Following these simple guidelines will yield high quality results and will extend the life of your anilox rolls and printing plates.

The anilox roller and the printing plates are critical components in a corrugated operation on a day-to-day basis. This is where the inking process begins and ends. If the anilox is specified incorrectly or worn out, you will not have good color management on that press. The ceramic laser engraved anilox roller has yielded stability to the flexo process, but we all know that there are many ways to damage or reduce the life of an anilox.

There are many variables that can cause premature wear. This includes ink contamination, warped chambers, over impressing doctor blades, ink starvation and just a lack of preventative maintenance.

The printing plate as well needs to be handled, stored and cleaned properly in order to get the life expectancy out of the plate. Training your pressroom personnel is an ongoing process that will yield its reward if done regularly and especially when new employees come on board. A training program should be put together for manufacturing personnel as well as new hires so everyone is aware of these simple guidelines.
**Ink Handling**

Water-based ink pH and viscosity needs to be checked periodically. As the pH level drops, the ink pigment goes into suspension. This will cause ink to plug the anilox and increase friction on the plate surface. A clogged filter can cause ink starvation.

Filtering the inks is critical to success with the anilox rolls. Using filters and magnets to trap and collect debris is needed. The filters need to be cleaned on a regular basis. In my travels I see where filters are taken out of the press rather than cleaned properly. If the filter is clogged, it is doing its job.

Pressroom personnel need to set up schedules on a regular basis to clean these filters. Some inks will clog faster than others. Stay on top of inspecting the condition of the ink filters.

**Ink Starvation**

Ink starvation is a definite culprit in damaging anilox rolls. Never run an anilox roll dry. The ink intake as well as the out flow needs to be balanced. Over time this can get out of sync if there are ink flow issues or blockages. You also want to avoid too much positive pressure in the ink chamber. This will affect blade contact and can cause an inking inconsistency that will affect dot gain and drying time on the press. Never over impress the blade to get greater ink density. This also is causing the blade to roll over and it will then hydroplane causing an inconsistent inking to the plate. This will add to dot gain and definitely cause color shifting.

**In My Travels I See Where Filters Are Taken Out Of The Press Rather Than Cleaned Properly. If The Filter Is Clogged, It Is Doing Its Job.**
Doctor Blade Chambers
The ink chamber makes contact with the anilox roller at all times. This is a component that needs to be maintained 100%. Maintenance programs should be put into place on a scheduled basis. Keep the chamber and the print station area clean from residual ink and dust and this will allow the equipment to last longer with less issues to deal with over time. Keep a close watch on the doctor blade wear across the anilox roll face. This will tip you off if there are misalignment issues, warped chambers or just pressure issues from side to side.

Warped Ink Chambers/Reverse Blade Holders
When the doctor blade chambers are new they are parallel with the anilox roll and make a true contact to the anilox roller. The end seals as well seat evenly and create the seal needed to have an even and low pressure contact with the doctor blade and the anilox surface. Over time they can warp or get knocked out of alignment with the anilox roll. The chamber should be checked periodically to ensure that there is a true and perfect alignment to the anilox roller. All press crews should check the wear across the blade every time a blade is changed in all chambers. If a chamber or blade holder is out of alignment it will get detected immediately simply by confirming that the contact edge has consistent wear across the blade. If the chamber or blade holder is out of alignment or warped you will see the affect of that problem. These types of operating practices should be implemented at the operator and helper level. When loading the chamber the operator should watch that the ink gets metered across the chamber evenly. If extra pressure is needed to get the middle of the chamber to meter properly, then the chamber may be warped. Who is closer to the press’s daily movements than an operator and his helper? Train them to notice these characteristics that can damage the anilox and press investment.

Doctor Blade Clamp Maintenance
Periodically the clamps should be disassembled and cleaned carefully to ensure that you are getting an even clamp down to the doctor blade. Never over tighten the blade clamps. Always tighten the clamp from the center on out and alternate left to right. Ink does migrate up under the clamp over time and this is usually an area that tends to be overlooked.

