to a substrate.

### **COLOR STABILITY**

The ability of a material to retain its original color, even after long exposure to strong sunlight and/or other harsh environmental conditions, including air pollutants, acid rain, extremes of temperature, etc. Color stability may be especially important for white specifically pigmented materials which may have been deliberately selected for their high degree of reflectivity or aesthetic effect. See REFLECTIVITY.

### **COMPRESSION**

The squeezing or pressing together by the application of pressure, as in the pressure applied to roofing material and components by the weight of mechanical loads, foot traffic, etc. See COMPRESSIVE STRENGTH, HARDNESS, IMPACT RESISTANCE.

### **COMPRESSIVE STRENGTH**

The ability of roofing materials and components to resist deformation or other damage caused by the weight or

compression of either “live”\* or “dead loads.”\* High compressive strength may be especially important in insulation boards. See COMPRESSION, HARDNESS, IMPACT, RESISTANCE.

## **CONDENSATION**

As it relates to water vapor, and the build up of water on the surface of roofing and building components, condensation is the change from water vapor to liquid water, resulting from a drop in the temperature of an air/water vapor mixture below the “dew point”\* of that mixture. There are basically two types of condensation to consider:

1) **concealed condensation**—that which takes place within a roof (i.e. between the components of the roofing system) and is largely unseen, and

2) **surface condensation**—that which appears in the colder exposed surface of a roof, and is easily seen. See DEW POINT, PONDING, WATERPROOF.

## **CONTACT ELEMENTS**

Adhesives\* which may be used to adhere\* or bond\* together various roofing components. The adhesive is applied to the last surfaces to be joined in a liquid state, and then allowed to dry before the surfaces are mated. The bond is formed immediately as the surfaces touch. Because contact cements form a bond immediately upon mating the surfaces, great care must be taken to assure that the membrane is positioned properly. Any attempt to lift or reposition a misaligned and cemented membrane could result in damage to the membrane and/or in poor adhesion\*. See ADHERE, ADHESION, ADHESIVE, BOND.

## **COOL ROOFS**

A generic term applied to roofs that reflect sunlight. These roofs have high albedo or

reflectivity greater than 50% for low slope roofs and 25% for steep roofs.

## **COOL ROOF RATING COUNCIL**

The Cool Roof Rating Council (CRRC)\* is a volunteer organization dedicated to the development of test standards for reflective roofs and fair equitable and consistent reporting of reflective and emissive v data for roofing products.

## **COOL ROOF SURFACES**

- A roof system that substantially reduces the heat gain caused by the sun’s energy radiated at the building. This may be accomplished by the following methods, but is not limited to them:
  - o Using a highly reflective surface
  - o Using moisture transpiration through plants
  - o Using mass with high emissivity.
- Use of highly reflective surfaces is recognized as one of the key methods for substantially reducing the heat gain in a building. These highly reflective surfaces consist of the following types, but are not limited to them, and may use other possible methods:
  - o Membrane sheet products designed to be highly reflective
  - o Coating applied in the field to produce the highly reflective surface
  - o Coats that are factory applied to membranes or metal panels
  - o Special infrared (IR) reflective materials added to the formula to allow non-white colors to be highly reflective.

## **COPING**

The covering piece on top of a wall that is exposed to the weather,

**COPOLYMERIZATION**

A chemical reaction that results in the bonding of two or more dissimilar monomers\* to produce large, long-chain molecules which are co-polymers\*. See MONOMER, POLYMER, POLYMERIZATION.

**CPA**

Abbreviation for “copolymer alloy.”\* see ALLOY

**CPE**

Abbreviation for “chlorinated polyethylene.”\*

**CREEP**

The gradual movement (i.e. deformation or stretching) of a roofing membrane or other roofing material caused by a mechanical loading or gravity. Excessive creep, especially in improperly anchored membranes, can result in the permanent deformation of the membrane material. See DEAD LOADS.

**CROSSLINK**

A chemical phenomenon by which polymers\* are cured\* or vulcanized\*. A crosslink is a chemical bond formed between the long chain molecules in the block polymer. This bond connects adjacent molecules and prevents their relative displacement (molecular slippage) when the material is stressed. See CURE, VULCANIZE.

**CRRC**

Abbreviation for the “Cool Roof Rating Council.”\* The Cool Roof Rating Council is a volunteer organization dedicated to the development of test standards for reflective roofs and fair equitable and consistent reporting of reflective and emissive v data for roofing products.

**CSM**

The designated nomenclature for “chlorosulfonated polyethylene”\* by ASTM\*D-1418

**CSPE**

A common abbreviation for “chlorosulfonated polyethylene.”\*

**CURE**

A process whereby a material is caused to form a permanent molecular linkages by exposure to chemicals, heat, or pressure. See CROSSLINK, VULCANIZE.

**DEAD LEVEL**

Absolutely flat, as in a roof deck\* or rooftop with no intentional slope to the roof drains. Essentially the same as “zero slope.” See DRAIN, PONDING, SLOPE.

**DEAD LOADS**

Permanent, non-moving rooftop loads that result from the weight of structural components, mechanical equipment, heating, ventilation, and air-conditioning units, exhausts, sprinklers, etc., as well as the various materials and the components of the roof system itself. Essentially the same as “dead weight” or “dead weight loads.” Designers and installers of roofing systems should be sensitive to the potential of both “dead” and “live loads,”\* such as snow, foot traffic, etc., on all roofing materials and components, including insulation\*, membranes, fasteners\*, etc. See LIVE LOADS.

**DECK**

The uppermost structural component of the roof system of the building. The deck must be capable of safely supporting the weight of the roof system, and the loads required by the governing building codes. Decks are either noncombustible (corrugated metal, concrete, or gypsum) or combustible (wood

plank or plywood), and provide the substrate\* to which the roofing or waterproofing assembly (including insulation\* and/or other roofing components) is applied. See ROOF SYSTEM ASSEMBLIES, SUBSTRATE.

