

**No-Tox<sup>®</sup> NT23BR WATER-BASED INKS  
(NARROW AND WIDE WEB FLEXOGRAPHIC INKS)**

*NT23BR  
(11/11)*

- Product Type:** Water reducible modified acrylic polymer-based inks
- Printing Method:** Flexography (narrow, mid or wide web)
- Stocks:** All types of FDA acceptable coated and uncoated papers, Tyvek, corona treated PE & PP, corona treated polystyrene, acrylic and Saran (PVDC) coated PP, some cellophanes, Mylar<sup>®</sup>, and aluminum foils.
- Adhesion:** The inks and coating have excellent adhesion characteristics to most corona treated films, PVDC coated films, papers, and aluminum foil.
- Applications:** Labels, coupons, and other narrow web printed items that will be in direct contact with foods, pharmaceuticals, or medical products requiring good water and/or oil resistance.
- Plates and Rollers:** All natural and synthetic plates and rollers are acceptable, including photopolymer plates.
- Viscosity:** Ink is supplied at higher than press ready viscosity to allow for dilution and press adjustment flexibility.
- Drying Rates:** Drying rates of these ink systems can be controlled using the following materials:
- Fast Drying:* 20% IPA  
80 % Water
  - Average Drying:* 100% Water\*
  - Slow Drying:* 100% Propylene Glycol
- \* pH should be maintained @ 8.5 – 9.5
- Web temperatures of about 50°C are needed for optimum ink film resistance characteristics.

***Water & Bleed Resistance:*** The inks must be adequately dried before BR coating is applied to assure optimum physical resistance properties are developed. If the inks and coating are dried, the water and oil resistance of the BR system is outstanding. Depending on the substrate, the BR system has shown that it can resist more than 100 rubs with a cotton ball saturated with oil or water.

***Special Handling Procedures:*** *pH Control*  
Due to the volatility of ammonium hydroxide and the amines in these inks, the pH may drop during a press run and needs to be maintained between 8.5 – 9.5. Adjust with an aqueous ammonia solution. Add only a few drops at a time, mix and recheck the pH. Loss of ammonia may cause the BR coating to “skin”. Should this happen, adjust the pH and stir.

*Viscosity*  
Viscosity controls the amount of ink deposited. A high viscosity will increase your density, but may cause a reduction in drying. Reduce your viscosity carefully with the appropriate material(s) for the desired press speed.

*Clean Up*  
Remove ink from the fountain. If you have a spray bottle of ammonia in water, you can spray on the plate and anilox roll. This will facilitate cleaning. Rinse with water to remove excess ammonia and dry thoroughly to prevent metal corrosion.

***Color Availability:*** Process and spot colors

Note: The FDA compliant magenta and process yellow have different hues than conventional magenta and process yellow. Printing process colors requires different print densities to obtain best results. See Press Guidelines for process printing information.

***FDA Acceptability\*\**** All components in these No-Tox inks are classified by the FDA as either direct or indirect food additives. See the Colorcon guarantee letter for specific regulations.

## Press Guidelines

### ***Properties:***

Colorcon No-Tox NT23BR water-based ink and coating system is designed to provide excellent water, oil and grease-resistance (WOG) properties for direct food contact applications. In addition to the WOG properties, NT23BR exhibits superior adhesion to treated polystyrene and is suitable for many other paper and film substrates. This No-Tox system also has excellent chemical, abrasion, block and heat-resistance characteristics.

### ***Inks:***

NT23BR inks are formulated for flexo presses equipped with hot air dryers. The ink drying rates have been balanced to offer adequate drying speed, yet are slow enough to keep the anilox rolls open and clean. The drying rate of these inks can be decreased with small amounts of propylene glycol as required by your press configuration. However, it is essential, for optimum water-resistance, that the inks be effectively dried and reach a surface temperature around 40° C before reacting with the NT23BR Coating.

We recommend mixing the NT23BR inks and coating well before pouring into the ink fountains. These inks are formulated with direct food contact compliant pigments and do not have the identical color spectral characteristics of conventional pigments. Process printing of these inks requires balancing the color densities for optimum results. Typically, process colors can be run at the following densities using 500 - 600 anilox rolls of about 2.6 – 3.2 BCM volumes:

Y	=	0.65 - 0.75
M	=	1.20 - 1.35
C	=	1.20 - 1.35
B	=	1.45 - 1.55

Since the yellow ink is based on an FDA opaque pigment, the yellow should be first-down followed by magenta, cyan and black. The yellow has the lowest print density and should be set as high as possible. The magenta and cyan are balanced accordingly, about twice the density of the yellow. The black can be run normally. If the ink densities need to be reduced, you can do so with the use of our NT23BR Extender.

Typical ink viscosities are about 40 – 60 seconds, #3 Zahn. To attain proper densities, especially on the yellow, the ink should be applied at the higher end of this viscosity range. The pH of the ink should be maintained between 8.8 – 9.4 and the BR coating pH should be 9.0 to 9.5.

At press-side, use your coarser anilox roll first to adjust your print density and attain the correct ink viscosity. If you intend to use finer anilox rolls, then you may need to add a small amount of propylene glycol. Adding more propylene glycol than necessary will retard the drying rate. Always run the press at the highest speed possible for best print quality results. Since ammonium hydroxide, amines and other ink components can evaporate, we recommend covered ink fountains to maintain good ink performance.

***Coating:***

Viscosity of the NT23BR coating is about 15 - 25 seconds, #3 Zahn and is applied at a greater thickness, compared to the inks, to assure that good product resistance is achieved. If left uncovered for long periods of time, this coating may skin, due to a loss of ammonia. Re-mixing will re-dissolve the “skin” and make the coating homogeneous. It is best to cover the coating tray to prevent any loss of ammonia.

The BR coating works synergistically with the BR inks. The coating chemically bonds to the ink, forming a high barrier to water, oil, and grease. The coating has been successfully applied with 300 line anilox rolls with about 5.0 BCM volumes. Since the coating is typically at 15-25 seconds, #3 Zahn viscosity, it is recommended that it should be well stirred, before use, to prevent settling. This coating contains high performance additives, which while being chemically inert, have high densities and can settle out with time. Additions of water or water/alcohol can be added to improve coating flow and release characteristics.

***Economics:***

The No-Tox NT23BR System is FDA (Food & Drug Administration) compliant as all components of the inks and coating are sanctioned by the FDA for direct food contact. NT23BR will provide your customer an affordable alternative to laminated polystyrene inserts or barrier overwrapping.

***Technical Assistance:***

These guidelines were developed based on press trials conducted in the field and may or may not be representative of your press configurations. If you have questions about your application, please contact our Technical Service Department. We are committed to servicing your needs.

\*\* FDA acceptability is based on the ink as supplied. Therefore, no other materials should be added, other than those indicated in this technical data sheet, unless specifically recommended by Colorcon.