

## GLOSSARY OF TERMS

### Terminology Used for 2PC Metal Decorating Process Design and Measurement

#### **Abrasion Resistance**

The ability of a material to withstand mechanical action such as rubbing, scraping or erosion, that tends to progressively remove material from the surface.

#### **Adhesion**

The state in which two surfaces are held together by interfacial forces which may consist of valence forces or interlocking action, or both.

#### **Adhesive**

Any substance that is capable of bonding other substances together by surface attachment.

#### **Additive**

Wet or dry raw material (generally not referring to the colorants or vehicle) that affects the physical and/or chemical properties of the ink.

#### **Base Ink**

A finished ink that contains only one colorant.

#### **Base Blend**

Ink made by mixing base inks together in the proper ratio to achieve the desired finished ink color.

#### **Batch**

A quantity of ink made at one time.

#### **Blanket**

The Blanket or Printing Blanket is a compressible sheet of synthetic rubber which transfers an ink image from the printing plate to the substrate.

#### **Blend**

An ink formulation consisting of a combination of finished base inks.

#### **Body Maker**

A reciprocating die press used to draw, iron, and form the basic 2PC can body. A cup or can body blank is forced through a series of concentric dies to form a dimensionally correct 2PC.

#### **Bump**

Over-printing an image a 2nd (or 3rd) time with the same ink. Bump plates usually have wider openings of reverse copy than the main plate image it over-prints.

#### **Clean**

A general term for a light, bright appearance to the print tone or mass tone of an ink.

#### **Colorant/Coloring Matter**

A pigment; dye; or other material which gives the ink color.

**Contamination**

The presence of foreign matter in an ink.. This usually refers to another ink, but can be any foreign matter.

**Cross-contamination**

Contamination that occurs specifically on the decorator from inks in contact with one another on the blankets.

**Crosslinking**

The chemical combining of monomers, oligomers and/or polymers to enhance their properties which also renders them insoluble.

**Cup**

A cup shaped can body blank.

**Cupper**

A hydraulic plunger press used to stamp a cup shaped can body blank from a coil of aluminum.

**Cure**

Conversion of a material from a raw “liquid” state to a finished and useful “solid” condition by chemical reaction.

**DE/Delta E**

An arithmetic value referring to the difference between two colors. There are many different color measurement factors and tolerance methods which determine DE value.

**Decorator**

A type of printing press designed for printing tubular forms. Up to eight colors are applied to a common blanket via a raised image plate before being offset onto the can. This process is commonly referred to as dry offset.

**Density**

In physics - A measurement of the mass per unit of volume of a substance. In printing – A measure of the reflected light. See also “Optical Density”.

**Drawdown**

A test by which two inks are compared side-by-side on a common substrate for the purpose of comparing shade. A “lab print” is often incorrectly called a drawdown.

**Dry Offset**

The printing method of the 2-piece decorating process. “Dry” refers to the lack of a water dampening process in the inking system.

**Durometer**

The measure of Shore Hardness of a rubber or synthetic composition compressible roller.

**Dye**

Dry coloring matter, usually a soluble powder to be mixed and dissolved with a vehicle to produce ink and similar products.

**Dyne Level**

Dyne level testing is a method widely used to test the treatment level of a substrate intended for printing, laminating, or coating. Test results are based on how varying surface tension solutions react when applied to a non absorptive surface.

**Feathering**

Small lines going from the color image area to a non-image area or another color.

**Fill-in**

Solid color merging into a non-image area or another color.

**Finished Ink**

An ink that meets all QA specifications.

**Flexibility**

The ability of a material to twist and bend without cracking or suffering other damage.

**Gelling**

A premature chemical reaction of an ink or coating during production or storage from a liquid state to a solid state that cannot be reversed by stirring. In 2PC ink, this is most commonly the result of exposure to heat.

**Graduated Screen**

A screen that fades from a stronger to a lesser % value.

**Gloss**

The property of a surface which causes it to reflect light.

**Grind**

A measure of the particle size and incidence of any dry raw materials present in an ink. Or, the act of passing ink through a mill to crush dry raw material particles.

**Halftone**

A reproduction of a photograph or other image in which tones of gray or color are produced by variously sized dots of ink.

**Hazard**

Refers to the likelihood that a substance or process will cause injury in a given set of conditions of manufacturing, use or disposal.

**Heat Cure (Thermal Cure)**

A curing reaction which takes place when the materials are subjected to a form of heat.

**Ink Train**

The path taken by the ink from the fountain down the series of inker rolls. Can also include the ink path after the inker, via plates and blankets to the can.

**Inker**

The portion of the decorator which distributes and transfers ink to the printing plate.

**Lab Print**

A proofing method to check the color of a single ink. Can be done with a variety of table-top proofers. A lab print is often incorrectly called a “drawdown”.

**Lay/Laydown**

The surface smoothness of the printed ink on the aluminum.

**Line Speed**

The rate of travel of the substrate (aluminum beverage cans) through the production process, usually expressed in cans per minute.

**Lines per Inch (LPI)**

The number of lines of dots per inch, both horizontally and vertically, that comprise a halftone or screen.

**Little Joe™**

A brand of table-top proofer.

**Long Ink**

Ink with low viscosity.