### **DELAMINATION**

Separation of the plies in a roof membrane or system in any laminated\* roofing material or component, e.g. laminated layers of rigid insulation\* or the felt plies in a built-up roof\*. See BUILT-UP ROOF, LAMINATE, PLY.

### **DEPARTMENT OF ENERGY**

The Department of Energy's (DOE)\*overarching mission is to advance the national, economic, and energy security of the United States; to promote scientific and technological innovation in support of that mission; and to ensure the environmental cleanup of the national nuclear weapons complex.

### **DEWPOINT**

The temperature at which an air mixture is saturated with water vapor. If the temperature drops below the dew point, condensation\* will occur. For example, dew (i.e. tiny droplets of water) will form when a thin film of air, in contact with a (roof) surface, is cooled to below its dew point. If, however, both the air temperature and the dew point are below freezing, the moisture in the air will be deposited as frost. See CONDENSATION, WATERPROOF.

### **DIMENSIONAL STABILITY**

The change in length and/or width of a material that results from exposure to elevated temperatures over time. Expressed as a percent.

### **DISC FASTENERS**

A wide variety of devices of mechanical assemblies used to attach membranes and/or insulation boards to a substrate\* or deck\*. Disc attachments generally consist of a square- or circular-shaped plate with a hole in the center, through which a screw or nail-like clip may be inserted. They are generally set in place with a drill-like device. See BATTEN, MECHANICALLY FASTENED.

### **DOE**

Abbreviation for the "Department of Energy."\*

### **DRAIN**

An outlet or other device designed to capture and/or direct the flow of water from a roof. Without effective roof drainage, rainwater and/or water from refrigeration units and storage tanks, etc. could pond\*, adding considerable weight to the roof system. Further, in cold weather, the trapped water could freeze, potentially causing a loss of adhesion\* or damage to roofing materials and components. See PONDING.

### **ELASTICTY**

The property of matter by which it tends to return to its original size and shape after removal of the stress which causes a deformation. See ELASTOMER, ELASTOMERIC.

### **ELASTOMER**

Any natural or synthetic macromolecular material which, at room temperature, can be stretched under low stress and, upon immediate release of the stress, will return with force to its approximate original length. See ELASTOMERIC, ELASTOMERIC MEMBRANES.

**ELASTOMERIC**

A term generally used to describe the elastic\*, rubber-like properties of a material. See ELASTOMER, ELASTOMERIC MEMBRANES, PLASTOMERIC.

**ELASTOMERIC MEMBRANES**

A broad group of sheet materials which possess elastomeric\* or elastic rubber-like properties. Elastomeric materials and membranes may be manufactured from a variety of polymers.\* See ELASTOMER, ELASTOMERIC, PLASTOMERIC MEMBRANES.

**ELONGATION**

The ability of a roofing material to be stretched or elongated by the application of a force. See ULTIMATE ELONGATION.

**EMBRITTLEMENT**

The loss of flexibility, elasticity\*, or ductility of a material. The transition of a flexible material to a brittle material.

**ENVIRONMENTAL PROTECTION AGENCY**

An agency of the federal government of the United States charged with protecting human health and with safeguarding the natural environment.

**ENERGY STAR**

ENERGY STAR® is a government-backed program helping businesses and individuals protect the environment through energy efficiency.

**EP**

Abbreviation for “Ethylene Propylene.”\*

**EPA**

Abbreviation for “Environmental Protection Agency.”\*

**EPDM**

Designated nomenclature of ASTM\* for a terpolymer of ethylene, propylene, and a diene.

**EPDM LAP SEALANT**

A material used to caulk the exposed edge of field seams\* of EPDM\* membranes. See FIELD SEAM, SEAM, SEALANT.

**ETHYLENE INTERPOLYMERS (EIP)**

A group of thermoplastic\* compounds generally based on PVC\* from which flexible roofing membranes can be formulated.

**ETHYLENE/PROPYLENE**

A copolymer of polyethylene and polypropylene. See also TPO.

**ETHYLENE PROPYLENE DIENE TERPOLYMER (EPDM)**

An elastomeric\* material synthesized from ethylene, propylene, and small amounts of diene monomer. EPDM is widely used in flexible roofing membranes. It may also be used alone or in EPDM/butyl\* blends\*. See ELASTOMERIC MEMBRANES.

**EXTRUSION**

A manufacturing process which consists of forcing molten polymers\* through an orifice called a “die.” The shape and dimensions of the die orifice determine the shape and dimensions of the finished product. Extrusion is one method by which flexible roofing membranes may be manufactured. See CALENDERING, CAST SHEETING, SPREAD COATING.

**FABRIC**

Different kinds of woven or knitted cloths of treated or non-treated organic\* or inorganic\* fibers used for reinforcement\* in certain membranes, assemblies, and flashing



materials. See REINFORCEMENT, SCRIM.

### **FACTORY MUTUAL (FM GLOBAL)**

FM Global is a group of insurance companies which insures large industrial and commercial properties in the U.S., Canada and other areas of the world. Among the many services provided by FM is assistance in the prevention of fire, explosion, accidents, and other hazards. This is accomplished, in part, by fire prevention programs, inspections, research, consultation, and the setting of standards. Also, Factory Mutual tests and classifies roof assemblies and components based on their fire characteristics, and resistance to wind uplift and hail damage.

### **FACTORY SEAM**

A splice\* made by the manufacturer during the assembling of narrow width material into large sheets. See FACTORY SEAM STRENGTH.

### **FACTORY SEAM STRENGTH**

The force required to cause a seam (created by the membrane supplier) to fail in peel or shear. Expressed in units of force or force per unit area, or as a percentage of the strength of the sheet itself.

