



## Technical Product Information

### THERMOSTAR® WATER BASED SCREEN INK 1410

**Functionality:** Reversible Thermochromic ink

**Article No:** 1410

**Revision:** 02

**Last Revision:** 14/09/2011

#### Description

Water based Thermochromic ink for absorbent paper and board substrates. THERMOSTAR® Water Based Screen Ink is supplied as a 1 part ink system.

#### Application

Screen printing ink 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 matt finish. Therefore, it is always recommended that over laminate or spot varnish is used to give a glossy aspect.

#### Product Properties

##### Thermochromic properties

THERMOSTAR® Water Based Screen Ink brings **reversible colour changing properties** to printed items. The print is fully coloured 3 to 4 degrees below the activation temperature and colourless above the activation temperature.

Standard activation temperatures are 15, 31 and 47°C (59, 88 and 117°F). Activation temperatures included within -10 and +69°C (14 and 149°F) are also available.

### **Adhesion**

THERMOSTAR® 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**

Both heat and cold set laminates can be used with THERMOSTAR® WB Screen Ink. THERMOSTAR® WB Screen Ink can be also 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 THERMOSTAR® WB Screen Ink is overprinted onto a surface pre-printed with offset ink, it is recommended that the offset ink is wax free. For applications where Thermochromic ink activates at cold temperatures (lower than 20°C/68°F), we recommend the use of a matt laminate for optimum visual effect. For inks activated at warm and hot temperatures (20°C/ 68°F and above), we recommend a gloss laminate.

### **Additional Product Properties**

<b>Pigment Content (%)</b>	<b>24 ± 1.5</b>
<b>Pigment Size (µm)</b>	<b>95% less than 6 microns</b>
<b>Solvent</b>	<b>Water</b>
<b>Supplied Viscosity (cps) <sup>1</sup></b>	<b>5000-40000 cps</b>

<sup>1</sup> Mixed ink 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 where minimal exposure to UV light is expected. UV protective varnish can be used to slow degradation caused by UV light.

Light fastness properties of supplied THERMOSTAR® colours 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 Thermochromics are showing thermal Hysteresis. This means temperature against colour curves on the heating cycle does not match the cooling cycle curve.

Thermochromics consistently heated up at temperatures above 50°C (122°F) will slowly lose colour intensity below the activation temperature.

## Recommended Printing Parameters

### Screen Configuration

When printing THERMOSTAR® Water based Screen Ink, the Use of a clean screen free of solvents is required because the Thermochromic function can be affected by traces of solvents.

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

The theoretical ink volume of the screen is crucial for matching the desired effect. Using a higher theoretical ink volume will affect the print as follows:

- Below the activation temperature, colour intensity is increased
- Beyond the activation temperature, the level of residual colour is increased accordingly.

	<b>Activated Below 20°C European</b>	<b>Activated Above 20°C European/US Measurement</b>
<b>Recommended Mesh Size</b>	<b>90T</b>	<b>70T</b>
<b>Minimum Mesh Size</b>	<b>150T</b>	<b>150T</b>

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.

### Ink Consumption

Typical ink consumption for THERMOSTAR® Water Based Screen Ink on a 70T mesh is approx 30 – 35gms per sqm. When obliterating an image, 2 passes may be required.

