Glossary

Glossary

ADHESION TEST:
Any of a variety of test methods used to determine the adequacy of ink or coating adhesion to a substrate. A commonly used test method is ASTM#D-3359, also referred to as the Cross-cut tape test.

BINDER:
The portion of the vehicle in an ink composition that, in combination with the pigments, forms a film.

BLEED:
1. The spreading or migration of an ink component or dye into an area where it is not wanted; 2. The spreading or running of a pigment color by action of a solvent.

BLOCKING:
An undesired adhesion between layers of material placed in contact under moderate pressure and/or temperature in storage or use. Usually occurs in a stack prior to thorough drying.

BLOOM:
The bluish-gray milky veil which appears on the surface of prints under adhesive conditions of heat and humidity. It is usually the result of too rapid solvent evaporation which causes condensation of moisture on the surface.

CATALYST:
A substance which has the capability of initiating or accelerating the speed of a reaction between two or more substances when introduced into their presence, normally in relatively small quantities.

CHALKING:
A condition of a screen printed ink in which the pigment is not properly bound to the substrate and can be easily rubbed off, usually after exposure to the elements. Typically degrades to a dry powder.

CHEESEY:
A term used in evaluating the degree of curing in a plastisol ink film, usually describing and undercured state.

CHEMICAL RESISTANCE:
The resistance of an ink film or imprint to deteriorating effects resulting from exposure to or immersion in chemicals of specified type under specified conditions.

CLOGGING:
Premature drying of ink in the printing screen which causes imperfect prints by blocking portions of the open stencil.

COBWEBBING:
Fine filaments produced by the ink between the screen fabric and the substrate, resulting in a cobweb-like appearance on the finished print. It may be reduced to a minimum by careful selection of solvents and proper adjustment of printing conditions.

COMBUSTIBLE LIQUID:
A liquid having a flash point at or above 100° F (37.8° C) but less than 200° F (93.3° C).

CORONA DISCHARGE:
An electrical, surface treating method whereby the atmosphere (corona) around the substrate is ionized, discouraging oxidation and reducing surface tension for improved ink adhesion.

CRATERING:
Small undesirable depressions in a dried ink film which may be so deep as to expose the substrate.

CRAWLING:
The contraction of an ink into drops after printing onto a surface which the ink does not wet completely.

CRAZING:
1. A cracking and/or removal of ink from areas of a posted printed poster; 2. A random pattern of minute intersecting cracks in plastic, ceramic glaze, or other surfaces.

CROCKING:
Printed image rub-off (wet or dry) of surface color that can occur when a dye or pigment is not adequately fixed in the substrate.

CURE:
The effective polymerization of a UV coating.

CURING UNIT:
An ultraviolet reactor housing a UV emitter used for polymerization of UV inks.

DARK REACTION:
When a UV ink forms into a gel-like substance apart from any light initiation due to premature polymerization.

DEGREASING:
The removal of dirt and oils from the stretched screen fabric before coating or applications of stencils. May include roughening of the fabric surface or application of adhesion promoting chemicals.

DENSITOMETER:
A photoelectric device that measures either the reflected or transmitted density of photographic film or printed color.

DIAZO:
A photosensitive chemical which sensitizes photo-screen making emulsions to actinic light.

DIRECT EMULSION:
A liquid photo-polymer emulsion used as a screen printing stencil which is coated onto a stretched screen, dried, exposed through an imaged film positive by actinic light and developed.

DIRECT/INDIRECT PHOTOSCREEN STENCIL:
A stencil made by adhering a gelatin coated sheet to the underside of the tensioned screen fabric with a photosensitized emulsion, drying, exposing through a film positive to actinic light, developing and stripping away of the gelatin's plastic support sheet.

DOT GAIN:
The tendency of the printed halftone dot to change in size at the moment of ink imprinting, thus changing the overall visual quality of the print. Due to a number of variables, the printed dot will be larger than its film counterpart. Also called Dot Growth or Dot Spread.

DRAIZE TEST:
A method for estimating the skin or eye irritation due to contact with a chemical substance.

DRAWDOWN:
A film of ink deposited uniformly on a substrate by means of a smooth edged blade or cylindrical rod, to evaluate the undertone, mass tone, etc., of an ink.