### **FASTENERS**

Any of a wide variety of mechanical fastening devices and assemblies, including clips, screws, or bolts, which may be used to secure battens\*, discs\*, termination bars, and wood nailers\* to the deck or other suitable substrate.

### **FIELD SEAM**

A splice\* made in the field which joins two sheets together using an adhesive\*, splicing tape\*, or heat-\* or solvent-welding\*. See FACTORY SEAM.

### **FISHMOUTH**

A half-cylindrical or half-conical shaped opening or void in a lapped edge or seam\* of a membrane, usually caused by wrinkling, or discontinuities in solvent-\* or heat-welding\*, or adhesive\* application. Repairs may be easily made by cutting the defect and applying the patch.

### **FLAMMABILITY**

The characteristics to burn or support combustion. Although some flexible membranes possess a considerable degree of inherent fire resistance, all organic\* materials will burn under the right condition of heat and oxygen supply. They should not, therefore, be exposed to direct flame or extreme heat. Also, before architects, material specifiers, owners, or roofing contractors specify or install a given membrane or other roofing material, they should carefully consider its flammability, and any specific applicable building costs. See FACTORY MUTUAL, UNDERWRITERS LABORATORIES.

### **FLASHING**

The materials and/or systems used to connect and seal the edges of a roofing membrane to the other building components with which it intersects. For example, flashing is used at walls, expansion joints, drains\*, terminations\*, gravel stops\*, and other areas where the membrane is cut, edged, or otherwise interrupted. The increasing use of flexible membranes has led to the development of new and innovative flashing materials and systems which are specifically designed for membrane systems.

### **FLEECE**

Mats of felt composed of fibers (usually non-woven polyester fibers) used as a membrane backer or separator sheet.

**FLEXIBLE MEMBRANES**

Roofing membranes that are field applied using prefabricated sheets of membrane material (either homogeneous or composite). The manufacture of the membrane sheets may involve lamination\* or fabrication of multiple layers of the same or different materials. See MEMBRANE, FLEXIBLE MEMBRANE ROOFING, ROOF SYSTEM ASSEMBLIES. Also see BUILT-UP ROOFING (BUR).

**FLEXIBLE MEMBRANE ROOFING**

A roofing system in which the principal roofing component is a flexible membrane of thermoset\*, thermoplastic\*, or modified bituminous\* compounds. See ROOF SYSTEM ASSEMBLIES.

**FM**

Abbreviation for Factory Mutual.

**GLASS FIBER MAT**

A thin mat\* of glass fibers bonded into a sheet with a resinous binder. This mat serves as reinforcement\* to the membrane.

**GRAVEL STOP**

A low upward-projecting edge, usually formed from sheet or extruded metal, installed along the perimeter of a roof to prevent gravel or other small or lightweight aggregate\* from being blown or washed off. The gravel stop also serves as a point of termination\* for the roofing system. See BALLAST.

**HARDNESS**

The ability of a membrane or other material to resist indentation resulting from pressure or impact. See COMPRESSION, COMPRESSIVE STRENGTH, IMPACT RESISTANCE.

**HEAT AGING**

Controlled exposure to elevated temperatures over time.

**HEAT WELDING**

A process or method of melting and sealing or fusing together the overlapping edges of separate sections of thermoplastic or uncured elastomeric roofing membranes by the application of heat and pressure. Small, portable “hot air” or heat welding” devices are available which can, without the use of chemicals or adhesives\*, heat seal or fuse together overlapping edges to form waterproof seams. See LAP, SEAM, SOLVENT WELDING.

**HVAC**

Abbreviation for Heating, Ventilation, and Air Conditioning.

**HYDROCARBON**

Any of a large number of organic\* compounds which are based primarily on carbon and hydrogen atoms, such as ethylene, benzene, etc. Petroleum and petroleum products are mixtures of numerous hydrocarbons. See INORGANIC, ORGANIC.

**HYGROSCOPIC**

A term which describes a membrane or other roofing material or component which attracts, absorbs, or retains moisture from the air. See WATER ABSORPTION.

**HYPALON®**

A registered trademark of E.I. DuPont de Nemours, Inc., for “chlorosulfonated polyethylene”\* (CSPE).

**ICBO**

Abbreviation for “International Conference of Building Officials.”

**ICC**

Abbreviation for “International Code Council.”\*

**ICC-ES**

Abbreviation for “International Code Council Evaluation Service.”\*

**IMPACT RESISTANCE**

The ability of a roofing material to resist damage (e.g. puncturing) from falling objects, application equipment, foot traffic, etc. The impact resistance of the roofing assembly is a function of all of its components, not just the membrane itself. See COMPRESSIVE STRENGTH, HARDNESS.

**IMPREGNATE**

A term used to describe the process of coating, saturating, or surrounding the fibers of a reinforcing mat\* or fabric\* with an elastomeric\* or other enveloping material. See FABRIC, MAT, SCRIM.

**INORGANIC**

Any chemical or compound which is derived from minerals, does not contain carbon, and is not classified as organic;\* being or composed of materials other than hydrocarbons\* and their derivatives; not of plant or animal origin. See HYDROCARBON, ORGANIC.

**INSULATION**

Any of a variety of materials designed to reduce the flow of heat, either from or into a building. Insulating materials are generally installed either just below or immediately above the roofing membrane, depending on the roofing system employed. Currently, rigid or semi-rigid boards or panels of extruded or expanded polystyrene, polyisocyanurate, fiberboard, and various composite insulations are among the most popular and widely used insulating materials

in a flexible membrane roofing systems. See INVERTED ROOF MEMBRANE ASSEMBLY, PROTECTED MEMBRANE ROOF ASSEMBLY.

**INTERNATIONAL CODE COUNCIL**

The International Code Council, (ICC)\* a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools.

