



Tech Talk From

Prisco[®]

Tech Talk #C3

ENVIRONMENTAL CONDITIONS AND SEASONAL CHANGES

It is important to be aware of the environmental conditions inside the pressroom as well as outside, as both environments can affect the printing and coating process.

Hot, Humid, Summer-Like Conditions

Drying rates are slower anytime an excessive amount of heat and moisture are present. Stock, ink, and coating, are affected by heat and moisture. Proper care should be taken in order to deliver a saleable press sheet. Process control of all the variables in the printing process is critical when conditions are extreme. Pile temperatures, coating viscosity, film weight, ink emulsification, ink density and fountain solution conductivity should be closely monitored.

Maintain the recommended pile temperatures during printing. A combination of infrared energy and warm air are needed. The shearing and removal of moisture from the sheet is extremely important during hot and humid conditions. Under these conditions, allow for increased cure time before finishing and converting.

Coating viscosity and film weight are directly related. When conditions are hot and humid the viscosity will decrease, which results in lower film weights. The lower film weights will, in turn, reduce gloss and rub resistance. It may be necessary to purchase higher viscosity coatings in the summer months to combat this issue. Another option is to increase the film weight of the coating. A recommended film weight of 1 wet pound per 1000 square feet of stock is required for optimum coating performance. If the press is equipped with variable-speed rollers, an increase in film weight can be obtained by increasing the speed of the pan roller. Film weight is also controlled by pressure settings. Reducing the blanket stripe to 1/8" or 3 mm will also increase film weight.

Over emulsified inks, heavy ink densities and uncontrolled fountain solution conductivity (signifying reservoir contamination) can all lead to slow drying coating. Use caution under extreme conditions and control the process.

COLD, DRY, WINTER-LIKE CONDITIONS

Just like hot and humid conditions, the control of the process is equally important during cold and dry conditions. Cold conditions may increase coating viscosity, which will result in heavier

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film weights. Increased viscosity and film weight may cause the coating to sling, orange peel and cause drying problems. If the film weight exceeds 1.2 wet pounds per 1000 square feet, the sheets may stick in the pile. To increase temperature and decrease viscosity, allow the coating to circulate through the press for about 15 minutes.

Dry air will cause the coating to become brittle and crack. When the drying rate of the coating is faster than the drying rate of the ink, cracking can occur. Increasing infrared settings will speed ink drying; reducing air temperature will slow coating drying. Thin coating film weight is another reason for cracking. Maintain a coating weight of .8-1.2 wet pounds of coating per 1000 square feet of substrate.

Controlled Environmental Conditions

The best way to prevent the adverse effects of a fluctuating pressroom environment is to control the environment. The performance of aqueous coating as well as inks and stocks are optimized when the pressroom is controlled for temperature and humidity. Optimum results are achieved when the pressroom is between 65-75°F (18.3 – 23.9°C) and between 40-60% relative humidity.

BENEFITS OF CONTROLLED TEMPERATURE AND HUMIDITY:

- Optimizes aqueous coating performance
- Consistent and predictable drying
- Optimum and consistent gloss
- Optimum and consistent rub resistance
- Optimum and consistent film formation, i.e. no cracking, no orange peel
- Eliminates static electricity
- Allows for higher press speeds
- Eliminates sheet curl and warping
- Improves sheet separation
- Allows better ink transfer
- Stabilizes raw materials- i.e. paper, ink, fountain solution, coating
- Improves overall conditions of the workplace
- Provides for dust suppression

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