DRYING:
A multi-stage process describing the solvent evaporation and/or film formation of screen printing inks and coatings (not to include curing, a separate process). Various stages include setto-touch; dust-free; tack-free; dry-to-touch; dry-hard; dry-through; and dry-to-recoat.

EDGE CURL:
The tendency of a pressure-sensitive sheet to deform or bend away from the surface to which it has been adhered.

EVAPORATION RATE:
The speed at which a solvent or any liquid evaporates.

EXEMPT SOLVENTS:
Descriptive of evaporative solvents not currently subject to air pollution regulation.

EXTENDER BASE (EXTENDER):
A non-pigmented compound used in screen printing to increase ink volume without reducing viscosity. Ordinarily, it is a buttery semi-paste that has no effect on ink color except to reduce its intensity of hue.

FABRIC: PLAIN WEAVE:
A uniform pattern of weaving fabric with one over and one under in each direction.

FABRIC: TWILL WEAVE:
A weaving pattern of the fabric that was one over, two under configurations. Twill weave deposits approximately 20% more ink than a plain weave in the same mesh.

FADING:
Partial or complete loss of color due to excess heating or environmental influences; a gradual "bleaching out" appearance of a color from a print. Common causes are: (a) intense sun exposure; (b) too much "watering down" of ink with solvents during printing; (c) lack of wash resistance of garment inks or dyes.

FINENESS OF GRIND:
The degree of dispersion of pigment particles in a vehicle.

FISH EYE:
A flaw in a screen printed ink film consisting of a circular defect caused by the slight bubbling of the ink with resulting dispersion of the pigment within the immediate area, causing a non-uniformity of color in what appears to be a hole or a void.

FLAGGING:
Corners of sheets of an outdoor poster releasing from the background due to improper paste or posting or to having ink on the back of sheets.

FLAME TREATED PRODUCT:
A container or other object typically formed of polyethylene or polypropylene plastic, the surface of which has been oxidized by contact with a flame to disperse surface solvents to prepare the object for printing.

FLAMMABLE LIQUID:
A liquid having a flash point below 100° F (37.8° C) with the exception of any liquid mixtures which have one or more components with a flash point at or above 100° F in a concentration of 99% or more of the total volume of the mixture.

FLASH CURE:
A stage in the plastisol curing process generally used between ink laydowns. Usually modular units are employed to accomplish this step, which are not designed to completely cure the plastisol film. Also referred to as Spot Cure.

FLASH POINT:
The minimum temperature of a saturated vapor of a specified liquid at which the vapor will ignite in the presence of a spark or flame, under specified conditions.

FLATTING AGENT:
Any material added to reduce the gloss level of an ink or coating.

FLOCCULATION:
The process by which an aggregation of pigment particles in ink, caused by a flocculant, form clusters or chains; usually accompanied by a change in the chroma and/or hue of the color of the ink. Also called Livering.

FLOW:
The ability of the screen ink to spread uniformly on deposit for the purpose of covering the intersections left in the printing film by the threads or strands of the screen fabric at the instant of printing.

FLOW AGENT:
An additive used to disturb the surface tension and increase the ink flow when bubbles or orange-peel occur.

FOCAL DISTANCE:
The optimum distance between UV lamp/reflector and substrate.

FOUR COLOR PROCESS PRINTING:
A method of reproducing full-color artwork by photographically separating the art into its three subtractive primary colors: yellow, magenta and cyan, plus black and then printed through a set of color-separated halftone printing screens.

FOUR COLOR SEPARATIONS:
The term applied to films, either negative or positive, totaling four in number, each having the total image elements for one of the four colors used in four color process printing. The separations may be made by use of a process camera or more sophisticated electronic scanner devices.

GEL:
A state or condition in which an ink or vehicle demonstrates a semi-solid or jelly-like consistency. Can refer to the deterioration of a material to an unworkable substance.

HALFTONE:
An image in which details and dark and light tones are represented by dots of varying sizes in relationship to the tones and shades which they must reproduce. Small dots form light tones and larger dots form darker tones.

HEAT SEALING:
Uniting two distinct surfaces by fusion, either of the coatings or of the base materials, under controlled conditions of temperature, pressure, and time (dwell).

HEAT TRANSFER APPLICATION:
The process of image transfer to substrate by application of heat.