**INTERNATIONAL CODE COUNCIL – EVALUATION SERVICE**

ICC-ES\* is the United States’ leader in evaluating building products for compliance with code. A nonprofit, public-benefit corporation, ICC-ES does technical evaluations of building products, components, methods, and materials. The evaluation process culminates with the issuance of reports on code compliance, which are made available free of charge to code officials, contractors, specifiers, architects, engineers, and anyone else with an interest in the building industry and construction. ICC-ES evaluation reports provide evidence that products and systems meet code requirements.

**INVERTED ROOF MEMBRANE ASSEMBLY (IRMA™)**

A patented variation of the “Protected Membrane Roof Assembly,”\* in which STYROFOAM® Brand Insulation and ballast are placed over the membrane. See ROOF SYSTEM ASSEMBLIES.

IRMA™ and STYROFOAM® are registered trademarks of the Dow Chemical Company.

**ISOCYANURATE FOAM**

Thermoset plastic expanded with blowing agents to form a foam insulation. Typically

used as a board stock with facers to provide thermal insulation and a substrate for roof membrane materials.

### **JOINT**

See SEAM

### **LAMINATE**

To bond\* together, usually with the application of heat and/or pressure, two or more layers or plies\* of a material to make a finished product. Scrim\*, fibers, or mats\*, may be introduced between the two components being laminated to serve as reinforcement in the finished sheet. See DELAMINATION.

### **LAP**

That part of a roofing membrane which overlaps or covers any portion of another section of membrane which is then sealed to form a watertight connection. See CONTACT CEMENTS, FIELD SEAM, HEAT WELDING, SOLVENT WELDING, SEAM.

### **LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN**

The Leadership in Energy and Environmental Design (LEED)\* Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

### **LEED**

Abbreviation for "Leadership in Energy and Environmental Design."\*

### **LIVE LOADS**

Temporary loads which the roof system must be designed to support, as required by governing building codes. Live loads are generally moving and/or temporary, such as people, installation equipment, wind, snow, ice, or rain. See DEAD LOADS.

### **LOOSELY LAID MEMBRANES**

Membranes which are not attached to the substrate except at the perimeter of the roof. Loosely laid membranes are held in place with appropriate and adequate ballast\*, such as round river washed stone, gravel\*, pavers, etc. This assembly may only be used on roof structures able to support the added weight of the ballast, which is generally applied at the rate of 10 pounds per square foot of roof area. See DEAD LOADS, ROOF SYSTEM ASSEMBLIES.

### **LOW TEMPERATURE FLEXIBILITY**

The ability of a membrane or other material to remain flexible (resist cracking when flexed), after it has been cooled to a low temperature. Low temperature flexibility is important, especially in a membrane which is to be installed during the winter and in a cold climate. See LOW TEMPERATURE RESISTANCE.

### **LOW TEMPERATURE RESISTANCE**

The lowest temperature at which a material does not fracture or crack under prescribed impact and flexing conditions. Expressed in °F or °C. See LOW TEMPERATURE FLEXIBILITY.

### **MASTIC**

A sealant that has a "non-sag" consistency to prevent the material from flowing away from the joint or surface to which it is

applied. Mastics are usually applied using a standard caulking gun, trowel, or knife. See SEALANT.

### **MAT**

A thin layer of woven, non-woven, or knitted fiber which serves as reinforcement to the membrane. See GLASS FIBER MAT.

### **MB**

Abbreviation for “Modified Bitumen.”\*

### **MECHANICALLY FASTENED MEMBRANES**

Generally used to describe roofing membranes which have been positively attached at intervals to the substrate,\* usually with various fasteners\* and other mechanical devices such as battens\*. Mechanical fastening makes it possible to install membranes over certain substrates,\* such as gypsum or lightweight concrete fills, which may not accept adhesive\* or heavy ballasting\*. Mechanical fastening permits the membrane to float free between the fasteners, and allows greater movement between the membrane and the substrate than in adhered systems. See ROOF SYSTEM ASSEMBLIES.

### **MEMBRANE**

A continuous flexible sheet of thermoset\*, thermoplastic\*, or modified bituminous\* material, which functions as the weather- and water-proofing element of a roof assembly. See FLEXIBLE MEMBRANE ROOFING, ROOF SYSTEM ASSEMBLIES.

### **METAL FILM**

A layer of foil made from a single metallic substance or from an alloy\*. This foil, when used in a modified bitumen roofing membrane\* is laminated\* to the membrane at the factory. It serves as the weathering surface of the membrane, providing

strength, reflectivity\*, and ultraviolet\* protection.

### **MICA DUST**

See TALC.

### **MICROBIOLOGICAL RESISTANCE**

The ability of a roofing membrane or other material to resist attack and degradation by various air- and soil-borne microorganisms. Typically, fungicides are added to certain compounds to render them not susceptible to microbiological decay.

### **MICRON**

A unit of linear measure equal to one millionth of a meter, or one thousandth of a millimeter. Often used to indicate the thickness of a very thin sheet or film (25,400 microns = 1/100 inch = 1 mil\*). See MIL, MILLIMETER.

### **MIL**

A unit of measure used to indicate the thickness of a roofing membrane. One mil is equal to .001 inches or 25,400 microns.\* See MICRON, MILLIMETER.

### **MILLIMETER**

A unit of measure equal to one thousandth of a meter or 0.03937 inches. See MIL, MICRON.

### **MODIFIED BITUMEN**

A material consisting of bitumen which has been modified through the insulation of one or more polymers\* and may contain stabilizers and other additives. Modified bitumen roofing membranes also typically contain a reinforcing material.

### **MODULUS**

A measure of a material's stiffness. Since polymeric materials do not exhibit traditional elastic behavior, the modulus is not a constant. For a polymeric material, the

modulus as the tensile stress required at a given elongation. Expressed as force per unit area at a given percent elongation.

