

GLOSSARY

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-A-

Acrylic — An extruded or cast rigid plastic characterized by its clarity and colorability.
Acrylic — A paint with an acrylic resin base.
Adhesive — A material able to hold two surfaces together, often activated by heat or pressure.
Airbrush — A device utilizing compressed air to generate a fine spray of paint.
Alternating Current (AC) — One of the three basic forms of electricity. Specifically, a current that changes direction back and forth at some frequency — 60Hz in the U.S.; 50Hz in Europe — as in the electricity that comes from a household wall socket. See also Direct Current.
Ambient light — The light in a given area, excluding direct or internal illumination.
Ampere — Often called amps, a unit used to measure electric current flow.
Anchor — In sign making, refers particularly to the fasteners used to secure awnings and fascia signs to facades.
Animated sign — A sign that shows motion or changes in copy or color by means of an electric or electronic switching device. See flasher.
Anneal — To subject to great heat, and then cool slowly. Neon tubes are annealed after bending to reduce stress in the glass.
Anodizing — Process by which a protective aluminum oxide layer is applied to an underlying metal using electrolysis.
Anti-aliasing — In digital printing, the process of mixing various amounts of surrounding colors to pixels (or dots) forming lines or edges of colors. Helps eliminate the jagged look that sometimes occurs.
Application tape — See transfer tape.
Aqueous Inks — Inks that use water as a carrier.
Argon — An inert gas which,

when mixed with mercury, is used in fluorescent lamps and neon tubes.
Awning — A shelter constructed of non-rigid materials on a supporting framework which projects from and is supported by the exterior wall of a building. An awning may or may not be illuminated and/or decorated with graphics to serve as a sign.

-B-

Backlit sign — A sign consisting of a cabinet containing a light source surrounded by one or more translucent faces, illuminated for visibility.
Baked enamel — A type of metal sign finish. A special enamel paint is sprayed or screen printed on the metal surface, dried, then cured. The result is an extremely durable surface similar to that found on many appliances.
Ballast — A device that operates as part of a fluorescent lamp and is designed primarily to provide sufficient starting voltage.
Banner — A sign usually made of fabric, vinyl or other non-rigid material with no enclosing framework. May be painted, screen-printed, digitally printed or decorated with vinyl.
Binder — A substance that binds two others together. For instance, lacquer is used as a binder when painting with some metallic dusts, and many paints require binders.
Blank — Most commonly, an undecorated face. May also refer to a sign face without any framing or cabinet.
Blockout — Specially formulated paint used to block out the crossover connections between neon letters.
Bombarding — The process of heating the glass and metal portions of a neon tube to a high temperature to release all absorbed gases and other impurities.
Bulletin colors — Specially prepared enamel paints preferred by many sign painters for hand-let-tering.
Burning-In — Recommended to bring a neon tube to its proper brilliance, burning-in involves connecting the completed tube to a transformer similar to that which will be used in the installation and allowing it to remain

lighted until proper brightness, color and electrical properties are achieved. Also called aging.
Burnish — To polish by rubbing, a common practice in the gilding process.
Bushing — In a neon sign, insulates the electrode from a metal sign. Requires a separate connection between the electrode and the high-voltage line.

-C-

Cabinet — An electric sign, not including the components and structure. A cabinet is made up of a face and back, or two faces, along with the edge. (Also called can)
Calendered — Vinyl sheeting squeezed between a series of heated rollers (also extruded) to achieve a small-enough thickness for cutting with a knife plotter. Calendered film is generally thicker and less expensive than cast vinyl.
Calibration — Operation of matching color shades and hues between input (design software/monitor/scanner) and output device (printer). Also the operation of keeping colors consistent during printer operations, compensating for changes in humidity, media, toners, etc.
Carrier — Substance in which pigments in inks are suspended. Aqueous, solvent and eco-solvent carriers evaporate after printing. Monomers are considered carriers in UV-curing inks, but are transformed into solid polymers after curing.
Cast — Vinyl sheeting formed by spreading a molten mixture on a carrier sheet, and then baking at high temperatures to remove solvents and fuse the remaining material into a film. Cast film is usually thinner and more-expensive than calendered vinyl.
Channel letter — The outline of a letter, with extended side-walls that create depth, into which a light source is placed.
Chase — 1. The illusion of movement in neon tubes or incandescent bulbs created by turning the light sources on and off in sequence. 2. To decorate metal, typically by engraving or cutting.
CMYK — Cyan, Magenta, Yellow and Black, or the four process colors. Used in screen printing and by output devices such as inkjets,

