

## THERMOCHROMIC WATER BASED SCREEN INK TI 11000

**Functionality:** Reversible Thermochromic ink

### Description

Water Based Thermochromic Ink is for printing on absorbent paper and board substrates. Thermochromic Water Based Screen Ink is supplied as a 1 part ready to use ink system.

### Application

Thermochromic Water Based Screen printing ink is ideally suited to flat bed screen printing processes onto absorbent paper and board substrates for applications such as labels, tags, tickets and boards. As with all Thermochromic inks the printed effect is dependent upon several factors including press speed, substrate, drying time/temperature and mesh count.

The prints exhibit a matte finish. Therefore, it is always recommended that over laminate or spot varnish is used to give a glossy aspect.

### Product Properties

#### Thermochromic properties

Thermochromic Water Based Screen Ink brings reversible color changing properties to printed items. The print is fully colored 3 degrees below the activation temperature and colorless above the activation temperature.

Standard activation temperatures are 15°C, 31°C and 47°C (59°F, 88°F and 117°F). Activation temperatures between -10°C and 69°C (14°F and 156°F) are also available.

#### Adhesion

Thermochromic Water Based Screen Ink is suitable for absorbent paper and boards. Due to the wide variety of substrates it is recommended that this ink is evaluated fully prior to any commercial use.

#### Rub Resistance

An over varnish or laminate is necessary if any resistance to abrasion is required as resistance to pressure is low.

## Overprintability/Lamination Properties

Hot laminates can be used with Thermochromic WB Screen Inks. Thermochromic WB Screen Inks can also be overprinted with UV offset, UV flexo and UV screen varnish. However an evaluation for compatibility should always be carried out prior to commercial use.

When Thermochromic Water Based Screen Ink is intended for use on overprinting onto a surface pre-printed with offset inks, it is recommended that the offset inks are wax free.

For applications that use a Thermochromic ink activated at cold temperatures (less than 20°C/68°F) we would recommend the use of a matte laminate for optimum effect. For warm and hot temperature activation inks (20°C/ 68°F and above), we would recommend a gloss laminate.

## Additional Product Properties

|                            |                         |
|----------------------------|-------------------------|
| Pigment Content (%)        | 24 ± 2                  |
| Pigment Size (3m)          | 90% less than 6 microns |
| Solvent                    | Water                   |
| Supplied Viscosity (cps) * | >15000cps               |

\*Measured on a LVT Brookfield Viscometer Spindle #2

## Light fastness

Thermochromic inks are inherently susceptible to damage by UV light. They are only recommended for use in applications with minimal exposure to UV light. UV protective varnish can be used to slow degradation caused by UV light.

Light fastness properties of supplied thermochromic ink colors are as follows:\*

|                       |     |
|-----------------------|-----|
| Green                 | 1   |
| Red, Orange & Magenta | 1-2 |
| Yellow, Blue, Purple  | 2   |
| Turquoise             | 3   |

\*Rating according to measurement on Blue Wool Scale

## Heat Behaviour

Reversible Thermochromic inks show thermal Hysteresis. This means temperature against color curves on the heating cycle do not match the cooling cycle curve.

Thermochromic inks consistently heated to temperatures above 50°C (122°F) will slowly lose color intensity below the activation temperature.

## **Recommended Printing Parameters**

### **Screen Configuration**

The optimum screen configuration depends on several factors, the most important of which is the desired opacity and color of the finished product.

Do not allow the ink to sit dormant on the screen as this will cause 'drying in' on the screen and effect print definition and quality.

Use a clean screen free of solvents when printing Thermochromic Water Based Screen Ink since the Thermochromic effect can be affected by traces of solvents.

### **Ink Consumption**

Typical ink consumption for Thermochromic Water Based Screen Ink on a 195 mesh is approx 10 – 15gms per sq ft. Multiple passes may be needed to achieve the desired activation color or to obliterate an image.

### **Dilution**

The printing ink is supplied in a format that once mixed is at printing viscosity. Should the ink need to be thinned to suit application then only water should be used. No alternative thinners should be used as these will affect both the performance of the ink and the Thermochromic function. No more than 15% water should be added to the ink system.

### **Drying**

The ink can be either air dried or dried using hot air dryers or IR lamps set to a maximum temperature of 70°C/158°F. Care should be taken when stacking the finished product as if too much pressure is applied to uncoated ink (not varnished or laminated) offsetting of the print can occur.

### **Cleaning recommendations**

Thermochromic Water Based Screen Ink should be cleaned on screen using water only. Glycol based cleaners should not be used as these will damage the function of the ink. After use, screens can be cleaned with water. A high powered water jet may be required to remove all ink remnants.

### **Handling and Storage**

Thermochromic Water Based Screen Inks should be stored away from solvents, sources of UV light and high temperature. Because the ink is water based it is important to keep the containers tightly shut to avoid evaporation and skinning of the product. When stored in the correct conditions, shelf life is 3 months. Ink should be thoroughly mixed prior to application.

Please consult MSDS prior to use.

Shelf Life of Ink 3 Months

Do not store in temperatures in Excess of 25°C/77°F

Do not freeze

Information in this Product Data Sheet is compiled from our general experience and data obtained from various technical publications. While we believe that the information provided herein is accurate at the date hereof, no responsibility for its completeness or accuracy can be assumed. Tests are carried out under controlled laboratory conditions. Information is given in good faith, but without commitment as conditions vary in every case. The information is provided solely for consideration, investigation and verification by the user. We do not except any liability for any loss, damage or injury resulting from its use (except as required by law). Please refer to the Material Safety Data Sheet before using products to ensure safe handling.