



SPECIALTY CARBON BLACKS

SPECIALTY CARBON BLACKS FOR UV CURE PRINTING INKS





Performance and leadership in specialty carbon blacks

UV cure inks is one of the fastest growing segments in the printing ink industry today. They have gained acceptance for use in lithographic and flexographic printing as well as in screen-printing. Formulators have been using carbon black as a key pigment in UV inks; however, the use of carbon black presents some interesting challenges. Because carbon black absorbs UV radiation, it can interfere with the cross-linking of the UV ink resin system, which can be corrected by either additional photoinitiator or higher energy for cure. Also, black UV inks tend to build viscosity upon storage.

Our MOGUL® E and BLACK PEARLS® E products are engineered to meet the various demands presented by UV inks. Our powdered MOGUL E carbon black consistently delivers lower cure energy and excellent aged viscosity stability in both lithographic and flexographic UV cure inks in comparison to other carbon blacks, while maintaining a good balance of coloristic and dispersive properties. BLACK PEARLS E carbon black is a pelleted version of the MOGUL E product and can deliver similar benefits to UV ink systems.

PRODUCT OFFERINGS

MOGUL E carbon black
BLACK PEARLS E carbon black

Specialty carbon blacks for UV cure inks, enabling low cure energy, excellent viscosity stability and blue tone for lithographic and flexographic inks.

PRODUCT PERFORMANCE

Lower cure energy requirements:

Inks that contain our MOGUL E carbon black have been shown to consistently require lower energy to cure than UV inks using other carbon blacks, as shown in Figures 1 and 2 for a variety of systems. These lower cure energy requirements enable ink printers to increase the rate of printing, thereby reducing their costs.

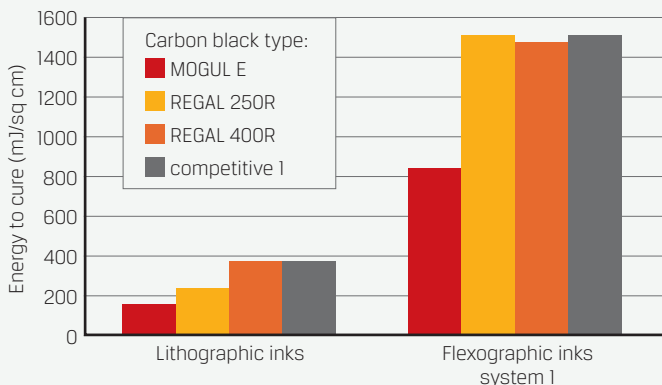


Figure 1

Cure energy of typical UV ink systems containing carbon black

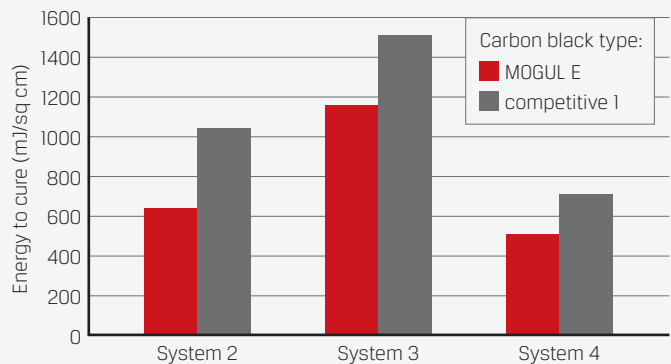


Figure 2

Cure energy of typical flexographic ink systems containing carbon black

One of the major costs associated with UV cure inks is the photoinitiator package. MOGUL® E carbon black also allows ink manufacturers to reduce the amount of photoinitiator and reduce the costs of their UV ink while maintaining ink performance. As shown in Figure 3, when using MOGUL E carbon black vs. the competitive product, the resulting ink can be cured using the same energy but with a reduced amount of photoinitiator.

Color characteristics

Inks made with MOGUL E carbon black are similar in color to those made with the competitive carbon black when printed at the same optical density. In both flexographic and lithographic UV cure inks, color performance when using MOGUL E carbon black is similar to that of the competitive product. At equivalent optical densities, the gloss is also similar.

Dispersion

The standard method for dispersing carbon blacks into UV cure inks is with a three roll mill, regardless of whether the ink is lithographic or flexographic. In all of our laboratory evaluations using a three roll mill, the MOGUL E carbon black was equal or better in dispersion compared to the other carbon blacks evaluated, as shown in Figure 4. The model formulations below were used to generate all the data featured in this brochure except for Figure 2.

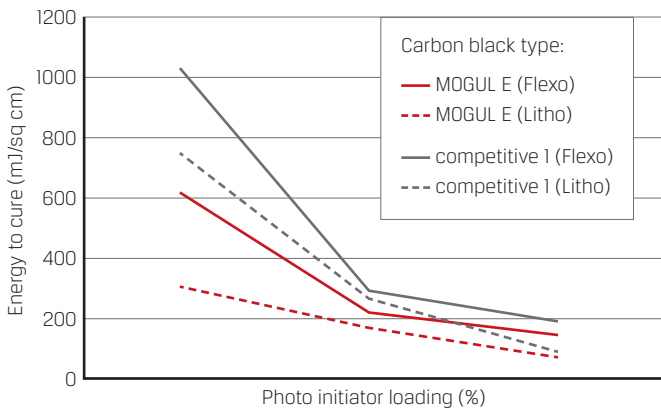


Figure 3

Cure energy vs. photo initiator loading

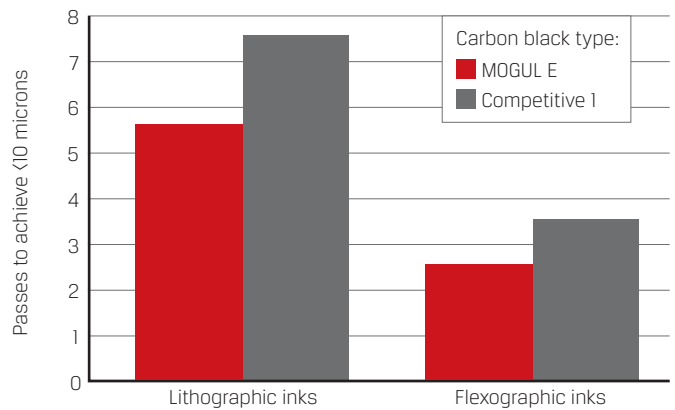


Figure 4

Carbon black dispersion using lab 3-roll mill

MODEL FORMULATIONS

Lithographic ink formulation

Product name	Description	Amount (%)
Actilane® 540	Oligomer	23%
Actilane 515	Oligomer	28%
Actilane 260GP25	Oligomer	10%
Actilane 432	Diluent	10%
Lanco TF 1778	PTFE modified Polyethylene wax	2%
Microtalc® 600	Talc	1%
Cure All 200	Photoinitiator	6%
carbon black	Pigment	20%
Total		100%

Flexographic ink formulation

Product name	Description	Amount (%)
Actilane 515	Oligomer	35%
Actilane 430	Diluent	25%
Actilane 422	Oligomer	10%
Viacure® DX	Photoinitiator	10%
Solsperse® 32000	Dispersing agent	5%
carbon black	Pigment	15%
Total		100%

Additional references

This Product Selection Guide provides specific information about our specialty carbon blacks for use in UV cure inks. For other application-specific product information, please visit cabotcorp.com or contact your Cabot representative.

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R02 12/2016