

GLOSSARY OF TERMS FOR THE CHEMICAL FABRICS & FILM INDUSTRY

Aging – The effect on materials of exposure to an environment for an interval of time. The process of exposing materials to an environment for an interval of time. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Antimicrobial (Biocide) – A compound commonly added to a polymeric compound or coating to inhibit the growth of bacteria, fungi and algae on the surface of a finished product.

Artificial Aging – The accelerated testing of materials to determine the changes of properties (dimension stability, chemical/solvent resistance, low temperature cracking, etc.). (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

Artificial Weathering – Exposure to laboratory conditions, which may be cyclic, involving changes in temperature, relative humidity, radiant energy, and any other elements found in the atmosphere in various geographical areas. Discussion: the laboratory conditions are usually intensified beyond those encountered in actual outdoor exposure in an attempt to achieve an accelerated effect. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Biodegradable Plastic – A degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi, and algae. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Blocking – Unintentional adhesion between plastic films or between a film and another surface. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Calendered Film – A polymeric material formed into a sheet of uniform gauge by passing through a series of precision rolls.

Calendering – Process of forming materials to make a film/sheet by passing them through a series of heated rolls with designated speeds and gaps to determine the product thickness. Calender coated fabrics have a selected textile material adhered to the plastic film/sheet. (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

Cast Coating – A process where a liquid coating is spread on a reusable release paper, fused or dried in an oven, and then removed from the release paper as a solid film.

Cast Film – A film made by depositing a layer of plastic, either molten, in solution, or in a dispersion, onto a surface, solidifying

and removing the film from the surface. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Casting – Liquid plastic poured continuously on a preformed shape or texture for a mirror effect when dried and separated.

Cellular Plastics (Expanded, Foamed) – All names for materials with a composition of cells dispersed throughout its mass. The cells can be open or closed structures, and the product's density can be varied depending upon the formulation and/or process. (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

Chemical Fabric – A polymeric material in a sheet form attached to a fabric.

Chemical Film – A polymeric material that is formed in a sheet using either naturally occurring or synthetic chemicals.

Coated Fabrics – Fabrics coated/impregnated with a plastic solution, dispersion, hot melt, or powder. The material is usually spread over the surface in a uniform manner. Also, fabrics with the formed film applied from a calender or extruder are called Laminated Coated Fabrics. (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

Coated Film – A film to which a liquid polymeric coating has been applied to the surface to affect the surface properties of the product.

Coating – A material that is applied to the surface of a product with the gravure or some other process in order to change the color or surface properties of the product.

Coating Operation – A process where a coating is applied to a substrate and is subsequently air dried, cured in an oven, or cured by radiation.

Coextrusion – Process of extruding multiple films from different extruders that pass through a single die with multiple orifices that form the exudates into a single merged film/sheet consisting of individual welded layers. (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

Colorants – Pigments or dyes used to impart the color to a material. They can be from natural or synthetic sources and can be organic or inorganic in composition. (Whittington's Dictionary of Plastics by Lloyd R. Whittington)

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Composite – A construction consisting of two or more polymeric films (usually PVC, PVC-ABS, or TPO) laminated together or laminated to a non-polymeric substrate such as a fabric.

Compound/Compounding – A mixture of resin(s) and additives needed to modify the resin into a suitable form to make the finished article and the process of doing that operation. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Conditioning – Placing a material into a set of standard environmental or stress conditions prior to testing the product. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Degradable Plastic – A plastic designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Delamination – The separation of the layers of material in a laminate or composite. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Drape – A term to describe the way a fabric, coated fabric and/or film falls while it hangs; the suppleness and ability of a fabric to form graceful configurations.

