Cork Tech TalkNews

Manufacturers of Waterbase, UV+EB Curable Coatings, Varnishes and Adhesives

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# COLOR SHIFT & AQUEOUS COATINGS

The use of Aqueous Coatings by the Printing Industry is without doubt, a success story that now sees many millions of pounds of coating used annually to protect and enhance printed material. This success has not always come easy, as the processes of printing involve many variables which must be in control in-order to produce the desired, saleable result. These variables are inherent to the printing and coating processes themselves, and encompass such things as, substrate, inks (pigments), coating, fountain solution, ink coverage, speed, drying, handling, shipping, and last but not least, the effects of the environment.

There are a number of ink related Graphic Arts terms that must be the concern of printers that use coatings. These terms, which follow, are used in the Printing Ink Industry and appear in the glossary of the Printing Ink Handbook compiled by the National Association of Printing Ink Manufacturers.

**Alkali Resistance** The relative ability to withstand the action of alkalies. To be distinguished from soap resistance.

**Bleed** 1. The spreading or migration of an ink component into an unwanted area. 2. The spreading or running of a pigment color by the action of a solvent.

**Color Burn-out** An objectional change in the color of a printing ink which may occur either in bulk or on the printed sheet. In the former case it is associated primarily with tints, and is caused by a chemical reaction between certain components in the ink formulation. In the latter case it is generally caused by heat generated in a pile of printed material during the drying of an oxidizing type of ink.

**Fugitive colors** Inks made from pigments or dyes which are not permanent and change or lose color rapidly when exposed to light, heat, moisture, or other conditions.

The color portion of an ink consists of a rather limited number of pigments, dyes or combinations thereof, that may be manufactured in North America or imported. These colorants vary in color fastness properties when considering resistance to heat, moisture, light, hydrocarbons, oxygenated solvents, acids, alkalies and other materials; according to the Raw Materials Data Handbook, Vol 4, Pigments, published by the National Printing Ink Research Institute.

Inks formulated with one or more of the pigments sensitive to heat, moisture, and/or alkalies, under conditions that are not always predictable, have been seen to shift in color after they have been printed and aqueous coated.

At times this change can be seen immediately or it may take 24 hours or longer to be noticed.

The pigments with known alkali (pH) and other resistance sensitivities that may cause color shift problems are:

**RHODAMINE RED BS ... blue shade, bright bluish red**
**RHODAMINE RED YS ... yellow shade, bright bluish red**
**METHYL VIOLET ... bright bluish violet**
**REFLEX-ALKALI BLUE ... greenish blue**
**REDLAKE C (BARIUM) ... bright yellowish red**

Additionally, salt derived pigments such as those listed here may also be affected, although any color change is reported to be
toward the clean side, which is usually not objectionable.

**BON RED**
**LITHOL RED**
**LITHOL RUBINE**
**RED 2B**

Fluorescent pigments, especially the pinks and bluer shades of red will also be affected and must be used with caution.

Problems with color shift are much more likely to be seen in weakly pigmented, lightly tinted inks. Here especially, the use of alkali resistant permanent pigments, as listed below is recommended.

**NAPTHOL REDS**
**QUINACRIDONES**
**PHTHALO BLUE & GREEN**

A rule to remember is that Printing ink suppliers should be consulted whenever the use of aqueous coating is contemplated. This should assure that inks are supplied that are compatible with the processes involved with printing and aqueous coating.

It is strongly recommended that all of the elements of a job be proofed and tested for full qualification before production commences. When proofing pre-production, the recommended coating should be coated over the exact inks and substrate to be used in production.

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Cork Industries, Inc. 500 Kaiser Drive Folcroft, PA 19032 610.522.9550 F 610.522.9659
Elmer W. Griese, Jr. 440.353-0980 ewgriese.cork@att.net
Website http://www.corkindustries.com

Production should be duplicated as closely as possible applying coating wet over wet inks or wet over dry, whichever the case may be. All of the jobs' performance property requirements should be measured a minimum of 24 hours later to assure that the correct choices of materials have been made.

Material choices, matched to production process variations in control, should lead to the ability to satisfy and exceed the requirements of the customer, the buyer of aqueous coated, enhanced printing.

Work smart and **TEST** to know that you will always be able to meet each and every job requirement of your customer.

***LOOK TO CORK!***..... for your coating and varnish needs, for both aqueous & UV/EB coatings/ and varnishes.