electrostatics, and thermal-transfer printers.
Cold cathode — The technical name for all forms of neon lighting. The term cold cathode is used to refer to 18mm to 25mm tubing operating at currents 60mA to 240mA. These gas discharge lamps also have electrodes that depend on a large emission surface area rather than high temperature for their operation.
Color management — Refers to coordination of color with output and display. In output, color management is often handled on a device-by-device basis by imaging production software (see RIP).
Color specification — Color values used to numerically specify a color within a color system.
Conduit — A metal or PVC plastic tube for protecting electric cables.
Corrugated board — A board created by gluing a corrugated piece to a flat face, or between two flat faces.
Coverage — The area (usually given in square feet) that a given material will coat-out.
Craze — Thin cracks or breaks in paint, plastic or vinyl, caused mainly by weathering, though it may also be caused by the incompatibility of paint layers or solvents.
Crossover — The connection between two portions of a neon tube, intended to be unnoticed in the finished sign. Typically, crossovers are coated with block-out paint.
Curing — The process of effecting a chemical change in some inks or paints by the application of heat or ultraviolet light.
Current — The flux or rate of flow of electrical charge carriers in a conductor. A unit of current is typically given in amperes or milliamperes (mA).

-D-

Decal — Copy and/or graphics printed on the non-adhesive side of film, then cut to a specified shape.
Delamination — The separation of layers in a laminated substrate. Delamination is most often caused when edges are over-exposed to moisture, temperature extremes or UV light, resulting in adhesive failure.

Density — In sign making, a measurement used to express the hardness of foam boards in pounds-per-cubic-foot.

Die-cut — A cut made with a steel rule die manufactured to cut a particular shape, commonly, when a large number of shapes with curved lines are to be cut. Also refers to the object that has been cut.

Diffusion pump — A vacuum pump consisting of a boiler, a jet assembly and a cooling chamber, designed to increase the speed of evacuation of a neon tube after bombarding.

Direct Current (DC) — One of three varieties of electricity. Specifically, a current that always flows in one direction, around and around, as in the electricity that powers household batteries. See also Alternating Current.

Directional sign — Signs designed to provide direction to travelers. The Highway Beautification Act sets guidelines for the size, placement and content of true directional signs.

Directly illuminated — A sign that is illuminated by a source other than ambient light; any lighted sign.

Directory sign — An on-premise sign that identifies the names and locations of tenants in a multi-tenant building, or group of buildings.

Dot gain — Occurrence of dots printing larger than intended. The result may be bigger prints or darker colors, but also may create larger color blocks and more-defined images.

Dots-per-inch (DPI) — A unit of measure used to describe the resolution capability of a given piece of equipment by measuring the number of individual dots the device can reproduce in a linear inch. If the horizontal and vertical resolutions are different, typically both figures will be given. The higher the number of dots, the less easy it is to distinguish individual dots, making the image sharper.

Double tube — Two neon tubes running parallel to each other, often used for outlining or borders.

Double face — A sign with two parallel but opposing faces.

Double back — A 180-degree bend used in neon tubes to produce such letters as R, E, F and G. Often used to describe the technique and placement of the elec-

trode on a neon unit.

Driver — power supply for LED systems, providing low voltage output.

-E-

Eco-Solvent Inks — Inks using a less-toxic solvent-based carrier. Printers using eco-solvent inks emit less harmful VOCs (volatile organic compounds).

Electrode — A terminal that conducts an electrical current between two conducting substances. Electrodes are found at both ends of a neon unit.

Electronic Message Center (EMC) — A sign that utilizes computer-generated messages or some other electronic means of changing copy. These signs include displays using incandescent lamps, LEDs, LCDs or a flipper matrix. Also called changeable message signs (CMS).