HEAVY METALS:
Generally toxic metallic elements contained in some pigments, e.g., chromium, cadmium, lead, etc.

HIDING POWERS:
The ability of a paint, ink or coating material used to hide or obscure a surface to which it has been uniformly applied, under specified conditions.

HYDROPHOBIC:
Lacking affinity for water; the opposite of hydrophilic.

HYDROSCOPIC:
The quality of some materials to absorb atmospheric moisture; exhibiting an affinity for water.

INTERCOAT ADHESION:
The adhesion of one ink to another with regard to compatibility, strength and quality of the bond.

IRRADIATOR:
The lamp housing and reflector assembly in a UV reactor.

JELLING:
The thickening of an ink or other liquid that cannot be reversed by stirring. Premature polymerization of a UV ink.

JET DRYING:
The drying of screen printed material by means of a jet dryer.

LEAD-FREE INK:
Inks formulated with the absence of lead and used for special purposes where the presence of lead would constitute a danger. In the U.S., "lead-free" coatings must contain less than 0.06% lead by weight to meet certain regulations.

LEAFING:
A phenomenon by which metallic pigments form a layer parallel to the surface of the substrate, thereby yielding a high metallic luster.

MAR RESISTANCE:
Property of an ink film or varnish which remains unimpaired by slight abrasion, impact or pressure. Also called Rub Fastness or Abrasion Resistance.

MATTE FINISH:
A low-gloss or no-gloss finish.

MERCURY VAPOR LAMP:
A type of illuminant high in actinic value; used in camera lighting systems and in UV curing reactors.

MESH COUNT:
The number of openings per linear unit of measurement, either per inch or per centimeter, of a screen printing fabric.

MESH MARKS:
A fine, cross-hatch pattern left by the mesh of the screen printing fabric.

MESH OPENING:
A measure of the distance across the space between two parallel threads, expressed in microns.

MOIRE:
An undesirable optical pattern which occurs in halftone printing due primarily to incorrect screen angles of the halftone screens.

MONOMER:
Single unit molecule, usually thin in viscosity, used in forming polymeric chains in combination with oligomers and prepolymers.

MOTTLE (INK MOTTLE):
The spotty or uneven appearance of printing that becomes most pronounced in solid areas.

NEWTON VALUE:
Unit of measure, used in screen fabric tensioning and generally expressed in Newtons per centimeter.

OFF-CONTACT :
The preset distance between the screen and the substrate that is to be printed.

OLIGOMER:
Base resin used in ultraviolet. A molecule (or chemical compound) of a complicated structure consisting of several monomeric units in chemical union.

OPACITY:
The degree to which a sheet, coating or film obscures a pattern beneath it or obstructs the passage of light and prevents one from seeing through it.

ORANGE PEEL:
Irregular surface in the cured ink film due to improper cure.

OXIDATION:
The effect produced by contact with oxygen, either in the atmosphere or introduced in more concentrated form, which produces drying in some screen printing inks.

PEARLESCENCE:
A "pearl-like" appearance produced by adding powdered titanium dioxide and mica pigments to various inks. As a general rule, the smaller the particle size, the more opaque the coating and the larger the particle size, the higher the lustre of the "pearl-like" finish of the ink.

PERCENT OPEN AREA:
The relationships between that part of a screen fabric that is blocked by threads (or wires) and that part that is open, or between threads.

PERMANENT INKS:
Inks which resist fading or change of color when exposed to the environment.

PHOTO INITIATOR:
A substance which absorbs light and is directly involved in the production of initiator radicals for polymerization (as in UV curing).

PHOTOPOLYMER:
A type of polymer that undergoes a distinct change, such as depolymerization, on exposure to light. When used as a photostencil material, it requires no addition of a photosensitizer.

PIGMENT:
Substances that impart color. Finely divided solid, organic or inorganic coloring material insoluble in the medium in which it is applied. Pigments must be bound to the receptor surface by dispersing in a vehicle or binder, such as resins in screen printing inks.

PINHOLES:
Imperfections in the form of tiny transparent dots that appear in printing screens or in process films after development.

PLAIN WEAVE:
A pattern of weave whereby fabric threads are woven over one and under one as opposed to twill weave whereby threads are woven over one, under two.