### **NAILER**

A piece of dimension lumber or plywood secured to the structural deck or walls, which provides a receiving medium for the fasteners used to attach membrane or flashing. Nailers must be the same thickness as the insulation, and should be treated with a non-oil borne preservative,

### **NIGHT SEAL**

A material used to temporarily seal a membrane edge during construction to protect the roofing assembly in place from water penetration.

### **NITRILE ALLOY**

An elastomeric\* material of synthetic non-vulcanizing polymers\*. These alloys are generally compounded from butadiene-acrylonitrile copolymers\* (NBP), PVC\*, plasticizers\*, and other proprietary ingredients.

### **NITRILE RUBBER**

A membrane whose predominant resinous ingredient is a synthetic rubber made by the polymerization\* of acrylonitrile with butadiene; also known as acrylonitrile rubber, acrylonitrile-butadiene rubber, butadiene-acrylonitrile copolymer elastomer, nitrile-butadiene rubber.

### **NON-VULCANIZED MEMBRANE**

A membrane manufactured from thermoplastic\* compounds that retains its thermoplastic properties throughout the life of the membrane.

### **NONWOVEN**

A term used to describe the random arrangement of reinforcing\* fibers (glass, polyester, etc.) in a mat\* or scrim\*. See

**FABRIC, IMPREGNATED,  
REINFORCED MEMBRANE, SCRIM.**

### **NRCA**

Abbreviation for “National Roofing Contractors Association.”

### **OPEN TIME**

After a contact adhesive\* has been applied and allowed to dry, the period of time during which an effective bond\* can be achieved by joining the two surfaces.

### **ORGANIC**

Any chemical or chemical compound which is composed of or which contains carbon. See HYDROCARBON, INORGANIC.

### **OZONE RESISTANCE**

The ability of a flexible membrane to resist the deteriorating effects of ozone exposure.

### **PARTIALLY ATTACHED**

A roofing assembly in which the membrane has been “spot affixed” to a substrate\*, usually with an adhesive\*, such as contact cement\*, or a mechanical device. See ROOF SYSTEM ASSEMBLIES.

### **PEEL STRENGTH**

The average force (or force per unit width) required to peel a membrane from the substrate\* to which it has been bonded.\*

### **PERM**

A unit of water vapor transmission\* defined as 1 grain of water per square foot per hour per inch of mercury pressure difference (1 inch of mercury = 0.491 psi). See VAPOR RETARDER.

### **PIB**

Abbreviation for “polyisobutylene.”\*

**PIPEBOOT**

Prefabricated flashing\* used to flash around circular pipe penetrations. See FLASHING.

**PITCH POCKET**

An enclosure made of sheet metal, rubber, or other material, used to flash penetrations through a roof system. The flanges of a container are flashed to the roof membrane, the container partially filled with concrete or other inert filler, and topped with a pourable sealer\* to form a watertight seal. The term “pitch pocket” is carried over from the early BUR industry practice of filling these containers with coal tar pitch, because pitch would liquefy and “self heal” during warm weather.

**PLASTIC FILM**

A flexible sheet made by the extrusion\* of thermoplastic\* resins. When used in a modified bitumen roofing membrane, the plastic film may be used on the outer surfaces of the membrane to prevent the membrane from sticking to itself when in the roll; or the film can be used as an integral layer within the membrane serving as reinforcement.\*

**PLASTICIZER**

A chemical substance (e.g. an organic\* compound) added to natural or synthetic resins for the purpose of increasing flexibility, and facilitating processing and workability. See ELASTOMERIC, PLASTOMERIC.

**PLASTIC**

Any of a large group of synthetic materials, usually produced by the polymerization\* of various organic\* compounds, which can be formed (i.e. molded, cast\*, extruded\*, etc.) into flexible sheets or membranes. See ELASTOMER, PLASTOMERIC, POLYMER.

**PLASTOMERIC**

A term used to describe any of a large group of plastic\*-based materials, possessing elastic, rubber-like properties. See ELASTOMERIC, PLASTOMERIC MEMBRANES.

**PLASTOMERIC MEMBRANES**

A broad group of plastic\*-based materials in sheet form, which possess elastomeric\* properties. Plastomeric materials may be manufactured from a variety of polymers\*, including various compounds and/or blends or alloy. See ELASTOMERIC MEMBRANES.

**PLY**

A single layer or thickness of a roofing material used to construct a roofing membrane; sometimes used to refer to the membrane itself. See MEMBRANE, FLEXIBLE MEMBRANE ROOFING.

**PLY LAMINATE STRENGTH**

In a laminated\* sheet, the force required to separate the coating from the reinforcing\* or non-reinforcing fabric\* when peeled in a 180° plane. Expressed as pounds force per prescribed width of sample.

**PMRA**

Abbreviation for “Protected Membrane Roof Assembly.”\* See ROOF SYSTEM ASSEMBLIES.

**POLYESTER**

A polymeric\* resin which is generally crosslinked\* or cured,\* and made into a variety of plastic\* materials and products. Polyester fibers are widely used as the reinforcing medium in reinforced\* flexible membranes as they provide high tensile strength\* and tear resistance\*. See IMPREGNATED, NONWOVEN, REINFORCED MEMBRANE, SCRIM.

**POLYISOBUTYLENE (PIB)**

A thermoplastic\* compound produced by the copolymerization\* of isobutylene and isoprene. PIB roofing membranes are composed of polyisobutylene, and various other reinforcing fillers and stabilizers. See ELASTOMERIC MEMBRANES.

**POLYMER**

A natural or synthetic chemical compound of high molecular weight, or a mixture of such compounds, formed when small individual molecules called monomers, are combined and linked together to form long-chain molecules, called *polymers*. See ELASTOMER, PLASTOMER, POLYMERIZATION.