Electrostatic film — Vinyl film treated with a small charge of electricity, enabling it to temporarily, but firmly, adhere to glass and similar smooth substrates.

Emboss — The process of producing raised letters, particularly those produced by engraving dies or plates.

Engraving — Method of marking metal, plastic or glass in shallow, negative relief utilizing a bit or graver. Engraving may be done freehand, using a pantograph or computer-driven equipment.

Exterior illumination — Illumination that is provided from a source separate from the sign itself, such as a spotlight. Also called indirectly illuminated.

Extrusion — A part created by forcing a raw material (usually metal or plastic) through a die to create a specific shape.

-F-

Face — The decorated surface of a sign; the area on which the copy and art is placed.

Flasher — A mechanical device designed to interrupt the electrical current in a sign at regular intervals, turning the light source on and off to create a flashing image.

Flat — 1. A brush made with medium-length ox hair bristles, called a flat because the bristles are cut flat and tend to remain that way when pressed to its full width; useful in maintaining even stroke widths; 2. Refers to substrates, particularly metal and

plastic sheets, as they are received from the supplier; an undecorated substrate; 3.

Describes a finish that is duller than matte, and has little reflective quality.

Flexible-face material — Translucent material, usually decorated and then stretched across a frame to form awnings, billboards and other types of signage.

Flexible metallic tubing — A flexible conduit tube used to protect electric wiring.

Fluorescent lamp or tube — A type of lamp in which the light is produced by the fluorescence of a phosphor coating in the tube. In a fluorescent lamp, the tube is coated with phosphors and then filled with a mix of argon gas and mercury. When electrical current passes between the electrodes, the gas mixture emits ultraviolet (UV) light. The UV light is absorbed by the phosphors, which then radiate the energy as visible light.

Foam board — A type of lightweight, rigid board used for interior signs. Foam boards consist of a foam center sheet laminated on one or both sides by a variety of substrates.

Footing — The (usually) concrete supporting base of a structure, as for a pylon or monument sign. Also called footer.

Formed — Refers to a plastic face or letter that has been heated and shaped to give it dimension.

Friction feed — Process where material is fed through a printer or plotter by placing it between a motor-driven grit wheel and two tensioned pinch rollers.

-G-

Galvanized — Steel or iron that has been protected by a zinc coating.

Gauge — A method for measuring the thickness of sheet metal. In the sign industry, most sheet metal ranges from 10-26 gauge.

Gilding — The application of thin metal sheets (see gold leaf) to glass and other surfaces.

Gold leaf — Gold manufactured into thin leaves, commonly available in a range of from 10-23 karats.

Grommet — A reinforced metal eyelet found in banners used to receive cords or other fasteners.

GTO — A type of insulated wire capable of handling high volt-

ages on the secondary circuit of a neon sign.

-H-

HDPE (High-Density Polyethylene) — A strong, relatively opaque form of polyethylene having a dense structure.

HDU (High-Density Urethane) — A type of hard foam product used in sign production. Urethane has the density and fabrication characteristics of wood, but only one-third of the weight.

Heat bending — The process of heating PVC boards and then bending them to desired shapes.

Hexachrome — Color matching system created by Pantone Inc. for combining six colors to create a larger gamut of reproducible color.

Hinging — Vinyl installation process where a cut vinyl image, the carrier liner and the transfer tape are placed on the target surface; a piece of masking tape is then attached to the top edge of the transfer tape. The liner is then slowly rolled off from the top edge, and the transfer tape and vinyl image are slowly smoothed onto the surface.

Housing — For neon tubing, made from porcelain or Pyrex glass, a housing mounted in the sign that provides the contact between the electrode and the lead-in wire.

-I-

Inkjet printer — Device that drops liquid ink onto a substrate for printing. The thermal bubble-type of inkjet heats ink to approximately 400 degrees F inside a small chamber before shooting it through a series of nozzles. A piezo-based inkjet puts ink in a small chamber and then sends a charge to contract piezoelectric crystal lining the chamber and send the ink through the nozzles.

Ink-receptive — Describes a substrate that can be made wet by ink when printed and that will bond with the ink after drying or curing.