Embossing – The process of imparting a specific pattern or graining to the surface of the material. This can be done during the film formation process or at a later operation. It generally requires the material to be at an elevated temperature during the process and then cooled to set in the embossing pattern. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Extruder/Extrusion – A process in which heated or unheated plastic is forced through a shaping orifice (a die) in one continuously formed shape, as in film, sheet, rod, or tubing. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Fabric – In the coated fabrics industry, this term refers to the textile material used to enhance the physicals of the composite formed by the coating/lamination of the plastic to the textile. The fabric usually is in a woven, knitted, or nonwoven construction. Woven Fabrics consist of materials formed on a loom with two separate yarns (warp and filling) that are at right angles to each

other. The two yarns go over and under each other in a designated pattern. Knitted Fabrics are formed by a single or multiple yarns making interlocking loops. Non-Woven Fabrics are formed by laying a continuous web of random spaced fibers to form a uniform batting. The fibers are then bonded to form a fabric by chemical adhesion, thermal or mechanical processes. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Fabricating – The manufacture of plastic products from molded parts, rods, tubes, sheeting, extrusions, or other forms by appropriate operations such as punching, cutting, drilling and tapping including fastening plastic parts together or to other parts by mechanical devices, adhesives, heat sealing, or other means. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Film – In plastics, an optional term for sheeting having a nominal thickness not greater than 0.25 mm (0.01 in.). (ASTM D883-91a – Standard Terminology Relating to Plastics) A thin sheet of uniform gauge without any underlying support fabric.

Gravure Coating – A process by which a design or full coating is applied to the surface of a product using an engraved cylinder.

Gravure Printing (Rotogravure) – A roll printing process where the amount and areas of application are determined by the location and depth of depressions engraved on the roll surface. The excess print vehicle is wiped off the surface of the roll with a doctoring blade prior to application. The metered print is applied to the plastic material as it passes between the gravure roll and a resilient surface backing roll. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

HAP (Hazardous Air Pollutant) – A material identified by the EPA which has been identified as toxic when released to the environment.

Hand – The tactile qualities of a fabric, coated fabric and/or film, e.g., softness, firmness, elasticity, fineness, resilience, and other qualities perceived by touch. (*Man-Made Fiber and Textile Dictionary* – Celanese Corporation)

Intumescence – The condition where a plastic material expands when exposed to very high heats and/or flames. It aides in reducing the flamespread of a material. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Knitted Fabrics – See "Fabric."

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Lacquer – A solution of a resin(s) in a volatile solvent that when applied to the surface of a material forms an adherent film when the solvents have evaporated. The film has similar properties to the resins used to make the original lacquer. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Laminated Coated Fabrics – See "Coated Fabrics."

Laminate – Product(s) consisting of two or more layers which are bonded together by an adhesive, heat, and/or pressure. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Laminating – The process of combining two or more natural or synthetic layers together.

Laminator – A machine used to combine multiple layers of polymer film or a polymeric film with a fabric. This process can use various adhesives or simply heat and pressure to combine the multiple layers.

Latex/Latices – A resinous polymer dispersion of material in a mainly aqueous vehicle. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Machine Direction and Cross Machine Direction – Machine direction is parallel to the orientation through the equipment by which a film is manufactured (MD). Cross machine is perpendicular to machine direction.

Metamerism – A term used to note the condition where a material matches the color of another item in one type of light and does not in another type of light. Example: two pieces match in sunlight (daylight) but one looks too red when looked at under incandescent light. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Nonrigid Plastic – For purposes of general classification, a plastic that has a modulus of elasticity either in flexure or in tension of not over 70 Mpa (10,000 psi) at 23°C and 50% relative humidity when tested in accordance with ASTM Test Methods D790, D747, D638, or D882. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Non-Woven Fabrics – See "Fabric."