**POLYMERIC ALLOYS**

A physical blend of two or more polymers\*, combined to modify a given physical property, e.g. tensile strength\*.

**POLYMERIZATION**

The process whereby single molecules, called *monomers*, are combined to form large, chainlike molecules, called *polymers*\*. Heat, pressure, and/or chemicals may be used to “trigger” this process, which depending on the raw materials used, can produce a wide variety of plastics\* and synthetic rubbers\*, a number of which are used in the fabrication of flexible roofing membranes. See ELASTOMER, ELASTOMERIC, PLASTOMERIC, POLYMER.

**POLYVINYL CHLORIDE (PVC)**

A thermoplastic\* polymer\*, synthesized from vinyl chloride monomer. Membranes containing polyvinyl chloride are used in a flexible membrane roofing systems. See PLASTOMERIC MEMBRANES, THERMOPLASTIC.

**PONDING**

The surface accumulation of rainwater and/or water from refrigeration units, storage tanks, etc., in low lying or poorly drained areas of a roof. If ponding is excessive, the weight may result in a load which exceeds the design capacity of the structure. See DEAD LEVEL, LIVE LOADS, SLOPE.

**POURABLE SEALER**

A specific type of sealant\* used at difficult-to-flash penetrations, typically in conjunction with “pitch pockets”\* to form a weather tight seal. See SEALANT.

**PRIMER**

A material which is sometimes used in the process of seaming\* flexible membranes to increase the strength (in shear\* and peel\*) of the field splice.\* See FIELD SEAM.

**PROTECTED MEMBRANE ROOF ASSEMBLY (PMRA)**

A loosely laid, insulated, and ballasted single-ply roofing assembly, in which the insulation and ballast are applied on top of the membrane. Sometimes called an “inverted assembly” or an “upside down roof.” See INSULATED ROOF MEMBRANE ASSEMBLY (IRMA), ROOF SYSTEM ASSEMBLIES.

**PVC**

Abbreviation for “polyvinyl chloride.”\*

**RCI**

Abbreviation for “Roof Consultant Institute.”\*

**REFLECTIVITY**

The ability of a material to reflect or “throw back” light, heat, etc. In an air-conditioned building, the reflectivity of a membrane may provide an energy savings.



**REINFORCED MEMBRANE**

A membrane which has been strengthened by the addition or incorporation of one or more reinforcing materials, including woven or non-woven\* glass fibers, polyester\* mats or scrim, nylon, or polyethylene sheeting. See IMPREGNATE, MEMBRANE, POLYESTER, SCRIM.

**RICOWI**

Abbreviation for "Roofing Industry Committee on Weather Issues."\*

**ROOF CONSULTANT INSTITUTE**

**RCI, Incorporated** is an international association of professional consultants, architects, and engineers who specialize in the specification and design of roofing, waterproofing and building envelope systems.

**ROOF SYSTEM ASSEMBLIES**

There are six major types of flexible membrane roofing system assemblies.

These are:

- 1) Loosely Laid\*
- 2) Self-Adhesive\*
- 3) Partially Adhered\*
- 4) Totally Adhered\*
- 5) Mechanically Fastened\*
- 6) Protected Membrane Roof Assembly

See each of the six types under their individual headings.

**ROOFING INDUSTRY COMMITTEE ON WEATHER ISSUES**

Established in 1990 as a non-profit organization to identify and address important technical issues related to the cause of wind damage.

**RUBBER**

A polymeric\* material which, at room temperature, is capable of recovering substantially in shape and size after removal

of a force. Refers to both synthetic and natural rubber. See ELASTOMER.

**SBS**

Styrene Butadiene Styrene\*, rubber used as a modifier for bitumen membranes.

**SCRIM**

A woven, non-woven, or knitted fabric\*, composed of continuous strands of material used for reinforcing\* or strengthening flexible membranes. Scrim may be incorporated into the membrane by laminating\* or coating. See IMPREGNATE, LAMINATE, MEMBRANE, POLYESTER, REINFORCED MEMBRANES.

**SEALANT**

A single- or multi-component polymeric\* or asphalt\*-based material used to weatherproof many types of construction joints. The materials come in various grades; pourable, self-leveling, non-sag, gun-applied, and cured\* or uncured tapes. Sealants are used in membrane roofing systems for lap seam sealers, pitch pocket\* fillers, and water cut-off mastics\*.

**SEAM**

A joint formed by mating together two separate sections of roofing membrane. Seams may be sealed in a variety of ways, including hot-air welding\*, solvent welding\* and liquid or tape adhesive bonding\*. Regardless of the method used, however, all seams should be permanently joined together to assure watertight integrity and to be able to withstand all strains and stresses variously caused by application, wind uplift\*, installation equipment and foot traffic. See ADHESIVE, HEAT WELDING, LAP, SOLVENT WELDING.

**SEAM STRENGTH**

The force or stress required to separate or rupture a seam\* in the membrane material. See SEAM.

**SEAM TAPE**

Polymeric material supplied in rolls, used to bond overlapping membrane seams together.

**SELF-ADHESIVE MEMBRANES**

Flexible membranes which can adhere to a substrate\* and to itself at overlaps without the use of an adhesive\*. The undersurface of a self-adhesive membrane is protected by a “release paper,” which prevents the membrane from bonding\* to itself during shipping and handling. Later, as the membrane is unrolled, the release paper is peeled away, and the self-adhering undersurface is applied to the substrate. Successful application of a self-adhesive membrane requires a clean and dry substrate and the application of firm, uniform pressure. See MODIFIED BITUMEN MEMBRANES, FLEXIBLE MEMBRANE ROOFING.