Internally illuminated — A sign which is lighted through the use of internal electric fixtures or lampbanks. See backlit sign and exterior illumination.

-K-

Knife bevel — Angle of the vertical cutting edge of a plotter blade. Bevels can be between 30

degrees for general vinyl, and 60 degrees for sandblast mask.

-L-

Lacquer — A quick-drying clear finishing material similar to varnish. May also be used as a binder.

Laminate — A process by which different materials are layered and then bonded together using adhesion. The end result may be the creation of a substrate — such as medium-density overlay (MDO) — or the protection of the underlying surface, as when a clear, plastic film is laminated to a decorated surface.

LED (light-emitting diode) — A semiconductor diode that emits light when voltage is applied; a solid state lighting component, used in signage for EMCs, channel letter illumination, edge lighting glass or acrylic panels or for various decorative lighting effects. **Lead-in wire** — The wire that connects an electrode to the power source.

Lumen — A unit of measurement for light.

Luminous tube — Also, a neon or fluorescent tube, consisting of a sealed glass vacuum tube with an electrode at each end containing a specific gas. As an electrical current is passed between the electrodes, the gas is ionized and emits light.

-M-

Magnetic sheeting — Magnetized strip laminated to a flexible plastic sheet and sold in rolls.

Mahl stick — A baton-like piece of wood with a knob at one end to provide extra support for a painter's brush hand.

Manifold — In neon tube processing, a system of vacuum tight tubing arranged so that attached tubes can be evacuated with a vacuum system and filled with rare gases.

Masking — In painting or screen printing, the process of covering — usually with tape or paper — areas to protect them from receiving subsequent layers of paint or ink.

Medium-density overlay (MDO) — An exterior-grade plywood with an average veneer on both sides.

Mercury — A heavy, silver-white metallic element liquid at room temperature. In neon tube

processing, it may be mixed with rare gases, typically argon, to produce ultraviolet light.

Monument sign — A free-standing sign sitting directly on the ground or mounted on a low base.

-N-

National Electric Code (NEC) — Electrical safety code adopted by many jurisdictions around the United States, published by the National Fire Protection Association.

Neon — A rare inert gas which, when an electric current is discharged through it, produces a reddish-orange glow. The word neon is also often used synonymously to describe a type of luminous tube sign, which may contain other inert gases such as argon.

Nesting — Placement of images or jobs in an arrangement to minimize waste of material when cutting.

-O-

Opacity — Measurement of resistance to light passing through a particular substrate.

Opaque — Not clear or translucent; not allowing light to show through.

Outgas — The characteristic of a solid or liquid to vaporize under heat. Occurs in some plastics and paints if they are not through drying resulting in adhesive failure to anything applied over them. Also describes the release of impurities in vacuum systems such as neon tubes during processing.

-P-

Pantone® Matching System (PMS) — Standardized series of thousands of colors, each with specific color formulations and identification number.

Perforating wheel — A toothed wheel on a handle that allows it to rotate freely, used to trace line art, creating perforations for pattern making. Also called a pounce wheel. See pounce pattern.

Phosphors — Chemical powders used to coat fluorescent tubes. A range of phosphors is available to produce a large variety of colors and whites.

Piezo inkjet — A printing process that uses the oscillations of electrically-stimulated piezo-electric crystals to force ink

through inkjet nozzles.

Pigment — A compound used to color other materials, such as paints and inks. Pigments are insoluble, finely ground particles and may be organic or inorganic.

Pixelization — Process where the number of pixels are simply multiplied to increase resolution. The result is a higher dpi but the altering of detail from smooth to square-step lines, or jaggies.

Plotter — Device that interprets information sent from a computer and moves a tool head to a series of coordinates based on the device's X and Y axes. Sign makers use a plotter equipped with a knife to cut vinyl, with the X and Y coordinates forming an outline that can be weeded and installed on a surface.

Point-of-purchase advertising (P.O.P.) — In-store advertising designed to sell more and different products to shoppers once they are in the store. The term applies to a store's internal sign system, as well as special displays. Also known as point-of-sale advertising.

Polycarbonate — A type of plastic used in sign faces, noted for its heat-resistance and impact strength.

