



## Laser Engraved Ceramic Anilox Sleeve Technology

The flexographic printer that wants to improve print quality, reduce press set-up time and achieve better repeatability, can help make these objectives a reality by using Praxair Surface Technologies' patented anilox roll sleeve technology.

### The History of Sleeve Technology

Sleeve technology was originally developed as a method to improve productivity in traditional flexo plate technology by reducing the need for large inventories of steel cylinders. Using conventional processing techniques, flexo printers mount printing plates directly on to the surface of a steel cylinder, requiring the use of multiple steel cylinders to perform various jobs of differing dimensions. This results in production downtime, less efficient operations, and somewhat higher costs. Large inventories of anilox rolls can also present printers with problems of adequate storage.

To address these concerns, sleeve manufacturers have developed composite carrier and conventionally-imaged photopolymer sleeves. These are available in various wall thicknesses (to allow for different repeat lengths of a printed image) and are mounted on fixed diameter steel mandrels.

With the development of the plate sleeve system, the flexo printing industry was offered a method of reducing steel cylinder inventories, while still maintaining the ability to print quality graphics. In addition, sleeves are much lighter and easier for printers to handle, allowing much shorter changeover and press set-up times, which increases printing efficiency.

### Anilox Sleeve Construction

Praxair, and its manufacturing partners, have incorporated this sleeve technology into the existing anilox product line to provide the advantages of sleeves to the anilox ink metering system. At the heart of anilox sleeve technology is the base sleeve, a tube of varying wall thickness that is mounted on a round, air-serviced cylinder. Base sleeves are manufactured using a unique, patented combination

'traditional' anilox rolls. Additionally, Praxair's full line of CO<sub>2</sub> and fiber laser engraving processes, as well as its Rainbow™ enhanced surface treatment, can be used with anilox sleeve bases to provide excellent print quality.

### How Does It Work?

Praxair's anilox sleeve utilizes a high-pressure "air cushion" design that allows for easy adjustment. Installation is accomplished by expanding the



*The new generation of sleeves have stainless steel rings on both ends and sealing of the composite face in order to improve resistance to cleaning and increase lifetime*

of Kevlar™, fiberglass, silk, polyester, a proprietary cushioning material, and a select metallic base that serves as the outermost surface. Like plate sleeve systems, the anilox sleeves are also mounted on fixed diameter steel mandrels to allow for press installation and operation.

When the base sleeve is completed, it can be coated with Praxair's proprietary ceramic coating, exactly like

inner wall of the sleeve using a high-pressure air exchange (approximately 90 psig, or six bars of pressure), and then sliding it over a specially bored steel cylinder. Highly compressed air streams pass in a radial direction through small air holes, forming an air cushion that allows an effortless adjustment of the sleeve around the cylinder. Once the airflow is discontinued, the air cushion is eliminated, and the expanded sleeve immediately contracts, creating a

locking effect. The sleeve can be easily removed by re-applying air pressure to reverse the procedure.

## Advantages of the Anilox Sleeve

Praxair's anilox sleeves offer advantages to flexographic printers because they have been designed to be lighter in weight, easier to handle, and to require less storage space.

The ease of handling means set-up for initial, and corresponding repeat, runs can be streamlined. Smoother changeovers can also be accomplished, which results in decreased downtime. In addition, because these sleeves can be easily adjusted for printing jobs of various dimensions, the need for large inventories of steel cylinders is reduced.

## Press Performance and Print Quality

Incorporating the anilox sleeve system into your printing process can improve press performance. The system's air cushion technology provides better shock absorption and impact resistance. The side faces are also protected, which results in reduced inner layer damage, and better corrosion protection, leading to longer overall press life. Praxair's unique cushion layer construction offers excellent concentricity, as well.

Print quality can also be improved by using anilox sleeves, as the sleeve system offers a better compromise between line screen and volume choices, higher line screen count availability, improved image contrast and better ink metering control. Anilox sleeves are available in custom lengths up to and including 1.7 meters (67 inches) in printing width.

Consider the facts: If Praxair's anilox sleeve technology sounds like the solution to your print quality and productivity concerns, contact your Praxair Technical Sales Engineer to obtain more information on the advantages that this system can bring to your printing operation.