**SELF-VULCANIZED MEMBRANE**

A membrane manufactured from compounds that are thermoplastic\* during manufacture and installation. The base materials are compounded so that the polymers\* eventually form crosslinks\* within their bulk structure and become cured\* and lose their thermoplastic properties. See CHLOROSULFONATED POLYETHYLENE, CURE, CROSSLINK.

**SELVAGE**

A specifically defined edge of a membrane, which is designed for some special purpose, such as overlapping. For example, the edge of a scrim\*-reinforced membrane which has been encapsulated with the polymeric\* material extending beyond the edge of a fabric.

**SHEAR STRENGTH**

The stress (pounds or pounds per inch width) required to disrupt a lap seam\* or bonded joint\* or attachment by forcing the substrates to slide over each other. See PEEL STRENGTH.

**SHEET MEMBRANE**

A roofing membrane fabricated in a controlled factory environment. It is waterproof and weather resistant. It may be a laminate of one or more materials and may or may not contain reinforcing fabrics.

**SINGLE PLY**

A term often applied to sheet membranes.

**SLIP SHEET**

Sheet material, such as reinforced kraft paper, polyester scrim\*, or polyethylene sheeting, placed between two components of a roofing system (such as membrane\* and insulation\*) to ensure that no adhesion\* occurs between them, and to prevent possible damage from chemical incompatibility.

**SLOPE**

The angle of inline of a roof surface as measured in “degrees,” in a “ratio of fall to run,” or in “inches of fall to run.” For example, a roof with a drop or fall of up to ½ inch per foot is generally regarded as a “level slope” roof; a drop or fall of ½ to 1-1/2 inches per foot is a “low slope” roof, and a drop of more than 1-1/2 inches per foot is a “steep slope” roof. Slope is a factor in roof system design with regard to the ability of the roof to retain gravel,\* and shed water. Slope, if desired, can be built into a flat roof through the use of tapered insulation.

**SOLVENT CLEANERS**

Heptane, hexane, white gas, and unleaded gas, used to clean the membrane prior to

applying the splicing adhesive\* in some flexible membrane roofing systems.

### **SOLVENT WELDING**

A process used to chemically weld or join together two or more layers of certain membrane materials (usually thermoplastic\*), by applying a solvent, such as tetrahydrofuran or THF, to the overlapping surfaces and mating them when the bonding surfaces become tacky. Used most often in welding or sealing seams. See HEAT WELDING.

### **SPLICE**

See SEAM.

### **SPLICE TAPE**

Polymeric material supplied in rolls, used to bond overlapping membrane seams together.

### **SPREAD COATING**

A manufactured process in which the compound (plastisol) is prepared in mixers and then fed to individual coaters. The mixture is cold until after it is spread onto the supporting base (reinforcement\*). After coating, the membrane passes through a heating channel which causes it to change from a paste to a solid. See CALENDERING, EXTRUDING.

### **SPUNBOUND POLYESTER MAT**

Continuous filament, uniformly dispersed polyethylene terephthalate fiber mat\*. A binder is used to stabilize the mat, which serves as reinforcement\* to the membrane. See SCRIM.

### **STABILIZER**

An ingredient in the formulation of flexible membranes added to improve certain physical properties which are important for processing, storage, workability, and performance.

### **STRAIN**

The dimensionless expression for the elongation\* of a material under stress. Strain is expressed as the ratio of elongation per unit length.

### **STRESS**

The internal resistance of a material to a force, measured as a force per unit area.

### **STRIP FASTENER**

See BATTEN

### **STYRENE-BUTADIENE RUBBER**

High molecular weight polymers\* having rubber-like properties, formed by the random copolymerization\* of styrene and butadiene monomers. Polymers of this type are often crosslinked\* to give maximum rubber-like properties in service. These polymers are sometimes used as the modifying compound in certain modified bitumen roofing membranes\*.

### **STYRENE-BUTADIENE-STYRENE COPOLYMER (SBS)**

High molecular weight polymers\* which have both thermoset\* and thermoplastic\* properties, formed by the block copolymerization\* of styrene and butadiene monomers. The three block copolymer formed has a center block of butadiene with end blocks of styrene. These polymers are sometimes used as the modifying compound in certain modified bitumen roofing membranes\*.

### **SQUARE**

An area of roof surface equal to 100 square feet.

### **SUBSTRATE**

The upper surface of the roof deck, insulation\*, or other roofing structure upon which a roofing membrane or other component of the roofing system is placed

or to which it is attached. Both the successful attachment of the roofing membrane to the substrate, and the ability of the membrane to remain in place throughout its service life, are critical to the performance of the entire roof system. For this reason, most flexible membranes are designed to accommodate a variety of substrate surfaces and materials, including structural concrete, plywood, insulation boards, etc. Compatibility between the substrate and the immediate overlying component must always be ensured.

### **SUMP**

A depression in the surface of a roof around the opening to a drain,\* which serves to promote drainage. See DEAD LEVEL, PONDING.

### **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 flexible roofing membranes. See ELASTOMERIC MEMBRANES, POLYMER.

### **TALC**

The white powder present on the surface of vulcanized\* EPDM\* membranes, used to prevent adhesion of the membrane to itself, necessary in the manufacturing process of some sheets. The same purpose can also be served by the use of mica dust\*.

### **TEAR RESISTANCE**

The load required to tear a material when the stress is concentrated on a small area of the specimen by the introduction of a prescribed flaw. Expressed in psi or pounds-force.

### **TENSILE FATIGUE RESISTANCE**

The ability of a given membrane material to resist “fatigue” and/or other damage (such as loss of elasticity\*) caused by the alternate stretching and relaxing of the material over a long period of time. See TENSILE STRENGTH, ULTIMATE ELONGATION.

### **TENSILE STRENGTH**

The maximum force or stress required to break a membrane sample during a tensile test. For non-reinforced membranes, strength is reported as a stress (pounds per square inch, or psi); for reinforced\* membranes, strength is reported as a force (pounds, or pound-force/inch).