Polymer — Stable chemical compound or mixture of compounds consisting essentially of repeated structural units. UV-curing inks, once cured, become a solid polymer.

Polypropylene — A type of plastic used in banners, noted for its flexibility at low temperatures and its resistance to chemicals.

Polyurethane — Any of various synthetic polymers used in elastic fibers, molded products, coatings, etc.

Pounce pattern — A full-sized pattern of any design to be painted. Once the pattern is created, the outline is perforated using a manual or electric tool. The pattern is then held firmly against the substrate and the perforations patted with powder, leaving an outline of the design.

Pressure-sensitive — An adhesive that reacts when pressure is applied to the surfaces it is between. Sometimes used to refer to vinyl with a pressure-sensitive adhesive.

Primary wiring — Electrical wiring that directly connects a device, such as a neon transformer, to the breaker box.

Prime — To coat a raw substrate

prior to the application of paint or adhesive. A primer coat prevents subsequent coats of paint or adhesive from being absorbed.

Process color — The three primary colors of printing — cyan (blue); magenta (red); and yellow; plus black. When printed as halftones in that order, they create a full range of natural colors. Their printing is also known as four-color process or CMYK.

Pumping system — In neon tube production, the pumping system is used to remove impurities from the tubes and fill them with rare gases. A pumping system typically consists of a manifold, vacuum pumps, rare gases, a bombarder and electrical controllers.

PVC — Polyvinyl chloride, the most common plastic in use in the world. PVC is extruded or cast as sheets, tubing or films. PVC films are also commonly referred to as vinyl.

-R-

Raceway — A metal structure enclosing the electric components of a sign.

Raster image — An image created by a collection of pixels arranged in a rectangular way.

Rasterization — The process of translating data into a bitmap pattern for output by a digital printing device.

Reflective sheeting — Film with very small glass or glass-like materials encapsulated below its surface, creating the ability to bounce light beams back to its source.

Resin transfer — Method of heating a color on a carrier sheet (called a ribbon or foil) and printing it onto a substrate. The plastic-based resin is fused onto a material such as vinyl, creating a more-permanent image with waterfastness and UV protection.

Resolution — In digital imaging and printing, the number of pixels (or dots) of information per horizontal inch of actual image; the higher the number, as measured pixels horizontally and vertically, the more-precise the pictured image. In plotting, the degree of accuracy that a plotter will place a knife-head in relation to a theoretical, perfect location of a coordinate.

Retainer — The slotted portion of the edge that holds the translucent face within a sign cabinet. The projecting rim around the

sign face that holds it in place.

Retarder — An additive that slows the drying time of ink or paint.

Reverse channel letter — Channel letter which has a face and sides but no back, and is pegged out from a background surface. When the inside of the channel is lit, it produced a halo effect around the letter.

RIP — (Raster Image Processor), software used to create and place dots (or bitmaps) for printing, and then transferring that information to a printer.

Routing — Elimination of material in a substrate, using a tool bit machined to remove material.

-S-

Sandblasting — A pressurized stream of sand or synthetic particles used to remove material from a substrate, such as glass, wood or HDU. A rubberized stencil of the artwork is either hand- or computer-cut and applied to the substrate, which is then sandblasted.

Saturation — The measurement of white, with zero percent representing pure color.

SCGFP (Secondary-Circuit Ground-Fault Protection) — A ground fault detection system built into neon transformers based on the UL 2161 Standard, that detects current flow to ground and, if it reaches a preset level (15 mA or greater), turns off the transformer.

Sheet metal — Aluminum or steel in sheets or plates used as a sign substrate.

Showcard — An interior sign utilizing a card stock substrate and often decorated with tempera paints. The standard showcard size is 28" x 44".

Sign — Any device, structure, display or placard which is affixed to, placed on or in proximity to, or displayed from within a building to attract the attention of the public for the purposes of advertising, identifying or communicating information about goods and services.

Single-face — A sign consisting of one face, rather than back-to-back faces.

Sizing — The substance applied to the substrate before gilding in order to make the gold leaf adhere to the surface.

Solvent — A petroleum-based liquid used to modify oil-based paints and inks and to remove them from frames and brushes.

