



# URMI™ Liquid Volume Measurement System

The anilox roll's primary function is to deliver a precise, uniform wet ink film thickness to a printing plate. The accuracy of this ink film thickness is dependent upon accurately identifying the volume of the engraving. To determine the ink-carrying cell volume, Praxair developed a unique liquid volume measurement tool—the URMI™ system.

## URMI System Simulates Ink Metering Process

The URMI volume measurement system closely simulates the actual ink metering process. Testing procedures involve placing a measured amount of ink on a portion of the engraving to be tested, spreading that ink with a doctor blade until the volume has uniformly filled a specified number of adjacent cells; transferring the ink to a piece of paper as an image. The image is then analyzed to determine its area. As the volume of ink that created the image area is known, the volume per square inch (or volume per square meter depending on your measuring system) is easily calculated by dividing the ink volume by the area of the cells covered.

## Using the URMI System (step-by-step instructions)

The accuracy of the URMI system is dependent upon the consistent depositing and spreading of a known quantity of ink, as well as the accurate measurement of the resulting spread area. In order to maintain accuracy, the following procedures should be utilized.

1. Prior to taking any measurements, the anilox roll must be cleaned with distilled or tap water and wiped dry to prepare the surface for the ink application.

2. A positive-displacement pipette, an high precision pharmaceutical tool used for reliably measuring, dosing, transferring, dispensing and injecting liquids in a large number of applications (i.e: life sciences - such as biotechnology and molecular biology - medicine, chemistry, pharmacology, etc) is included with the URMI system kit and is then used to deliver the ink to the roll surface. The pipette should be calibrated to dispense the desired quantity of ink.

3. Once ink has been applied to the roll surface, the URMI tractor assembly, containing a clean-edged doctor blade, is used to evenly spread the ink.

4. Electrostatic copy paper is then placed against the roll and rubbed over the ink area. When the paper is removed, the ink will have transferred to the paper in a pattern representing the inked surface area. Clean the roll.

5. Calculating roll volume is done with the URMI app, a mobile phone application that is able to measure the area and immediately calculates the volume. It gives an immediate useful information that is easily sharable with the entire printing team through the commons message services.



This measurement will be recorded in billions of cubic microns per square inch (BCM/in<sup>2</sup>), or cubic centimeters per square meter (cm<sup>3</sup>/m<sup>2</sup>).

## Care and Maintenance of the URMI Kit

The URMI system components require basic maintenance in order to ensure the accuracy of the URMI volume measurements.

The ink required for URMI testing is water based, with specific components added for evaporation control.



Using different types of ink with the URMI system will negatively affect the accuracy of the readings; therefore, Praxair recommends using the ink provided in the kit. This ink has been tested and proven compatible for use with all ceramic anilox rolls. Exposure

of this ink to air should be kept to a minimum, as evaporation will result in viscosity changes.

The tractor-blade assembly should only be used with sharp, clean-edged doctor blades. Using blades that have visible nicks, kinks, or bent areas, will result in

significant differences in spreading the ink. If handled properly, a doctor blade insert should be usable for thousands of URMI readings. To ensure the highest quality results, the doctor blade should be visually inspected prior to each URMI test.

## URMI System and Anilox Roll Audits

Proper training is critical to successful use of the URMI liquid volume measurement system. Different operators will utilize varying techniques for using the equipment, and in order to guarantee accurate readings, training is essential.

Praxair can provide the necessary training through a complimentary Anilox Roll Audit, a service that educates you on how to perform regular inspections of your anilox roll inventory. These inspections can determine both the specifications and condition of all rolls currently in use and can assist in determining when a roll needs to be replaced or refurbished.

Praxair's Technical Sales personnel can provide roll audit and URMI training at any of our plant locations or on-site at your facility. During training, pressroom personnel will be shown how to perform roll audits and to accurately use the URMI volume measurement system.



Knowing the accurate ink cell volume for each anilox roll in inventory assists in the selection of the correct anilox roll for a specific application. It also helps to achieve the highest print quality for that application.

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

Ask a Praxair printing specialist to schedule a complimentary anilox roll audit.

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

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

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Printed in the United States of America  
03-2018

Printed on recycled paper  
P-10427