

Printing Terms

Aqueous coating Some printing presses have an extra unit for adding an aqueous (water-based) varnish to an entire sheet as it is printed. These coatings add a lovely gloss to a printed piece and make them more durable and less prone to fingerprints and smudges.

Anilox The flexographic printing process requires a special roller to control the density of the ink transferred from the ink metering roller to the printing plate. Anilox rollers are cylinders with microscopic cells etched into the surface. Each cell has a fixed volume, which defines the amount of ink the cell can hold. A *doctor blade* removes ink from the surface of the anilox as it turns.

Blanket In offset printing, a rubberized surface that transfers the inked image from plate to paper.

Blanket cylinder In offset presses, the metal cylinder around which the blanket is wrapped.

Cold-set printing Ink applied to paper on a printing press, then allowed to air-dry by evaporation of the *vehicle* that made the ink liquid. As opposed to *heat-set* printing, where the ink is dried by heating elements in the printing press.

Cover stock Heavy-weight paper used for the covers of magazines and publications.

Dampening In lithography, fountain solution (mostly water) is applied to the plate as it turns. Image areas are smooth (called *oleophilic*), which makes them attractive to ink. Non-image areas are porous (called *hydrophilic*), which makes them attractive to water. When in balance, the ink sticks to the smooth areas and the water to the porous areas.

Densitometer A device used to measure the density of ink (the ink film thickness). Density is the inverse of reflectivity.

Die A stamping tool used in embossing and cutting. Often requires a counter-die.

Dimensional stability A paper's resistance to stretching or distortion, especially when damp.

Doctor blade A siff squeegee-like blade that removes excess ink on flexographic and gravure printing presses.

Dot gain The spread of dots during several stages of printing or platemaking, as measured by the increase in size of a midtone dot. When a 50% dot expands into a 60% dot, the gain is 10%. *Average* dot gain on offset printing is more than 20%. All printing processes experience dot gain, even ink-jet and toner-based printing.

Dry lithography and waterless offset A type of lithographic printing that uses a plate with a coating that repels ink without needing to be dampened. Ink is confined to the image area without the usual dampening. These plates are usually surfaced with silicone in the non-image areas.

Drying oven An oven used to dry paper after printing. In heat-set web-offset lithography, the paper passes from the press through a drying oven on its way to the folding and finishing units on the press.

Embossing Producing a raised image in paper by means of a die striking from the back of the paper into a counter-die at the front.

Engraving (Intaglio) A printing process in the family of Intaglio printing, where the image is engraved into a copper or steel plate. On the press, the plate is cleaned by a squeegee (*doctor*) blade, and the ink is then transferred by pressure and capillary action. Engraving is used for fine business stationery and currency printing.

Flexography Relief printing using a flexible printing plate—usually a photopolymer. The image is raised, as with an ordinary letterpress. Flexography is most commonly used to print on food product labels, pressure-sensitive labels, cardboard and other packaging.

Form A form is one side of a *signature*. A group of pages positioned so that when folded and finished, they come out in the right order and position.

Fountain The supply of ink for a lithographic press. Sometimes also the supply of dampening solution.

Gang run Two or more printing jobs run simultaneously on the same press sheet. Large sheets of paper are shared by several jobs and, after printing, are cut into separate jobs.

Gravure printing (Intaglio) Sometimes called *engraved printing*, gravure is printing by the Intaglio process where the image is engraved into a copper plate, ink is applied, then the residue is removed from the surface by a stiff blade called a *doctor blade*. This is the process used to print fine business stationery and currency. A variant is *rotogravure*, used to print very-long-run publications like the *National Geographic*.

Gripper edge The gripper edge of a sheet of paper is the leading edge where the sheet is grasped mechanically and drawn into the press.

Gripper margin Unprinted space allowed along the gripper edge of the printing medium.

Halo effect Occurs when ink builds up at the edge of an area, making the interior look lighter. Common in electrophotographic (toner) printing and some letterpress.

Hickey A donut-shaped imperfection in presswork caused by paper particles that get stuck to the blanket cylinder of an offset press.

Imposition The arrangement of pages for printing on a press sheet in such a way that they appear in correct order when the sheet is folded.

Impression cylinder A cylinder that presses paper into contact with an inked surface.

Ink coverage A percentage indicating the inked area of the paper. Also called *dot area*, it is the ratio of area covered by ink divided into the area measured.