PLASTICIZERS:
Additives which may be added to plastic or other formulations such as screen printing inks to improve compatibility of components and/or to improve flexibility, workability or distensibility of the dried product.

PLASTISOL FUSION RATES:
The fusing required by a plastisol deposit with the application of a specific temperature elevation.

POLYMERIZATION:
A chemical reaction initiated by a catalyst, heat or light, in which monomers and/or oligomers combine to form a polymer.

POST CURE:
1. The continuation of a polymerization (curing) process within a UV ink or coating after exposure to UV radiation has been terminated; 2. A final or more complete resolving of organic materials after the initial curing process.

POST HARDENING:
The process of further hardening a photo emulsion stencil by subjecting the screen to additional light after initial exposure and image development (washout) has taken place.

POT LIFE:
A term indicating the length of time during storage in a specific container under normal storage conditions that chemical composition will not lose usefulness through deterioration in the original container.

PUFF INK:
An ink that when heated to a specific temperature for a definite period of time, achieves a characteristic of three-dimensionality by expansion.

PYROMETER:
A meter for registering heat which may be calibrated in either Fahrenheit or Celsius scales.

QUARTZ TUBE:
A UV lamp typically filled with mercury vapor and made from quartz.

RADIATION:
With regard to screen printing, the term is generally limited to ultraviolet or infrared wavelengths of light and heat energy used for curing ink films or exposing photostencils.

RADIOMETER:
An instrument, usually self contained, for measuring UV energy inside of curing units.

REACTIVE DILUTENT:
Monomer or mixture of monomers used to reduce the viscosity of a UV ink.

RECLAIMING:
The process of removing both ink and stencil from the screen fabric after a printing run in order to reuse the fabric.

REDUCER:
A solvent or other additive used for reducing the viscosity of an ink formulation.

RESIN:
The basic binder in an ink. A solid or semi-solid material of vegetable origin or obtained synthetically by solvent extraction, which can be dissolved to a liquid state, suspended in a vehicle to make an ink or coating, and which, upon drying, forms the solid part of the dried, printed film.

RETARDER:
An additive for screen printing ink that slows down the drying time. It is usually composed of solvents that have a slower evaporation rate than the solvent intended as a dilutent for the specific ink system.

ROLL-TO-ROLL:
See Web Fed.

SAWTOOTH:
The effect of stencil material which tends to conform to the meshes of a screen printing fabric rather than the cleaner contours of the design on the film positive from which the stencil is produced. Both insufficient bridging and filling-in of the meshes produce a notched effect where lines of the design cross the fabric mesh diagonally.

SCOOP COATER:
A tool for coating screen printing fabrics with photosensitive emulsions for making printing screens. Also called “Emulsion Coater.”

SCORING:
1. The marking of substrate stock with a dull edge to break the grain in order to facilitate creasing or folding along a predetermined line; 2. The slitting of the liner paper at intervals to permit easier release of the pressure sensitive film.

SCREENABILITY:
A characteristic describing how difficult or easy it is to print a material such as an ink, paste or coating through the screen.

SEEDINESS:
A defect in a varnish caused by small particles which sometimes become visible when examined by transmitted light. Varnished surfaces may present a specky or sandy appearance due to this defect.

SELF-TENSIONING FRAME:
A screen printing frame or chase with a built-in means of tensioning applied fabrics, usually via a screw arrangement acting upon an inner frame or a roller system, to which the fabric is attached.

SENSITIZER:
A photosensitive chemical used for sensitizing photographic screen printing stencil films or emulsions.

SLIT:
1. A cut through the backing sheet or release liner of a decal to facilitate removal of the decal for application to the substrate; 2. A cut through any sheet material for any purpose, but usually to indicate a separation line or to permit the escape of air if the sheet is closely contacted with another true surface.

SOLID WASTE:
A garbage, refuse, sludge and other discarded material, including solid, liquid, semi-solid or contained gaseous material, resulting from industrial and commercial operations, and from community material.

SOLIDS:
The components of an ink formulation, other than the vehicle, which are not removed from the film by the drying process.

SOLUTION:
A uniform liquid mixture which consists of a solvent or liquid and a solute or that part which dissolves in the solvent.

SOLVENT:
Any dissolving, thinning or reducing agent. A liquid that dissolves another substance, such as a resin, or used as an additive to reduce the viscosity or an ink.

