

Tech Tip 19

Troubleshooting Ink Problems

Problems with ink, like many other problems that occur during printing, are not complex. In fact, it has been estimated that 80% of all ink problems can be attributed to fewer than six causes. Knowing the cause of a problem will often suggest the solution.

This Tech Tip will help you troubleshoot flexographic printing problems related to ink. If you have a problem that is not covered by these Tech Tips, check with the technical representatives from your supplier. They will be glad to help find a speedy solution.

Problem	Probable Cause	Solution
Ink drying in distributor train (on plates or rollers)	Solvent evaporating too quickly. Too much air movement in ink train. Fountain covers not used. Ink has dried on plate during make-ready.	Substitute slower. Balance between color dryers. Install fountain covers. Clean plates.
Ink does not dry on substrate	Solvent evaporates too slowly. Inadequate drying system. Ink too high in viscosity. Ink penetrates paper too quickly.	Use faster evaporating solvent. Increase drying capacity or balance dryers. Reduce ink viscosity. Choose ink with better holdout.
Blocking, printing roll sticks together	Ink not drying on substrate. Trapped solvents. Web temperature too high prior to rewind. Too much rewind tension.	Adjust solvent balance to speed drying. Adjust drying system or solvent balance. Install chill roll, or reduce dryer temperature. Reduce rewind tension.
Low adhesion of ink to substrate	Ink is not compatible with the substrate. Substrate not properly treated. Ink not properly reduced.	Use proper ink formulation. Consult substrate supplier. Reduce ink with proper solvents or resins.



		Check solvents/binder ratio.
Bleed	First color done is drying too slowly, or overprint color is drying too quickly. Dyes may cause some plasticizers to migrate.	Adjust drying rates with faster or slower solvents. Do not use dye-type inks with plasticized substrates.
Poor trapping	Incomplete drying of the first down color prior to printing the second down color. Excessive plate to substrate pressure of first down color.	Use faster evaporating solvents, increase dryer capacity, reduce ink viscosity, or choose an ink with better holdout. Reduce impression pressure of first down color.
Pinholing or screening	Ink dries on anilox, fails to transfer to plate. Ink doesn't form an even film on the substrate. Worn anilox. Substrate problem.	Use slower solvents, balance dryers, be sure to use fountain covers. Check pressure setting. If necessary use a pinholing compound. Replace anilox. Contact substrate supplier.
Poor ink transfer	Improper or inadequate pressures within the ink/plate train. Ink/substrate incompatibility.	Adjust pressure. Check substrate conditions and ink formulation.
Halo	Too much pressure between the plate and substrate.	Readjust substrate/plate pressure. Problem may be reduced by using a compressible plate or mounting materials.
Image fill-in	Too much ink being delivered to plate surface. Too much pressure within inking train. Ink is souring. Foreign particles in ink.	Control ink metering, use finer screen anilox, harder fountain roll and/or doctor blade. Check pressures-both plate-to-substrate and plate-to-anilox.
Ink film too heavy	Viscosity too high. Anilox screens are too coarse. Inadequate ink metering. Solvent imbalance.	Reduce viscosity. Use finer screen anilox roll. Adjust fountain roll nip, use harder fountain roll and/or doctor blade. Use recommend makeup solvent. Consult ink



		supplier.
Ink film too thin	Ink viscosity too low. Anilox screen is too fine. Worn anilox roll. Ink inadequately stirred or mixed prior to use.	Add undiluted ink to increase ink viscosity and color strength. Use coarser screen anilox roll. Be sure ink is mixed completely.
Feathering	Ink drying too fast. Inadequate pressure between anilox roll and plate. Improper setting of foundation roll nip. Static electricity.	Slow down drying by adding slower solvents. Adjust anilox/plate pressure. Increase nip pressure. Use static eliminators. Reduce tack of ink and clean plate.
Ghosting	Two large images being inked from the same area of the anilox before fresh ink can be applied. Anilox roll not properly cleaned.	Change speed ratio between the fountain roll and the anilox roll. Clean anilox roll.
Mottling	Uneven substrate or substrate does not have uniform absorption. Ink is too thin, lacks tack. Ink is too weak. Contamination in ink, or on plate surface. Worn anilox roll. Plate is not adequately supplied with ink.	Use softer or compressible plates, or compressible mounting materials. Opaque inks may improve appearance. Add resin to increase body and tack. Add fresh ink to restore viscosity. Strain or replace ink; clean plate surface. Replace anilox roll. Check solvent balance of inks, and balance between color dryers on press.
Ink sours or kicks out	Solvent-based inks—excessive absorption of water, or wrong solvent added. Water-based inks—loss of amines Contributing to lowering of pH.	Add more effective (richer) solvent to blend, or replace ink if necessary. Be sure to use fountain covers. Raise pH by adding amines recommended by ink manufacturer.