Printing Terms (continued)

Inkometer A tool for measuring the tackiness or stickiness of ink.

Inner form The part of an imposition that consists of inside pages. On a printed sheet, the inner form pages are those that will be on the inside when the sheet is folded into a signature.

Intaglio A family of printing processes where the image is engraved *into* the printing plate. Used primarily by two printing processes: *gravure* printing—used for fine stationery and currency printing, and *rotogravure*, used to print very long runs of commercial publications. The benefits include tremendous ink film thickness and the run-length of the plates, which will last for millions of impressions.

Lay-down sequence The order in which colors are printed.

Letterpress Relief printing directly onto the paper. The oldest form of printing. Raised areas of the plate hold the ink and transfer it directly. This is in contrast to intaglio or gravure printing, where sunken recesses hold the ink, and also in contrast to offset printing, where the plate has no relief.

Letterset Offset-letterpress printing. The image is defined by raised areas, as in the direct case. The raised areas get inked but do not come in contact with the paper. Instead, the image is transferred to a blanket, which in turn transfers it to paper. Also called *dry offset*. Resembles offset lithography in using a blanket as intermediary.

Moiré pattern Any of several interference patterns that show up in printed products a result of the *nearly exact* frequency of half-tone dot patterns with other patterns in the artwork. Moiré is known by physicists as a *beat pattern* where two similar patterns occasionally match but not consistently, causing a visible wave-like pattern in an image.

Offset Printing that uses an intermediary surface called a blanket to transfer the image from the inked surface to the paper.

Perfector A type of printing press that prints both sides of the paper as it passes through the press. Web presses are usually capable of perfecting the job as it is printed.

Photopolymer plate Most flexographic printing is done with a relatively thin plate made of a polymer material and coated with a photosensitive surface, which is exposed from a film negative and processed to create a relief image. Rubber plates are used in some flexographic operations.

Piling A printing problem in which ink pigment accumulates on a plate or blanket.

Platen press A type of flat letterpress that uses a hinged clamping action to bring the paper and plate together.

Press proof A proof pulled from the press prior to an actual print run.

Press run or print run The number of copies in one printing.

Progressive proofs, or progs Proofs made on a press. Each color is shown separately, and various combinations are shown overprinted. Progs are used as a guide in adjusting the final color quality.

Register The correct alignment of colors during printing.

Register mark A mark to assist in making the correct alignment of overlay copy and color during printing in multiple colors.

Relief plate A printing plate with a raised, image-bearing surface. Letterpress and flexography use a relief plate.

Rotary printing Any method using a cylinder as the primary printing surface.

Rotogravure Intaglio printing on a rotary, web-fed press.

Rubber plate A flexible relief plate used in flexography.

Screen printing A process in the *porous* family of printing processes. Used to print on garments, industrial products, and signs, screen printing is capable of laying down a tremendous amount of ink. The process involves making a stencil with fabric and a photo-sensitive coating, and using very thick plastic ink and a squeegee to force the ink through the stencil onto the substrate.

Sheet-fed press A printing press into which individual sheets of paper are fed, as contrasted with a *web-fed* press printing on a continuous roll of material—usually paper.

Show-through When the impression on one side of a sheet is visible on the other side, through the paper.

Signature A group of pages printed on the same sheet, front and back. After printing, the sheet is folded so that the pages fall in correct order.

Slurring A printing problem in which halftone dots appear elongated or smeared.

Tack Adhesive quality, or stickiness, of ink.

Trim marks Marks indicating where to trim.

Varnish A clear or tinted ink that adds a sheen or gloss or even a matte-surface quality to the press sheet. Varnish usually requires an extra printing plate with images for the desired areas to be coated. See also *aqueous coating*.

Web-fed press A printing press into which a continuous roll of paper is fed.

Work-and-tumble A type of sheet-fed printing in which front and back images share a single plate. The sheet is printed on one side, flipped end-to-end (along the gripper-edge axis), and printed on the other side. After flipping, the paper has a new gripper-edge.

Work-and-turn Another type of sheet-fed printing in which front and back images share a single plate. The sheet is printed on one side and then turned side-to-side so that the back side can be printed with the same plate. This does not change the paper's gripper-edge.

Zinc engravings Line or halftone art as a relief image on zinc plates for letterpress printing. Other metals have also been used in the making of relief plates: aluminum, magnesium, copper, and brass.