**Mar Resistance**

The ability of the surface of a material to withstand mechanical forces.

**Mass Tone**

The color of an ink in its dense, unprinted, uncured form.

**Mill**

A machine through which mixed ink is passed to crush or grind dry raw material particles to achieve homogeneity.

**Misting**

Ink spraying from the rolls of the inker.

**Opacity**

The degree to which an ink prevents light from reaching the substrate.

**Optical Density**

The logarithm of the reciprocal of reflectance or transmittance. A dimensionless number. In printing and color, it is the log of the ratio of visible light absorbed by and “absolute white” to the light absorbed by the measured ink.

**Pigment**

Dry coloring matter, usually an insoluble powder to be mixed with a vehicle to produce ink and similar products.

**Photo-realistic**

A pseudo real-life printed image created by building/over-printing screens of different colors. See also “Wet-on-wet”.

**Pigment Strength**

The % of total dry colorant, by weight, in a finished ink.

**PMS®**

Pantone Matching System®, a series of standard colors which have been copyrighted by Pantone®. These colors cannot be exactly reproduced on beverage can substrates and may not include specific reference to Pantone® or PMS®.

**Print Strength**

The visual intensity of the print-tone of an ink.

**Print Tone**

The color of an ink as printed on the can.

**Printing Plate**

A sheet of metal, plastic, rubber or other material bearing an image to be reproduced. In 2PC MD, a raised image photopolymer or metallic plate is most commonly used.

**Reducer**

A liquid raw material which lowers viscosity and tack of the ink.

**Register**

The process of fitting the printed image from two or more printing plates.

**Relative Strength**

The pigment strength of a sample or batch of ink compared to the standard pigment strength for that ink.

**Resin**

A polymeric material, either natural or synthetic, which is usually considered an ingredient in formulation.

**Retain**

See “wet sample”.

**Rheology**

The flow characteristics of an ink.

**Retort**

A sterilization process used for beverages containing perishable components such as fruit juices or dairy products. The Retort process uses high temperature as well as pressure to achieve sterilization.

**Safety**

Refers to the practical likelihood that a substance will not cause injury in a given set of conditions of manufacturing, use or disposal.

**Saturation Point**

The physical ink thickness, and densitometric value, at which the print tone no longer changes, no matter how much more ink is applied. (Not to be confused with Saturation i.e.: “Chroma” in color measurement.)

**Screen**

A composition of dots that create a visual image at less than solid value. Usually identified as being at a certain % value.

**SDS (Safety Data Sheet)**

A document, available from suppliers of chemical products, which outlines potential hazards associated with the particular chemical product and methods for proper handling.

**Shelf Life**

The amount of time a material may be stored under specified conditions with no significant changes in properties.

**Short Ink**

Ink with high viscosity.

**Slinging**

Whips or pronounced splatters of ink from the rolls of the inker.

**Solvent**

A substance capable of dissolving another substance to form a uniform, dispersed mixture at the molecular or ionic level.

### **Spectral Output**

The radiant output of a lamp versus wavelength. It is displayed in a variety of ways, but commonly a graph or chart of output watts plotted against wavelength. The appearance of the plot will vary dramatically, depending on the wavelength resolution used. A technique of normalizing is to integrate energy over 10 nanometer bands, to reduce the difficulty of quantifying the effects of line emission spectra.

### **Stabilizers**

Additives to coating, ink or adhesive formulations which help extend shelf life and resist heat or other degradation.

### **Stay-away**

The space between 2 different ink colors on the can. See also "Stay-back" and "Window".

### **Stay-back**

See "Stay away".

### **Substrate**

The material onto which ink is printed.

### **Tack**

Stickiness of a substance, or the force required to split a film from one surface to another.

### **Thixotropic**

The property of being viscous when static, but less viscous when agitated; shaken; or stressed.

### **Toxicity**

General capacity of a substrate to cause injury to a living organism but cannot really be defined without reference to exposure dose, the method of exposure, how often exposure takes place, the specific type and severity of injury, and time needed to produce the injury.

### **Transfer**

How readily ink passes from one ink-bearing media on the decorator to the next; i.e.: Fountain-to-roll-to-roll-to-plate-to-blanket-to-can.

### **Transparent**

Having the property of transmitting light without appreciable scattering so that bodies lying beyond are seen clearly.

### **Vehicle**

The primary binding or wet ingredient of ink that carries the colorant down the ink train.

### **Vignette**

A screen that fades into the background without a definite border. See also "Graduated screen".

### **Viscosity**

The internal resistance to flow exhibited by a fluid.

### **Volatiles (VOC)**

Solids or liquid materials which pass into the vapor state at a given temperature.

**Wavelength**

A fundamental descriptor of electromagnetic energy, including light. It is the distance between corresponding points of a propagated wave. It is the velocity of light divided by equivalent frequency of oscillation associated with a photon. The typical symbol for wavelength is  $\lambda$  (lambda).

**Wet-on-Wet**

The process by which 2 or more ink colors print over one another. The individual plates can be screened to create multi-tone and photo-realistic images on the can.

**Wet Sample**

A small amount of uncured ink. Sometimes called a “retain”.

**Whiteness Index**

A measure of the visual rating of whiteness for certain white and near-white surfaces.

**Window**

See “Stay-away”.