### **TERMINATION**

The treatment or method of anchoring the free edges of the membrane in a roofing system. See FLASHING, GRAVEL STOP.

### **THERMAL SHOCK**

The dynamic stress imposed on a membrane due to a sudden or very rapid change in the temperature of the membrane, as for example, when a cold rain follows a period of bright sunshine. In some climates, some degree of thermal stress may be caused by the simple setting of the sun, especially where the temperature differential between daytime and nighttime may be as great as 45° to 50° or more.

### **THERMOPLASTIC**

Polymers\* which soften when heated and harden when cooled. This process is repetitive provided the material is not heated above the point at which decomposition occurs. See THERMOSET.

### **THERMOPLASTIC ELASTOMERS**

Compounds formulated from materials traditionally used for vulcanized\* rubber. Curing agents\* are controlled in the compound so crosslinking\* does not occur, and the final product exhibits the properties

of a thermoplastic\* material. See  
NONVULCANIZED MEMBRANE.

**THERMOPLASTIC POLYOLEFIN**

A membrane made from a copolymer or blend of polyethylene and polypropylene polymers.

**THERMOSET**

A material that solidifies or “sets” irreversibly when heated. This property is usually associated with crosslinking\* of the molecules induced by heat or radiation. See THERMOPLASTIC.

**TOTALLY ADHERED**

A roofing assembly in which a membrane has been fully adhered\* to a substrate\*, usually with the aid of an appropriate contact\* or water-based adhesive\* or emulsion. Totally adhered membranes are often installed on roofs which, because of their slope, construction, or other factors, cannot support adequate ballast\*, or into which mechanical attachment is difficult. See BALLAST, MECHANICALLY FASTENED, PARTIALLY ADHERED, ROOF SYSTEM ASSEMBLIES.

**TPO**

Abbreviation for “Thermoplastic Polyolefin.”\*

**UL**

Abbreviation for “Underwriters Laboratories.”\*

**UL LABEL**

An identification label or seal attached to a roofing component with the authorization of Underwriters Laboratories\*. The presence of the label indicates that the product has a given rating based on performance tests for such products.

**ULTIMATE ELONGATION**

The amount a membrane sample stretches during tensile testing before it ruptures. Usually expressed as a percentage of the original length.

**ULTRAVIOLET (UV)**

Ultraviolet radiation from the sun is known to be potentially damaging to certain chemical compound such as those used in roofing membranes. Formulations with stabilizers\* and UV absorbers effectively inhibit the potentially deleterious effects of UV exposure.

**UNDERWRITERS LABORATORIES (UL)**

An independent, nonprofit agency which function as the testing arm of the National Board of Fire Underwriters. It maintains laboratories for the examination and testing of various devices, systems, and materials to determine their safety against the hazards of fire and accident. UL is organized around a number of separate departments, including “Chemical Hazards,” “Electrical Hazards,” and “Fire Protection.” See FACTORY MUTUAL.

**UV**

Abbreviation for “ultraviolet.”\*

**VAPOR RETARDER**

Sheet material installed to impede or restrict the passage of water vapor through a roofing assembly. Normally, a vapor retarder has a perm\* rating of 0.5 or less. See PERM.

**VEGETATIVE ROOF**

- A roof system designed to grow and nurture plants
- Types of integrated vegetative roof systems:
  - o Conventional – Growth Media spread over the roof surface into which plants are placed or seeds are spread. Depths range from 2 to 8

inches for extensive systems and 8 inches and above for intensive systems (ASTM may be at 6” – Tim McFarland is checking).

- o Vegetative mats – Pregrown Growth Media in a matrix that allows the vegetation to cut into sections and to be handled in strips similar to sod to cover the roof.
- o Module Systems – Systems that incorporate trays that may be formed to have the drainage system and moisture retention methods molded into the tray which carries the Growth Media and plants. These assembled trays, termed modules, are placed on the roof generating a continuous vegetative cover.

Components of the vegetative roof systems – System may consist of, but are not limited to, the following components:

- o Plants
- o Growth media
- o Filter fabric
- o Drainage layer
- o Root barrier
- o Insulation
- o Roof surface protect mat or board
- o Waterproofing system.

### **VULCANIZATION**

Any of various processes by which natural or synthetic rubber\* or other polymeric\* materials may be cured\* or otherwise treated (i.e. exposed to chemicals, heat, or pressure) to render them non-thermoplastic\*, and which improves their elastic\* properties through this chemical change. See CURE.

### **WATER ABSORPTION**

The amount of water absorbed by a material after immersion for a prescribed period of time. Expressed as a percentage of the original weight of the material.

### **WATER CUT-OFF MASTIC**

A thermoset\* material used to form a seal between membrane sheets at indicated termination points. See MASTIC.

### **WATER VAPOR TRANSMISSION**

A measure of the rate of transmission of water vapor through the membrane material under controlled laboratory conditions of temperature and humidity.

### **WATERPROOF**

The quality of a membrane, membrane material, or other component which prevents water from entering the roofing system. See DRAIN, FLASHING, PONDING, WATER ABSORPTION.

### **WIND UPLIFT**

Wind that is deflected at roof edges, roof peaks or obstructions can cause a drop in air pressure immediately above the roof surface. The resultant force is transmitted to the roof surface and is called wind uplift. The force can lift roof membranes from the roof deck if the membrane is not adequately secured. A source of air beneath the membrane is required to provide pressure which can result in uplift. Uplift may also occur because of the introduction of wind underneath the membrane and roof edges, where it can cause the membrane to balloon and pull away from the deck. Roof loss by wind can be avoided by proper installation and adequate adhesion, attachment or ballasting. See ADHESION, BALLAST, BATTEN, MECHANICALLY FASTENED.