Anilox Rolls and the Bottom Line

Improved production efficiency and profitability are just two byproducts of a well thought out maintenance program for anilox rolls.

If you are looking to improve flexographic production efficiency, there is no greater place than aniloxes to focus your energies. We know aniloxes play a critical role to the printing process and any anilox problems can cause great disruption to expected outcomes. What we will sometimes encounter in the field is a lack of quality anilox care, which leads to wasted substrate, time, and labor. These are concerns near and dear to every alert owner and production manager.

There are a number of reasons that create these problems, but they always come down to just a few things. Sometimes the problem is having the correct tools and sometimes it is a matter of understanding how to use those tools correctly. These are easy problems to fix. Problems can arise on a broader scope as well, so we will look into the anilox workflow and how to develop a true pattern of efficiency.

Getting started, we begin to understand by learning how the three major anilox systems of storage, protection, and handling contribute to anilox care. We will then need a comprehensive review of the anilox workflow to assess deficiencies in the process, whether it is equipment, personnel, and/or method. We finish by developing routines through a process of documentation, training, and using the right products for the job.

Storage, protection, handling

Anilox efficiency begins not at the press, but with anilox storage because of damage potential. Storage concepts vary from using the original container from the anilox supplier to mobile or static storage systems. The keys for any storage system follows.

We recommend physically storing the anilox in a manner that protects the engraving, and there are many elements to that end. First, you would include a design that keeps the anilox to the interior of the proposed storage, not exposing the engravings externally to passing hazards. Often it is a great idea to conceal anilox journals within the confines of the rack to keep anything from striking the journal and dislodging the anilox from the rack. Internalization of the anilox within the storage device also applies to stowing sleeve aniloxes.

For obvious reasons, it is important that the storage system itself does not contribute to anilox damage, especially when placing or removing the anilox from the storage unit. For metal racks, this means any metal surfaces that could come in contact with the anilox face must be shielded with rubber or foam. Upright supports and the frame are usually eligible to provide this unwanted contact, so look there first. There are a number of ways available to pad the storage unit. For racks with pegs, you can slip slightly longer ink tubing over the pegs and then you have a simple barrier to prevent contact with the engraved face of the anilox. Make sure the pegs are to the inside of the frame, or the anilox will surely rest on the frame itself. Sleeve racks should have rubber or plastic bump-stops that prevent the sleeve from striking a support or weld at the back of the unit. Sleeve racks can get too crowded for

Roll or sleeve covers—whether padded, unpadded, or hard plastic—provide the first-line of defense in protecting anilox surfaces.
Transportation devices should be dedicated to aniloxes and not used for other press material. Sometimes we see anilox carts that also have flexible dies, plate cylinders, and other equipment sharing a very tight space on a cart and the aniloxes stored with these items are not well-shielded from contact. Keep in mind that storage should maintain protection, not expose the anilox surface to greater risk. If a cart or carts cannot be dedicated to aniloxes, then consider isolating aniloxes as much as possible from the other parts by using roll covers and fixed shielding.

Anilox workflow
We have already discussed the methods for storing and protection, now you must consider the broader subject of workflow. The anilox workflow also starts at storage. Sometimes the storage racks themselves are mobile and can be positioned in a manner that allows easy access at press. If that is not available, it is recommended to have a cart that allows the aniloxes to be transported without hand-carrying them. The cart must maintain the same secure conditions as the storage does, or it becomes a likely location where damage can occur. The workflow then moves on to the press itself. If gears and bearings are installed at this point, a workstation should be in place that is free of any debris and a secure method for keeping the anilox in place by use of static, locked-down v-blocks. It is suggested to maintain any roll cover protection during transportation and installation of the anilox. When the roll or sleeve is secure in press, only then should the cover be removed.

Anilox cleaning
Once the anilox has finished its task in press, then it is time to move on to proper cleaning. Thorough anilox cleanups in press are sometimes errantly skipped to save time; as we have learned, however, a plugged anilox will cost you production and eliminate any time savings. The reality is that by using the right cleaning products and procedures, it takes very little time to clean an anilox. The cleaning process is not just scrubbing, but also rinsing, drying, and installing the protective cover. The slight investment in time is compensated by not having to transfer an inked anilox that will drip, or in the case of an anilox slated for reuse on the next job, the needed volume is maintained and helps avoid all of the related costs of additional cleaning, adjusting inks, and wasting substrate. The catch here is getting the right products involved instead of compromising.