SOLVENT-EVAPORATING INKS:
Inks which are generally dried after printing by allowing petroleum-based solvents to vaporize either in ambient or elevated temperature conditions.

STATIC ELECTRICITY:
A built-up electrical charge on the surface of a substrate, or other surfaces, usually induced by friction, and most evident under low atmospheric humidity conditions.

STREAKS:
Elongated defects:
1. On film, by scratching or by uneven application of processing chemicals, or by uneven drying; 2. In stencils, by uneven washing out or processing or exposure variance; 3. On prints, by uneven squeegee edge, by a fragment of foreign matter in the ink, overthinning of the ink, partial drying in the screen of the ink, or any other condition preventing a uniform flow of the ink through the stencil to the substrate.

SUBLIMATION:
The process whereby certain dyes change directly from a solid to a vapor and back again to a solid by the application of heat.

SURFACE TENSION:
The property, due to molecular forces, by which all liquids through contraction of the surface tend to bring the contained volume into a form having the least area. If an ink is to be compatible with a substrate, the surface tension of the ink must approximate that of the surface of the substrate. It is measured in dynes per centimeter.

TACK:
The property of a surface which when pressed together or to another surface has a tendency to stick. The area of contact between two surfaces adhering together depends on distortion and flow within the materials.

THERMOSETTING INK:
Inks which polymerize to a permanently solid and infusible state upon application of heat.

THINNER:
A liquid which can extend a solution but which does not materially impair the power of the solvent.

THIXOTROPY:
The property of a compound to liquefy under vibrating or shearing action as by a squeegee in a screen. This reduction in viscosity is due to a temporary breakdown of an internal structure and dependent upon the shear history or the amount of previous shearing to which the material has been subjected.

TRAPPING OF INKS:
The property of a printing ink that makes it possible to superimpose one color on another, both in wet and dry printing.

ULTRAVIOLET STABILIZER:
A chemical compound which when mixed with a thermoplastic resin, selectively absorbs ultraviolet rays.

VACUUM FORMING:
A technique for shaping flat plastic sheets into contours for 3-D effects by heating the sheet until flexible over a mold with the desire shape or contour, then withdrawing the air from between the heated plastic sheet and the mold or die.

VEHICLE:
The liquid portion of a pigmented coating or printing ink including the binders or adhesives and modifiers.

VISCOMETER:
An instrument for measuring the viscosity of liquids at specified temperature and atmospheric conditions by measuring the force required to move one layer over another without turbulence.

VOLATILE:
Subject to evaporation at a relatively low temperature.

VOLATILE ORGANIC SOLVENTS:
Liquid solvents that tend to vaporize at room temperature, high concentrations of which can be injurious to ones health.

WASH RESISTANCE:
The degree of resistance of printed textile inks to washing in detergent solutions without affecting their color strength and adhesion.

WATER BASED INKS:
Inks containing a vehicle whose binder is water soluble or water dispersible.

WEATHERABILITY:
The inherent resistance of a product to weather influences when subjected to exterior exposure conditions.

WEATHERING:
The effect of atmospheric elements on a test subject when exposed out of doors in a natural environment or under laboratory conditions.

WEATHEROMETER:
A device for testing, under accelerated similes of weather conditions, the resistance of a product to environmental influences.

WEBBING:
Fine filament produced by the ink between the screen fabric and substrate being printed, exhibiting a cobweb-like appearance on the finished print, usually created by the resin not being effectively doctored through the mesh.

WEB FED:
1. An automatic feeding system that feeds substrates from a continuous roll, synchronized to a stop motion arrangement which stops movement for printing; 2. A term to indicate a type of screen printing press that feeds the substrate from a bulk roll or bolt (as in textiles).

"WELL SIDE" OF A SCREEN:
The upper side of a printing screen where the ink is placed for printing; the side opposite the side which contacts the substrate.

WET FILM THICKNESS:
The depth, usually expressed in mils or microns, of an applied coating measured immediately after application.

WET-ON-WET:
Describes the printing of multiple colors onto a substrate before
the previously printed colors have dried.

WINDOW:
The limits of a material within which a reactive process can take place.

Index

P

Q

R

S

T

U

V

W

X