Offset Printing – Process of applying a print coat to a material where the printing material is first applied to an intermediate roll/plate surface. It is then transferred to the surface to be printed. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Organasol – A suspension of resin and plasticizer mixture with a volatile organic liquid (at >5% level). Used mainly to lower viscosity of liquid material. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Pigments – Colorants that are insoluble in the medium in which they are used. They can be organic (contain carbon in molecule basic component) or inorganic (contain a metal in molecule basic component) and derived from both natural or synthetic sources. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Plastic – A material of one or several organic polymers of large molecular weight that is solid in its finished application. It should flow in some state of its manufacturing operation. This definition excludes certain materials that meet some or all of the criteria such as rubber, paint, adhesives, etc. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Plasticizer – A substance incorporated in a material to increase its workability, flexibility, or distensibility. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Plastisol – A vinyl homopolymer or copolymer suspension containing plasticizer(s) and other needed additives. The liquid suspension is relatively stable at lower temperatures, but will solvate the resin to form a flexible solid material at elevated temperatures. The plastisol can be used in varied manufacturing processes including coating or casting a film. (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Polymer – A product made by the reaction of simple molecular material(s) (monomer(s)) that are linked together to form much larger molecular structure(s) that are multiples of the monomer(s). (*Whittington's Dictionary of Plastics* by Lloyd R. Whittington)

Poly(Vinyl Chloride) – A polymer prepared by the polymerization of vinyl chloride as the sole monomer. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Primer – A coating applied to the surface of a film to improve the receptivity of the surface for further coating application or improve bonds to an adhesive.

Recycled Plastic – Those plastics composed of post-consumer material or recovered material only, or both, that may or may not have been subject to additional processing steps of the types used to make products such as recycled-regrind or reprocessed or reconstituted plastics. (ASTM D883-91a – Standard Terminology Relating to Plastics)

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Rotogravure – See “Gravure Printing.” (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Sheet – An individual piece of sheeting. (ASTM D883-91a – Standard Terminology Relating to Plastics) Also, see “Film.” (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Sheeting – A form of plastic in which the thickness is very small in proportion to length and width and in which the plastic is present as a continuous phase throughout, with or without filter. (ASTM D883-91a – Standard Terminology Relating to Plastics)

Skin Layer – The relatively solid layer on the top surface of an expanded layer of coated material. This is usually applied for improved physical properties. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Spanishing – A printing process where the print solution is deposited in the bottoms and sides of the grain depressions of an embossed material. Usually, the top of the grain surface is wiped clean of the print vehicle. Also referred to as shadowing, wash coating, and flood coating. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Stabilizer – Additive being used in polymers to prevent degradation during processing and product life against heat, mechanical and ultraviolet stress.

Substrate – Unexposed layer or layers in a composite used to impart physical properties rather than appearance.

Supported Product – A polymeric film laminated to a fabric for support and strength.

Surface Tension – A measure of the surface energy of a film or liquid. For liquid, the surface tensions are those forces which hold the liquid together as a drop and prevent it from wetting a surface.

Thermoplastics – Resins or plastic compounds that can be softened by heating and rehardened at cooler temperatures. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Thermosets – Resins or plastic compounds that once they have been cured (by heat, catalyst, or some chemical means) will not soften when heated. Note: some thermoplastic materials can be made thermoset by cross linking with some materials. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Top Coat – A term used to signify the coating applied to the surface of the plastic material. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

Transfer Coating – A process of making the coated fabrics. The plastisol coatings are applied directly to a treated release paper or continuous belt. After one or several layers are applied and partially cured, a thin layer of adhesive plastisol is applied and the textile substrate is laid onto the material. The final curing process is completed. Then, the coated material is stripped from the treated paper. The paper can either be flat or have an embossed grain. It can normally be reused several times. (*Whittington’s Dictionary of Plastics* by Lloyd R. Whittington)

UEV – An unsupported expandable vacuum formable product usually produced by the cast coating process.

Vinyl Chloride Plastics – Plastics based on polymers of vinyl chloride or copolymers of vinyl chloride with other monomers, the vinyl chloride being the greatest amount by mass. (ASTM D883-91a – Standard Terminology Relating to Plastics)

VOC – Volatile organic compounds that flash off from a coating when it dries.

Waterborne Coating or Ink – A coating or ink containing solids that is dispersed or dissolved in a vehicle that is primarily water.

Whitening – Marking of the surface of a film, coated fabric, or composite when it is either bent or flexed.

Woven Fabrics – See “Fabric.”