water-based inks

Technical Data

5000 Series

gloss multi-purpose water-based Ink

Technical Data Sheet

Product Information

The 5000 Ink Series has been specifically formulated to adhere to a wide range of substrates offering rich, flat colors. End uses include fine art serigraphs, nameplates, skate boards, posters, aircraft interiors, and point of purchase displays.

5000 Series Features

- An Extremely Diverse Adhesion Range
- Brilliant Colors with a Gloss Finish
- Easy Clean Up
- Up to 3 Year Light-Fastness*
- Automotive Grade Pigments

Substrate Application

- Treated Coroplast™ / Fluted Polyolefin**
- Pressure Sensitive Vinyl
- Treated Polyethylene
- Polystyrene (Styrene)
- Treated Polyester
- Polycarbonate
- Coated Wood
- Card Stock
- Tyvek®
- Tedlar®
- PVC
- ABS

TW Graphics

The end-user must always determine the suitability of this product for the intended use prior to production. Please allow at least 24 hours after printing to evaluate the suitability of the ink and its adhesion to the surface. Revision 3.1 - 1/5/2005

* Please read the section on ink light-fastness, "Estimated Durability and Light-fastness". ****Must use WB-1824 for Chemical Resistance.**

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Application Instructions

■ **Product Description**

The 5000 Ink Series is a flexible, one component, high-gloss, water-based ink system which adheres to a wide variety of substrates. The 5000 Ink Series can be used to print fine art serigraphs, polystyrene, Tyvek®, Tedlar®, polycarbonate, treated polyesters, pressure sensitive vinyl, and aircraft interiors.

■ **Screen Mesh**

200 to 380 (80 to 150 cm) monofilament polyester is recommended.

■ **Stencils**

Solvent and water-proof emulsion only. Dual cure emulsions are recommended for added durability. Emulsion stencil must be thoroughly dried before image exposure. Use a water-proof block-out or emulsion for small touch-up areas.

■ **Squeegee Type**

A sharp 70 to 85 single or multi-durometer polyurethane blade.

■ **Ink Additives and Thinning**

Stir the ink well before every use. The 5000 Ink Series is supplied in a press ready condition for most applications and printing equipment. Use water for normal viscosity adjustments by no more than 5 to 10% by weight. Two thinners are available to reduce the inks viscosity; TW-1820 can be used for normal press viscosity reduction. TW-1821 is a slower evaporating thinner which can be used for slower print cycles. In addition, two retarders are available for use with the 5000 Series. Retarders should be used sparingly to reduce the inks drying time within the screen. Use TW-1822 for normal reduction in the inks drying speed, retard with TW-1823 slow retarder for fine detail printing, slow print cycles or high temperature conditions. Use no more than 5 to 10% of thinner or retarder by weight. 5100 Defoamer can be used by 1 to 2% by weight to eliminate the “bubbling” or foaming effect of the ink when printing at high press speeds. An over reduction with retarders, and thinners can result in blocking and a significant reduction in drying speed. Never exceed recommended levels of reduction.

Use 5 to 10% of WB-1824 Activator by weight to improve chemical resistance. Please note however, that the WB-1824 Activator will only stay active within the ink for only a 24 hour period under most conditions. The ink can be reactivated only one additional time after the first 24 hour is complete by re-adding the Activator. We strongly recommend mixing only enough ink with the WB-1824 Activator estimated for a 24 hour period.

4105 Flattening Powder can be used to change the gloss level of the ink to a satin or flat finish. Only 1 to 8% of Flattening Powder needs to be added by weight to change the ink’s gloss level. Please be aware that the addition of the 4105 Flattening Powder increases the viscosity of the ink. Reduce with the appropriate amount of water or thinner as necessary.

5008 Liquid Thickener can be used to increase the inks viscosity. This is normally added when printing fine detail or halftone areas. Only 1/2 to 1% of Thickener needs to be added by weight to increase the inks viscosity. After adding the Thickener to the ink, mix very well and allow the viscosity to fully develop for 10 minutes before use within production.

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Color Availability

■ **Ink Yield and Coverage**

Colors should achieve a yield of 1,400 to 2,000 square feet per gallon (33 to 47 square meters per liter) depending upon on fabric selection, squeegee hardness, substrate absorption and press mechanics.

■ **Drying Parameters**

The 5000 Series will air dry in 20 to 30 minutes at normal room temperature. Force drying in seconds at 90° to 150° F (32° to 66° C). To prevent the blocking of material after printing, it is paramount to ensure that the temperature of the drying is not excessive and the air flow surrounding the material is good. Material blocking may occur if sheets are stacked when still warm.

