

Building Envelope Products

IKO is well-known as a manufacturer of excellent roofing materials. Just as IKO products have protected roofs around the world for decades, IKO realised many years ago that their expertise in insulations and membranes could also help building owners in the building envelope arena. Since building designs and purposes vary widely, IKO offers both “breathable” (Ener-Air) and “nonbreathable” (Enerfoil) insulations. Both products are polyisocyanurate, the insulation of choice for most specifiers since it offers the greatest thermal properties per unit thickness of all commercially available insulation options.

To complement the insulating layer in the building envelope, IKO also offers a companion line of membranes. AquaBarrier has grown to become a trusted brand name in building envelope technology. IKO integrates the time-proven waterproofing characteristics of premium grades of asphalt with state-of-the-art polymer technology. The result is a modified bitumen formulation with performance driven physical properties. These AquaBarrier modified bitumen membranes exhibit enhanced low-temperature flexibility, elongation and moisture resistance. The results of this combination of history and technology are self-evident — building envelope and below-grade membranes with superior resistance to aging and weathering. Our membranes are strong, yet flexible enough to accommodate thermal and mechanical stresses.

And where needed for complete wall coverage, AquaBarrier membranes are available in non-permeable and vapour-permeable grades. For below-grade waterproofing needs, a torch-grade AquaBarrier product is available. AquaBarrier Tapes perfectly handle the joints in the insulation layer and other necessary detail areas. All IKO building envelope products are engineered to meet, or exceed, industry standards for high performance. Other IKO building envelope accessory products complete the system and include adhesives, primers, detail mastics and protection boards to protect critical below-grade membranes.

Glossary of Terms Used in this Manual

(Glossary courtesy of Canadian Roofing Contractors Association (CRCA). Note: IKO's terminology may differ from that used by CRCA. IKO's terminology as stated in this manual shall take precedence over those expressed by CRCA.)

A

Adhesive: A cementing substance that produces a steady and firm attachment or adhesion between two surfaces. Adhesion is measured in shear and peel modes.

Air barrier: An assembly or building element that provides resistance to through-flow of air from inside to outside and vice versa.

Air leakage: The movement of air through spaces between constituent parts of a roof system or other enclosure element as a result of air-pressure differences between one and the other side.

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

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

Asphalt mastic: A mixture of asphaltic material and graded mineral aggregate that can be poured when heated, but requires mechanical manipulation to apply.

B

Blowing agent: A compounding ingredient used to produce gas by chemical or thermal action, or both, in the manufacture of hollow or cellular products.

Board/block insulation: Rigid insulation preformed into rectangular units having a degree of suppleness. The boards may be of homogeneous material or of composite construction.

Bond:

1. To hold together two components by means of an adhesive.
2. The adhesive strength that prevents delamination of two components.

Butt Joint: A joint formed by adjacent, separate sections of material, such as where two neighbouring pieces of insulation abut.

C

Caulking: Any of a wide range of bituminous, rubber, plastic or other materials suitable for filling seams or cracks to make them tight against water leakage and remain plastic for an extended time after application. See sealant.

Cement: A substance used to make objects adhere to each other.

Compression: The decrease in length produced in a test specimen during a creep test. This term commonly applies to insulation boards or blocks.

Condensation: The conversion of water vapour to other gas or liquid phases as the temperature drops; the act or process of condensing.

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

Coverage or Covering:

1. The area to be covered per unit volume of coating to obtain specified dry thickness.
2. Area covered by a unit of building material, such as a roll of waterproofing membrane.

D

Damp Proofing: The treatment of a building material or component surface with a bituminous or other coating to provide some measure of resistance to the passage of moisture into or through the material or component.

Delamination:

1. Separation of components within a system as a result of cohesive or adhesive failure.
2. Separation of the laminated layers of a component or system.

Dew point: The temperature at which a sample of humid air becomes saturated and the water vapour begins to condense to liquid water.

Diffusion: The material permeation of two or more substances due to the kinetic activity of their molecules, so that a uniform mixture or solution results. Diffusion occurs with all forms of matter; it is more rapid for gases and somewhat slower for liquids and solids in solution.

E

Edge lap: The overlap of the edge of a ply over the previous ply. Also called side lap.

Embedment or Embed: The process of pressing a felt, aggregate, fabric, mat or panel uniformly and completely into adhesive to ensure intimate contact at all points.

End lap: The amount of overlap at the start of a roll of membrane over the end of the previously installed roll.

Expanded polystyrene (EPS): Insulation composed principally of polystyrene resin processed to form a rigid foam having a predominantly closed-cell structure. Boards or blocks are formed during expansion. See also insulation.

Extruded polystyrene: Insulation board produced by a continuous extrusion process as the resin foams. This forms a tight and complete skin on each side of the board.

F

Feather: To reduce the edge of a material to a very small dimension, like a feather edge.

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

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

Flashing (through-wall flashing): Flashing extending completely through a masonry wall to prevent water infiltrating the wall assembly.

Flash point: The lowest temperature at which vapours above a volatile combustible substance ignite in air when exposed to a flame.

H

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.

I

Infrared thermography: The process of displaying variations of apparent temperatures (variation of temperature or emissivity or both) over the surface of an object by measuring variations in infrared radiance.