Solvent Inks — Inks that use solvent as a carrier. Commonly used for printing onto vinyl, and offering good outdoor durability. Printers using solvent-based inks emit VOCs and should be ventilated.

Spectrophotometer — Measuring device that takes the colorimetric and spectral values of samples from a printed piece or device and compares them to standard colors.

Spot colors — Color used for a specific need within a print. It may be a separate, special tone to match a corporate color, or it may result from the overlapping of colors within a halftone.

Sprocket feed — Process where material is fed through a plotter by aligning pre-punched holes along the medium edges with raised points along the ends of the plotter's motor-driven drum wheel. Also called tractor feed or pin feed.

Squeegee — A hard plastic or nylon blade used to apply pressure to increase surface adhesion between cut vinyl and the transfer tape or between the vinyl and sign face.

Stencil — A thin sheet of material into which a design is cut.

Stopcock — A valve for controlling or stopping the movement of a liquid or gas.

Substrate — The material out of which a sign face is made. Wood, metal sheeting, paper and acrylic are all sign substrates.

Supports — Insulators that support a neon tube, as well as hold it away from the background surface and provide some impact resistance. Also known as stand-offs.

-T-

Tack — The stickiness of an adhesive under a given condition. Some adhesives require a particular temperature range for maximum tack.

Thermal-transfer printer — Device that uses a heating-element head to transfer resin- or wax-based colors from a carrier sheet (a ribbon or foil) to a medium.

Thermoforming — Taking a flat sheet of material and giving it dimension by heating and then forcing it into a mold either mechanically or pneumatically. Also known as pan-forming.

Thinner — Any liquid used to reduce the thickness of paint or ink.

Throughput — Actual speed of a

plotter in completing a job. Difficult to measure, but it represents a plotter's ability to process information and then cut an image.

Thumbnail — A type of rough sketch before preparing a complete design.

Traffic count — The estimated number of people who will see a sign in a given time period.

Transfer tape — Medium-tack adhesive-coated translucent paper, placed on weeded vinyl images still on the original carrier liner; the tack of the tape is stronger than the adhesion of the vinyl to the coated liner, so the image is pulled off the liner in a transfer to another surface.

Transformer — In neon displays, the mechanical or electronic component that transforms incoming voltage (primary voltage) into a higher voltage (secondary voltage).

Translucent — The property of a substrate, vinyl, paint or ink to allow the passage of some light through it without being transparent.

-U-

UL (Underwriters Laboratory) — Private organization which tests electrical devices and their construction and certifies their safety.

UV-curing — Printing process in which a lamp emitting ultra violet (UV) rays is used to transform monomer-based liquid inks (deposited onto a substrate) into polymer-based solid inks. Commonly used process in many digital flatbed printers.

-V-

Vacuum forming — Taking a flat sheet of plastic material and giving it dimension by placing it in a mold, heating it until it's flexible and then withdrawing the air in the mold, creating a vacuum. See thermoforming.

Vacuum gauge — Measures the degree of vacuum in a neon manifold by measuring residual gas pressure.

Vectorization — Function of tracing around a bitmap image to create an outline comprised of line segments, or vectors. Also called autotracing.

Vinyl — Polyvinylchloride (PVC) film that, in sign making, is backed with an adhesive that will create a strong bond to a surface when pressure is applied.

Viscosity — The thickness of a paint or ink.

VOCs — Volatile Organic Compounds (VOCs) are petroleum-based chemical compounds with high vapor pressure and low water solubility (evaporate easily). Commonly found in industrial solvents, including those used as carriers in solvent-based inks. VOCs are considered toxic, and airborne VOCs are federally regulated in some industries.

-W-

Wall mount — A single-face sign mounted on a wall. Another name for a wall sign.

Weed — Process of peeling extraneous vinyl (or matrix) away from a plotter cut, leaving only the sections representing the final image. Pulling the extra vinyl away in one quick stroke is known as rip weeding.

-X-

X axis — Theoretical horizontal line providing a lengthwise reference point for plotters and routers.

-Y-

Y axis — Theoretical vertical line providing a longitudinal reference point for plotters and routers.

-Z-

Z axis — Theoretical line providing a depth reference point for routers.