■ **Adhesion Testing**

It is imperative that all substrates are tested prior to use within production. Even similar materials can vary between different batches, manufacturers or the age and storage time of the particular substrate. Certain types of fabrics may be manufactured with surface treatments which can impair ink adhesion and print performance. Once the ink has been fully dried and allowed to cool down, the adhesion should be tested by:

Cross Hatch Test—Using a sharp blade or cross hatch knife, cut through the film of the ink only, then Apply 3M #600 tape firmly on the cut area. Rub the tape down firmly then rip off. Ink should only come off in the straight cut areas.

■ **Color Availability**

The 5000 Ink Series includes the Single Pigment Mixing Colors, Standard Colors and the Advanced Color Gamut™ four-color process inks.

Single Pigment Mixing Colors
5001 Green Shade Yellow
5002 Red Shade Yellow
5003 Yellow Shade Red
5004 Blue Shade Red
5005 Magenta
5006 Maroon
5007 Violet
5008 Red Shade Blue
5009 Green Shade Blue
5010 Blue Shade Green
5011 Yellow Shade Green

Additives / Thinners
TW-1822 Retarder
TW-1823 Slow Retarder
TW-1820 Thinner
TW-1821 Slow Thinner
WB-1824 Activator
5100 Defoamer
4105 Flattening Powder
5008 Liquid Thickener

Standard Colors
5012 Lemon Yellow
5013 Medium Yellow
5014 Fire Red*
5015 Rubine
5016 Warm Red
5017 Emerald Green
5018 Process Blue
5019 Reflex Blue**
5020 Ultra Blue**
5021 Hi-Hide White
5025 Opaque Black
5030 Clear Gloss Base
5031 Over Print Clear
5032 Metallic Clear

Advanced Color Gamut™ Halftone Colors
5040 Halftone Yellow
5041 Halftone Magenta
5042 Halftone Cyan
5043 Halftone Black
5044 Halftone Extender Base

* Fire Red is also a single pigment color.
** 2 year out door light fastness.

■ **Ink Wash Up**

Wash up on press with a press wash and reclaim with degradents specifically developed for water-based inks.

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Color Concentrates

■ Color Concentrates

These highly pigmented Color Concentrates are compatible with all of the TW Graphic's water-based ink lines. The concentrates are offered to advanced color formulators who wish to have the flexibility to create an endless range of colors. Please read the section directly below on how to use the Color Concentrates appropriately within our water-based ink systems.

Single Pigment Mixing Concentrates

WB-01 Green Shade Yellow
WB-02 Red Shade Yellow
WB-03 Yellow Shade Red
WB-04 Blue Shade Red
WB-05 Magenta
WB-06 Maroon
WB-07 Violet
WB-08 Red Shade Blue
WB-09 Green Shade Blue
WB-10 Blue Shade Green
WB-11 Yellow Shade Green

WB-40 Halftone Yellow
WB-41 Halftone Magenta
WB-42 Halftone Cyan
WB-43 Halftone Black

WB-25 Black
WB-21 White

*9 Fluorescent Colors Also Available!

■ Concentrate Mixing Instructions

The WB Series Color Concentrates may be added to any of the TW Graphics 1000, 4000, 5000 and 5500 water-based ink series. Please take note however that these concentrates are not press ready inks and must be used proportionately with a Clear Base or white to maintain the inks printing integrity.

Do not use more than 30% Color Concentrate by weight to the Clear Base or white. Color Concentrate should be added slowly into the vortex of the base mix on a power mixer. Make certain that the ink is mixed thoroughly.

■ Storage

Store at room temperature, below 100° F (38° C). Always avoid open flames and excessive heat exposure. Protect from freezing.

■ Packaging

Available in quarts, gallons and five-gallon pails. 30 and 50 gallon drums can be ordered.

■ Safety and Handling

Refer to the Material Safety Data Sheet for this product prior to use.

■ Estimated Durability and Light-fastness

Although outdoor durability cannot be specified exactly, accelerated weathering tests indicate that the 5000 Series Ink Line has an exterior life up to three years on most substrates, with exception to Reflex and Ultra Blue. Reflex and Ultra Blue has an exterior life up to two years. Variables within production and the end products use within the field will greatly affect a printed substrates durability. A slight change in color and gloss level should be expected.

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