

Energy-Cured Coatings – Offline Roller Coater Troubleshooting

Problem	Cause	Solution
Uneven Coat-Weight Across Sheet	<ul style="list-style-type: none"> - Metering-applicator roller setting not parallel - Applicator-impression roller setting not parallel - Build-up on metering or applicator rollers - Build-up on impression roller - Rubber roller condition not consistent in diameter 	<ul style="list-style-type: none"> - Adjust metering-applicator roller setting - Adjust applicator-impression roller setting - Clean metering/applicator rollers - Clean impression roller, replace cleaning doctor-blade - Check/replace rubber roller if needed
Insufficient Coating Film Thickness	<ul style="list-style-type: none"> - Metering-applicator roller setting too tight - Applicator-impression roller setting too tight - Rubber roller too hard in durometer - Coating viscosity too low – absorption into stock - Conveyor speed too slow – absorption into stock - High absorbency/low holdout stock 	<ul style="list-style-type: none"> - Open metering-applicator roller setting - Open applicator-impression roller setting - Replace rubber roller with softer durometer - Use higher viscosity coating – improves holdout - Increase conveyor speed – improves holdout - Use stock with low absorbency/high holdout
Excessive Coating Film Thickness	<ul style="list-style-type: none"> - Metering-applicator roller setting too loose - Applicator-impression roller setting too loose - Rubber roller too soft in durometer - Coating viscosity too high – high feed rate 	<ul style="list-style-type: none"> - Close metering-applicator roller setting - Close applicator-impression roller setting - Replace rubber roller with harder durometer - Use lower viscosity coating – reduce feed rate
Sheet Sticks to Applicator Roller	<ul style="list-style-type: none"> - Coating viscosity too high - Coating film thickness insufficient – too low - Applicator-impression setting too tight - Stock basis weight too low - Stock grain direction parallel to applicator roller 	<ul style="list-style-type: none"> - Use lower viscosity coating product - Open metering-applicator roller setting - Open applicator-impression roller setting - Use heavier basis weight stock - Feed stock with grain-direction perpendicular to applicator roller
Matte Coating - Matting Pigment Build-up	<ul style="list-style-type: none"> - Metering-applicator roller setting too tight – larger matting pigments cannot transfer through the metering nip and collect - Matting particles too large - Rubber roller too hard in durometer 	<ul style="list-style-type: none"> - Open metering-applicator roller setting - Use matte coating with smaller matting particles - Replace rubber roller with softer durometer
Insufficient Coating Film Cure	<ul style="list-style-type: none"> - Curing system not functioning properly - UV lamp deficiency – has reached end-of-life - Lamp/reflectors damaged/contaminated - Reflectors improperly focused - Insufficient UV energy output – too low - Improper UV output setting used – set too low - Conveyor speed too fast – insufficient UV dwell - High absorbency/low holdout stock - UV coating cure response insufficient - UV coating wavelength incompatibility 	<ul style="list-style-type: none"> - Check system for proper operation - Replace UV lamp – track operational hours - Inspect and clean lamp/reflectors – replace if needed - Adjust reflectors for proper focus of UV energy - Increase UV energy output – if available - Use ‘high’ output setting – typically 300 wpi - Reduce conveyor speed – increase UV dwell - Use stock with low absorbency/high holdout - Test UV coating film cure – ‘UV Cure Test Kit/KMn04’ - Ensure coating compatibility with lamp type/wavelength

TECHNICAL RESOURCE INFORMATION

Excessive Coating Film Cure	<ul style="list-style-type: none"> - Excessive UV energy output – too high - Conveyor speed too slow – excessive UV dwell - UV coating cure response excessive 	<ul style="list-style-type: none"> - Decrease UV energy output – if available - Increase conveyor speed – decrease UV dwell - Test UV coating film cure – ‘UV Cure Test Kit/KMnO4’
‘Orange Peel’ Appearance	<ul style="list-style-type: none"> - Excessive coating application - Coating viscosity too high - Conveyor speed too fast – insufficient leveling time - Insufficient coating flow-out - Poor wetting over ink/toners - Poor wetting over synthetic substrate 	<ul style="list-style-type: none"> - Close metering-applicator roller setting - Use lower viscosity coating product - Reduce conveyor speed – increase leveling time - Mix coating thoroughly prior to use – ensure defoamers and flow/leveling agents are incorporated - Use infrared lamps to heat coating film for leveling - Use coating with improved flow properties - Use coatings formulated for digital/toner applications - Use inks that contain no wax/silicone - Apply wax-free primer coating prior to UV coating - Check synthetic substrate for dyne level/wettability
‘Cratering’/‘Pin-holing’	<ul style="list-style-type: none"> - Poor wetting over inks/toners - Excessive spray powder application - Coating not leveling uniformly - Poor wetting over synthetic substrate 	<ul style="list-style-type: none"> - Use inks that contain no wax/silicone - Apply wax-free primer coating prior to UV coating - Reduce powder application – use uncoated - ‘Powder-crush’ or ‘dust’ sheets prior to use - Mix coating thoroughly prior to use - Check synthetic substrate for dyne level/wettability
Poor Coating Adhesion – Flaking/Scratching	<ul style="list-style-type: none"> - Wax/silicone in inks/toners - Inks not dry - Use of ink-additives that inhibit drying - Trapped ink oils or solvents - Dampening solution entrapment in ink film - Metallic ink - leafing pigments - Toner-based digital prints 	<ul style="list-style-type: none"> - Use wax/silicone free inks - Apply wax-free primer coating prior to UV coating - Allocate adequate drying time prior to UV coating - Avoid using anti-skin/stay-open sprays - Use high-solids, low-VOC inks - Monitor fountain solution parameters – glycol/Brix% - Use non-leafing metallic ink pigments - Use infrared lamps to promote adhesion – digital/toner prints
Low Gloss	<ul style="list-style-type: none"> - Insufficient coating film thickness - Insufficient coating leveling/flow-out - High absorbency/low holdout stock - Coating absorbs into beneath ink layers – ‘gloss back’ - Substrate/ink lacks smoothness – irregular surface - Excessive spray powder on the sheets - Coating not properly cured 	<ul style="list-style-type: none"> - Open metering-application roller setting - Use lower viscosity coating – improve leveling - Use higher viscosity coating – improve holdout - Use infrared lamps to heat coating film for leveling - Mix coating thoroughly prior to use – ensure defoamers and flow/leveling agents are incorporated - Use low-absorption/high hold-out stock - Allocate adequate ink drying time prior to UV coating - Improve drying capabilities for printing inks - Apply wax-free primer coating prior to UV coating - Reduce spray powder application - Use substrate with smooth/regular surface - ‘Powder-crush’ or ‘dust’ sheets prior to use - Test UV coating film cure – ‘UV Cure Test Kit/KMnO4’ - See “Insufficient Coating Film Cure” on page 1

Poor Coating Film Flexibility, Cracking

- Excessive coating film cure
 - Excessive coating film thickness
 - Stock condition
 - Stock construction – has poor flexibility and cracks
 - Excessive heat exposure – dry stock
 - Poor Scoring
- See 'Excessive Coating Film Cure' on page 2
 - See 'Excessive Coating Film Thickness' on page 1
 - Climatize pressroom for temperature/RH
 - Acclimate stock prior to use
 - Use stock with better construction – flexibility/pliability
 - Reduce heat being introduced into substrate – reduce infrared energy output
 - Check for proper dies/scoring tooling for stock thickness