While there are many revolutionary products in the printing industry for cleaning aniloxes away from the press, the trend for in-press solutions has rebounded to a degree, mainly because printers have found cleaners and equipment that are much more efficient and effective than in the past. For a primary system like anilox cleaning in press, it has been a matter of developing tools that clean without damaging the anilox surface. Gone are the abrasive pads and cleaners. They have been replaced with...
sponges, foam cleaning pads, and non-corrosive ink-emulsifying cleaners.

Cleaning at press has a twofold benefit. First, you save on the time it takes to remove the anilox, which on older presses is an important consideration, and you greatly diminish the opportunity to damage the anilox as it is transported. Secondary systems are categorized as external cleaning methods, typically equipment-based but can also include an area where aniloxes are manually cleaned away from press. These secondary systems are often an effective time-saving solution when used properly. The key to effectiveness is having the system tuned to OEM specifications and making sure the system is periodically maintained. When cleaning effectiveness wanes and/or anilox damage occurs, you will often find the settings are no longer correct because the system has not been maintained sufficiently and instead of a simple part replacement, the problem has been bypassed instead of addressed. Poor cleaning, anilox damage, and extensive cleaning cycles are the result, wasting time and money.

These secondary systems may also require bearing and gear removal or protection devices to prevent damage to those components, adding preparation time. Look to minimize the time it takes to protect the bearings by using rubber gloves that are secured over the bearings/journals and consider more robust guards like shielding or caps that can seal them off from the cleaning liquid or media. The guards are simple to install and take a few seconds of time and the problem is resolved without spending time to prepare the aniloxes. You will often find the suppliers of those systems also supply guards that are custom-fitted to the bearing/gear design of your particular aniloxes.

**A winning routine**

It must be mentioned that while many of these ideas are inherently obvious to most, every detail may not be apparent to everyone you employ and thus the need to have procedures written down that describe exactly how you want the aniloxes to be cared for and what will be your expectations of the condition. It is unrealistic to expect everyone given the task of cleaning aniloxes to fully understand the process without some training, guidance, and a demonstrated competence.

Any of the procedures, from cleaning to transportation to storage, can be broken down and recorded into a documentable method so that anyone asked to perform those tasks can do so to a level that yields the most efficient outcome for their anilox condition. Sufficient training and

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an explanation of why things are done a certain way lends
to getting a credible effort by those tasked with cleaning
and caring for the aniloxes. We recommend getting your
team together to form one document for each task. There
may be some variation due to press configurations but the
core tenets will stay the same.

In the following example, the general method for an
anilox cleanup of a narrow-web press using a single-blade
unit and subsequent storage away from press:

- Documentation example—Back off blade pressure,
  allowing ink to build on anilox surface to keep it wet.
  Stop the anilox. Drain the ink from the tray. Immediately
  address the wet ink on the anilox surface by using a spray
  cleaner, keeping the anilox wet until the anilox surface
can be cleaned and rinsed. Dry the cleaned anilox and prepare
to protect it with a roll cover before removal. Carefully
remove the covered anilox from the press and transport it
to the storage area by use of a protective anilox cart.

You should also consider procedures for secondary
cleaning systems, press installation and removal, gear and
bearing installation and removal, inspection, troubleshoot-
ing, and so on.

Inefficiency is an unwanted byproduct that occurs when
one or more of anilox protection, care, and maintenance
duties fall short of reasonable expectations. Those who mea-
sure their productivity and waste can capture the signs of
inefficiency and begin to do something about it. You will see
the savings in time and money by following the recommend-
ations for anilox protection, care, and maintenance because
a damaged or dirty anilox in inventory only wastes an op-
erator’s time. In addition, if the anilox is unique, you may
have to compromise at press by selecting a roll with a differ-
ent line and volume. Compromise from a designated setup
always adds waste as adjustments are made.

Optimal results

When aniloxes are prepared and cared for properly, you
get the exact results the prepress, operator, and ink tech-
nician would expect. Having the correct tools and the
knowledge to use them allows your employees to perform
their jobs efficiently. Tools and knowledge help optimize
conditions, so providing the right finished product with
low makeready waste and in a timely manner become a
normal practice. It is recommended that you review stor-
age, cleaning, and maintenance processes with your anilox
supplier to make sure you are making all the right choices
to preserve your anilox investment.

We advise every printer to reject the status quo of
day-to-day operations by making frequent reviews of
how processes could improve to create the desired anilox
process efficiencies.

About the author—Sean Teufler, technical graphics
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