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

Insulation: A material used as part of a building enclosure to retard the flow of heat through the enclosure. It is made from a variety of organic and inorganic fibers and foams, e.g., expanded/extruded polystyrene, glass fiber, cellular glass, phenolic foam, perlite, polyurethane foam, polyisocyanurate foam. It can be loose-filled or used in batt, board or block form. See also roof insulation, board insulation.

J

Jacket: A form of facing applied over insulation board.

L

Lap: That part of a membrane unit that covers the preceding course in any overlapping application.

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.

M**Mastic:**

1. A material of relatively viscous consistency that dries or cures to form a protective finish, suitable for application to thermal insulation in thickness greater than 0.75 mm per coat.
2. Trowelable bituminous paste made by adding mineral fillers to concentrated cutbacks. See also plastic cement, cement and asphalt mastic.

Mechanically fastened membranes: General terminology used to describe membranes that have been attached at defined intervals to the substrate.

Membrane: The term membrane applies to a continuous sheet of material, whether it is prefabricated as a flexible polymeric sheeting or is sprayed or coated in the field, in single ply or in multiple plies.

Membrane migration: Progressive movement of membranes in one or both directions. This movement occurs as a result of thermal shrinkage. Consequently, it can move improperly adhered insulation.

Mil: A unit of measure, one mil is equal to 25.4 micrometres or 0.001 inches. It is often used to indicate the thickness of a membrane.

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

Modified bituminous membrane: A bituminous material that has been chemically or physically altered by the addition of polymers intended to improve its performance characteristics.

N

Nailing strips: A member, usually of wood, set into or secured to non-nailable walls to allow for positive anchorage by nailing of insulation or flashings.

O

Organic: Being or composed of hydrocarbons or their derivatives, or matter of plant or animal origin.

P

Pinhole: A tiny hole in a film, foil, or laminate and comparable in size or shape to one made by a pin.

Polyisocyanurate (Polyiso): The resulting rigid cellular plastic insulation material produced from the reaction of specialty chemicals and laminated each side to various facers, during the manufacturing process.

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

Polyurethane (PU): Insulation composed principally of the catalysed reaction product of polyisocyanurate and polyhydroxy compounds, processes usually with fluorocarbon gas to form a rigid foam having a predominantly closed-cell structure. It is sprayed in place or preformed into boards.

Primer: A liquid material applied to a surface to improve the adhesion of subsequent liquids or membranes.

R

Relative humidity: The ratio of water vapour in the air to the water vapour in saturated air at the same temperature and barometric pressure. Approximately, it equals the ratio of the partial pressure or density of the water vapour in the air to the saturation pressure or density, respectively, at the same temperature.

S

Sealant: 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. See also caulking.

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, sealant, etc.

Self-adhesive 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.

Side lap: See edge lap.

Substrate: The surface upon which the membrane is placed. It may be concrete, concrete block, insulation or any other base material.

Surface condensation: Condensation that appears on the colder exposed surfaces of a building envelope system.

T

Thermal bridge: A heat-conductive element in a wall assembly that extends from the warm to the cold side and provides less heat-flow resistance than the adjacent construction. May be of considerable consequence when it passes through the insulation of a well-insulated wall.

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

U

Underlay: A material, usually felt, used in covering a roof deck before the roofing materials are applied.

Underlay sheet: Any of the bituminous base sheets, bituminous roll roofing and reinforced treated kraft laminates.

V

Vapour: A substance in gaseous state. In relation to building, it generally refers to water vapour.

Vapour migration: The movement of water molecules from a region of higher to one of lower vapour pressure through the walls and roofs of buildings.

Vapour permeability: The rate at which water vapour will diffuse or permeate through a unit area in unit time with unit vapour pressure difference across a unit thickness of a material. The units are nanograms per square metre per metre of thickness per second of time per pascal of pressure difference. The symbol is U, and the units are written $\text{ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$.

Vapour permeance: The rate at which water vapour will diffuse through a material of a particular thickness. The symbol is M , and the units are nanograms per square metre per second per pascal vapour pressure difference. They are written in $(\text{ng}/\text{Pa}\cdot\text{s}\cdot\text{m}^2)/\text{ng}$, $M=u/l$ where l = thickness in metres.

Vapour resistance: A measure of the resistance to water-vapour flow. Vapour resistance is the reciprocal of permeance = $1/m$, and the units are written $(\text{ng}/\text{Pa}\cdot\text{s}\cdot\text{m}^2)/\text{ng}$.

Vapour retarder: Material used to retard the passage of vapour or moisture into the wall system where harmful condensation of vapour within the system could take place.

W

Waterproofing:

1. A material used to treat or cover a building element or component to prevent leakage of water.
2. Treatment of a surface or structure to prevent the passage of water under hydrostatic pressure.

Water vapour pressure: The pressure of water vapour at a given temperature; also the component of atmospheric pressure contributed by the presence of water vapour.

Water vapour transmission (WVT): Water vapour flow normal to two parallel surfaces of a material, through a unit area, under specified conditions. It is expressed in $\text{ng}/\text{Pa}\cdot\text{s}\cdot\text{m}^2$ (perms).

End of Section