

# Ceramic Anilox Roll Care and Maintenance

Taking the time to care for, and maintain, the working condition of Praxair Surface Technologies laser-engraved ceramic anilox rolls is crucial to ensuring long life and high quality printing. Following these simple day-to-day maintenance procedures can eliminate most printing problems.

## Daily Care to Avoid Clogged Cells

If the cells of ceramic anilox rolls become clogged with dirt, dried ink, or coating material—print quality suffers. During normal use, rolls must be cleaned as soon as possible after a press run to remove ink and coating residue. If the ink is allowed to dry, the build-up of deposits in the cells will decrease the roll's ability to carry the proper amount of ink, resulting in color matching difficulties.

## How to clean rolls

For the daily cleaning of anilox rolls, use stainless steel brushes and water, or an alcohol-based roll cleaning solvent, recommended by Praxair or your ink supplier.

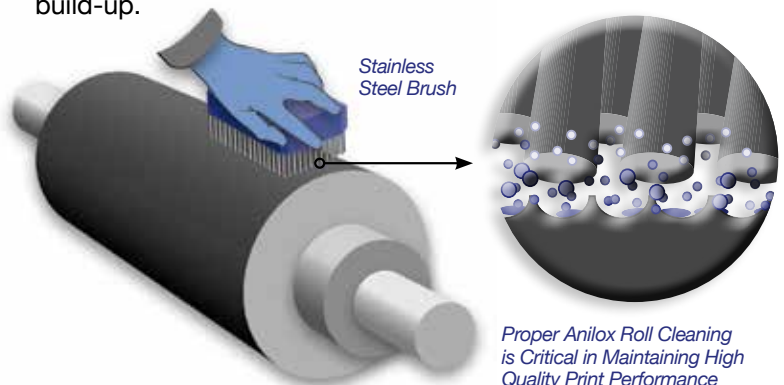
After draining the system, apply solvent to the roll surface and allow it to set. Vigorously brush the area in a circular motion, using heavy pressure to ensure that the solvent is forced into the cells in order to dissolve and remove the ink. After cleaning, flush the area with clean, hot water, and wipe it down with a lint-free cloth. Alcohol may be used to dry any moisture left in the cells. It may be necessary to repeat the cleaning cycle in the event the residue is not completely removed the first time.

## Use Only Stainless Steel Brushes

Soft bristle stainless steel brushes, never brass, should always be used to clean ceramic anilox rolls. Brass is too soft, and may transfer to the ceramic roll surface, filling in the cells and affecting the transfer of ink.

## Other Cleaning Options for Denser Deposits

For denser deposits, more aggressive, deep-cleaning methods such as chemical wash, media blast, or ultrasonic cleaning may be needed to loosen and remove build-up.



## Protecting Anilox Rolls

Although Praxair ceramic anilox rolls are tougher and less susceptible to damage than conventional chrome-plated rolls, special care must be taken in handling to avoid chipping the corners and edges. Chipped edges can result in seal wear acceleration, premature wear of doctor blades, or ink slinging. In addition, if your inks tend to run beyond the normal 8 to 9 pH range, the exposed substrate can then become corroded.

## Avoid Corner Chipping

There are four common options that will protect your ceramic anilox rolls from chipping.

Use of roll covers: The use of roll covers, will absorb a significant amount of mechanical shock and keep the engraving clean during storage. The covers can be designed to wrap around roll end faces, and they feature Velcro closures, as well as see-thru identification windows that allow the insertion of an ID or certification tag listing the angle, screen count, and volume of the roller. This tag can also be used to record the date the

roll was put into service, how many times it has been in the press, and the length of time of the press run. The interior lining of the roll cover is also resistant to solvents and oils.

**Install a small radius at the edges:** Install a small radius at the edges prior to applying the ceramic coating to the roll. In most cases, a 1/32 inch radius will not affect the doctor blades, and the reduced thickness of the sprayed ceramic on the corners will have a tendency to chip less.

**Eliminate engraving edges:** If your doctoring system uses a reverse angle blade, or a doctor blade chamber, the elimination of engraving at the edges for 1/8 inch or more may also prevent chipping and/or edge damage. This non-engraved area on each end of the anilox roll is commonly referred to as localization.

**Use steel shoulders:** Manufacture the anilox base with steel (or stainless steel) shoulders to absorb mechanical impact and prevent the hard, brittle ceramic from chipping. There are drawbacks to using this alternative, however, including the fact that doctor blades wear steel more quickly than ceramic, resulting in the need to re-weld the steel edges to re-install the shoulders. Also, if the doctor blades do wear the steel shoulder, there may be increased ink slinging by the end seals.

### Edge Repair

In the event an edge or corner of a roll does become chipped, a plastic steel epoxy patch can be applied to prevent further damage. Surface preparation is important, so be certain to sand and clean the damaged area prior to patching. Then apply a small amount of the mixed epoxy to the damaged area and allow it to dry overnight. The next day it can be lightly sanded smooth to match the contour of the roll diameter.

### Worn Bearings and Balance

Other items to check regularly include the bearing surfaces and roll balance. The bearings can be measured using a dial indicator while the roll is rotated on a surface. If the runout is above acceptable limits, the bearings should be replaced. Worn or damaged bearing surfaces, bent shafts, dynamic balance problems, or mechanically damaged engraved surfaces, should be inspected and repaired by your anilox roll supplier.

All rolls should be in static balance, and all rolls running in excess of 300 rpm should be dynamically balanced. This is especially important as the surface speed of the roll increases. Your anilox roll supplier is best equipped to handle these major repairs.

Whichever of these methods you choose to employ, keep in mind that properly caring for laser-engraved ceramic anilox rolls on a daily basis can greatly reduce the need for outside service calls and production downtime.

### Foreign Material Removal

If anilox roll cells become severely plugged with foreign, or doctor blade, materials, nitric acid or sodium hydroxide (oven cleaner) may be used to remove the deposits. For the removal of brass, stainless steel, hot rolled steel, or polyethylene, a diluted solution of nitric acid should remove the residue. Generally, a 20% concentration of nitric acid into water is recommended for the best cleaning action. Sodium hydroxide can be used to remove aluminum deposits.

Working with an acidic or alkaline chemical cleaning agent requires special safety measures. You should always review the chemical's Material Safety Data Sheet, and then be sure to wear a face shield or safety goggles, rubber gloves, and a rubber apron. Also, keep rinse water available in case of spills or violent reactions.

The chemical action of nitric acid, or sodium hydroxide, should be sufficient to dissolve deposits, but a stainless steel brush can be used to help remove large build-ups of material. However, remember to thoroughly rinse the brush afterward.

Also, keep in mind that the steel base material of anilox rolls can be attacked by harsh chemicals, so it is best to clean only a small area at a time, and to be sure to neutralize and rinse the area thoroughly to prevent corrosion.

Note: Due to the use of harsh chemical agents, Praxair Surface Technologies neither endorses or recommends any of the processes listed above, and cannot guarantee results. The user must assume responsibility for any and all results and/or damages.

### How to Get Started. Contact Us Today.

Ask a Praxair printing specialist to recommend the best engraving for your application.

Call the nearest location or email [psti-info@praxair.com](mailto:psti-info@praxair.com).

Or visit [www.praxair.com/printing](http://www.praxair.com/printing) to learn more.