End Seals
Excessive end seal leakage can be a sign of a warped doctor blade chamber or you just may need to modify the end seal to get the leakage eliminated. Too many times this is an area where the printer will fight with the problem rather then solve it. End seal leakage forces a press operator to over impress the blades. This is a major player in anilox roll wear and scoring. The lightest pressure possible should be the goal to get a good seal and a good metering contact with the anilox. The blade and seal settings need to be exact. Over impressing forces the blade to roll over and sliver which will only cause score lines and other imperfections on the anilox roll surface.

Loading Mechanisms
Loading mechanisms vary in design on all presses. As mentioned before, the new presses will have the latest and greatest equipment that makes them less likely to have pressure and contact issues. The older presses have mechanisms that may need to be replaced or lubricated frequently or retrofitted. The brackets as well are a critical component. The chambers and blade holders are changed and cleaned daily and go back into press where they put the brackets to the wear and tear test of time. Over time the bracket slots and holding mechanisms get fatigued or elongated from day to day use. The brackets should be replaced periodically if wear is occurring.

Anilox Roll Care & Maintenance

Tracking The Life
Tracking the wear on your anilox rolls is a very important step. Periodically you should have
your anilox supplier perform the anilox roll audit. Having a handheld scope microscope to visually check for cell wall wear and ink plugging is necessary.

Cleaning
Set up daily procedures for cleaning the anilox rolls. This practice needs to be duplicated by all press operators and helpers. Your rolls should be cleaned daily and wiped down well after the cleaning cycle. Don’t just depend on the auto wash systems. Visually inspect the rolls to ensure all decks are getting the proper flow of washup solutions. Remove all residual ink. This will prevent the ceramic surface from getting stained and minimize any anilox plugging. With the proper magnification you can tell if the roll is plugged. If you can see the bottom of the cell it is clean. If not the roll is plugged.

Offline and Online Cleaning Systems
Most corrugated facilities can have an outside source come in and clean their rolls on press. There are a few different types of cleaning systems. The cleaning systems available on the market are baking soda blasting, polymer bead blast, ultrasonics and pressure wash systems. One common practice for corrugated plants is the baking soda blast which can be attached to the press onsite without taking the anilox roll out of the press. If your anilox rolls plug over time and you cannot get them cleaned by hand, you may want to consider this service on a scheduled basis.

Chemical Cleaners
There are many chemical cleaners that can be used to clean the ceramic surface. Check the pH level of any cleaner. We recommend that you do not go above an 11 pH on the cleaner. Caustic cleaners can dive through the ceramic surface and create blistering. Blistering occurs when the buildup area under the ceramic starts to oxidize. Ceramic will chip from the roll if this occurs. Always use a stainless steel brush when cleaning a ceramic anilox roller.

Finished Polymer Plate Tips
- All plates should be cleaned and dried thoroughly before storage.
- Always use soft plastic bristle brushes, make sure all shop towels are not contaminated with metal debris.
- Make certain the cleanup solvents are compatible with the polymer being used. Soak the plate material for one hour in the solvent. If the plate does not swell and the plate surface does not get tacky, the solvent is good to use.
- When storing plates, keep away from light exposure when at all possible. Always use separators when stacking plates. Do not stack higher than four inches.
- Temperature in storage area should not exceed 100 degrees F.
- Protect plates from ozone by storing them away from power supply units and corona treated areas.
- Storing plates on a cylinder or a curved position will increase surface tension and make the plate more susceptible to ozone damage. Ozone will cause plates to crack.
- Clean all plates as soon as possible once you are finished using them.

Review, Improve and Implement
The points made in this article are that you really need to have preventative maintenance programs in place and document them for optimal efficiency. The anilox roll is one of the main investments in a corrugated operation and there is very little wiggle room for errors if you want to stay profitable. Look over your operation, see where you need improvement and then implement and hold pressroom personnel accountable for these programs. Call your supplier to implement the training needed.

Bill Poulson is Northeast Technical Graphics Advisor for Harper Corp. of America. He has been in the flexo industry for the past 30 years and has worked as a press operator and has held a variety pressroom management positions.