



# APPVION

## **FLEXOGRAPHIC PRINTING ON APPVION DIRECT THERMAL PAPERS AND FILMS**

### ***A printing guide for best practices***

***June 2018***

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Appvion recognizes that Flexography is the most widely used print process for pre-printing Direct Thermal paper and film substrates. Our Direct Thermal products are designed to facilitate good performance in pre-printed Flexo applications from the time of printing to imaging. For ultimate success, the thermal media must retain variable image function through quality thermal image performance AND retain the communication function of the pre-printed graphics.

Direct Thermal papers have specialty coatings applied to the substrate surface that enable variable image function in the presence of heat. The heat applied by the thermal printer during imaging often exceeds 300° F while in the presence of nip pressure and shear from motion across the static print head. These dynamics present challenges to the printed substrate that printers/converters need to be aware of.

Appvion has its own internal print-lab and has tested dozens of inks on a variety of Direct Thermal substrates. From this testing we are happy to provide the following considerations for Flexographic printing on our Direct Thermal papers and films. We also have a document that lists compatible Flexographic printing inks available upon request from your sales or technical services representative.

#### *Flexographic Printing considerations:*

- Across most basis weights, Appvion offers three main coating design platforms:
  - Résiste<sup>®</sup> top coated (TC) grades – non-absorptive surface, requires high pigment and good wetting ink for dark colors
  - Résiste<sup>®</sup> eco top coated grades – absorptive surface, requires high pigment ink for dark colors
  - Alpha non-top coated (NTC) grades – very absorptive surface, watch out for solvent interaction with certain inks. Not compatible with most UV overprint varnishes.
- Most applications use waterbased and UV Flexographic inks. The amount of solvent present in waterbased inks should be kept at a minimum. Typically for narrow-web printing less than 5% is fine. Wide web printing will allow for higher solvent content due to the higher web speeds associated with that process. Since most solvents will attack thermal coatings and compromise thermal image performance, make sure the solvent content is appropriate for drying conditions given your desired line speed. In general, problems will come in when solvent is still present within the ink coming out of the dryer. Additionally, NTC substrates may tolerate less solvent content than TC's as the flexo ink is coming in direct contact with the thermal chemistry on a NTC.
- UV inks tend to create high drag under the print head and especially during imaging. Such drag can prove problematic and can result in poor label tracking through the printer. To counter this, choose an ink that has good slip properties (like a gloss-coat overprint varnish) or use a UV curable overprint varnish.
- Waterbased inks also tend to create excess drag under the printhead during imaging. Therefore water inks should have good heat resistant properties AND good slip properties when exposed to elevated temperatures.
- Most major ink suppliers have an existing ink series suited for Direct Thermal applications. Start with your current ink supplier, always trial the ink and substrate in the end use printer before launch, and modify if quality issues are encountered.
- As always, contact your Appvion sales or technical services representative with any specific questions, we are happy to help.