

Preparation and Use Guidelines – Opacode® S-1

Opacode® S-1 monogramming ink is a solvent-based, edible printing ink developed for brand identification of pharmaceutical and dietary supplement solid oral dosage forms.

Equipment

Opacode S-1 is designed for use with offset-gravure printers and can be customized for single or multi-track printers. This monogramming ink is also suitable for use with pad printers.

Preparation

- Opacode inks are liquid dispersions with insoluble particles that must be re-suspended immediately prior to use
- For optimal suspension, vigorous shaking by-hand or with an industrial paint-style shaker should be applied for two minutes
- A sealed bottle of Opacode ink is recommended for each print run; this should be replaced with fresh material at the end of a work shift (roughly 8 hours) due to inherent evaporation and adjustment of the original ink

In-Process Adjustments

Opacode inks contain volatile solvents that evaporate throughout the printing operation caused by fluctuations in both the process and environmental conditions. Viscosity and performance of the ink will vary due to this evaporation, requiring ink adjustments throughout the printing operation. A skilled operator must closely monitor the process and adjust the ink to maintain the desired print quality.

Solvent Adjustment

As solvent evaporates, viscosity of the ink will increase and solvent may need to be added to maintain the correct viscosity and dry time. Improper drying time of the ink may also cause printing problems; this can be resolved by adding small amounts of solvent.

Opacode S-1 inks commonly contain a combination of the following solvents, in order of decreasing evaporation rates: ethyl alcohol; isopropyl alcohol (IPA); n-butyl alcohol; water; propylene glycol. These can be added alone or in combination to adjust the ink viscosity and optimize printing performance. It is highly recommended only to adjust inks with solvents already present in the formulation.

Adjustment Process

To adjust the viscosity and/or dry time of OPCODE monogramming ink:

1. Disengage the transfer roller of the offset gravure printer or tampon of the pad printer
2. Add the desired solvent or solvent blend to the ink reservoir. As a guideline, add 5-10 ml solvent in a 500 g ink reservoir or 10-20 ml solvent in a 1000 g ink reservoir
3. Allow solvent to mix with the ink for 30 seconds to one minute
4. Re-engage the transfer roller or tampon and evaluate the effectiveness of the adjustment
5. Make further incremental additions, as required, to achieve the desired dry time and print quality

When making solvent adjustments to compensate for loss through evaporation, volatility of the solvents within the ink formulation must be considered. A general recommendation is to use a blend of solvents at equivalent ratio as the specific OPCODE formulation. However, low volatility components such as glycols and water will experience minimal loss and may often need to be excluded from a solvent blend to avoid prolonged drying times. The ink may require initial dilution to ensure complete filling of the gravure, especially with high-speed single-track printers and/or when the print image is very narrow. Addition of solvents to the ink will likely reduce the initial viscosity; the advice is to evaluate the ink for both dry time and viscosity with each addition to ensure that both parameters are in acceptable ranges. Repeat the adjustment process, as required, during the printing operation as solvent evaporation occurs.

Key Advantages

- Applicable for a range of substrates including film and sugar-coated tablets, as well as hard and soft gelatin capsules
- Suitable for use on immediate and modified release coated dosage forms
- Sharp, clear monogram
- Good adhesion properties
- Simple equipment clean up using isopropyl alcohol or a mild detergent solution

COLORCON TECHNICAL SUPPORT

Colorcon provides technical assistance for printing applications with OPCODE monogramming ink. Technical Service Managers are available around the world to provide on-site support at your location and help optimize your process. Taking advantage of these services early in your product development will help expedite product launch and ensure efficient manufacturing with consistent quality print.

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