

## Technical Product Information

### THERMOSTAR® UV ROTARY SCREEN INK 1490

**Thermochromic Function:** Reversible  
**Article No:** 1490 series  
**Revision:** 03  
**Last Revision:** 14/04/2015

#### Description

This UV Curing Ink is suitable for a wide range of substrates including paper, plastic (polyethylene, TC polypropylene), coated papers and board substrates. The ink is supplied as a 1 part ink system ready formulated and easy to use allowing flexibility in application and optimisation in appearance of printed articles by bringing **reversible colour changing properties**. The ink is available as Bisphenol A free grade for most colours and temperatures.

#### Application

The ink ideally suited to rotary screen units providing the ink is cured (exposed to UV lamps). As with all thermochromic inks, the printed effect is dependent upon several factors including press speed, substrate, drying time/temperature and mesh count, ink film thickness.

#### Product Properties

##### Thermochromic properties

The print is fully coloured 3-5 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® UV Rotary Screen Ink is suitable for polyethylene, TC polypropylene, paper, coated paper and boards. However, due to the wide variety of substrates it is recommended that this ink is fully evaluated prior to any commercial use.

##### Rub Resistance

The ink exhibits good rub resistance properties. If a high level of resistance is required then a suitable over varnish or laminate can be used.

## Overprintability/lamination Properties

THERMOSTAR® UV Rotary Screen Inks is best overprinted with UV letterpress, UV offset and UV flexo varnish (additive may be needed). However, an evaluation for compatibility should always be carried out prior to commercial use. For applications that use a thermochromic ink that is activated at cold temperatures (less than 20°C / 68°F) we recommend the use of a matt laminate for optimum effect. For warm and hot temperature activation inks (20°C/68°F and above) we recommend a gloss laminate.

## Additional Product Properties

<b>Pigment Content (%)</b>	<b>27 ± 1.5</b>
<b>Pigment Size (µm)</b>	<b>95% less than 6</b>
<b>Solvent</b>	<b>N/A</b>
<b>Supplied Viscosity (cps) <sup>1</sup></b>	<b>1000-3500</b>

<sup>1</sup> Measured on a LVT Brookfield Viscometer

## Light Fastness

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

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. Temperature against colour on the heating cycle does not match the cooling cycle.

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

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>Recommended Mesh Size</b>	<b>70-120*</b>
<b>Minimum Mesh Size</b>	<b>150*</b>

\* depending on open area. Target wet ink deposit is 20 grams per sqm.

## **Ink consumption**

Typical ink consumption for THERMOSTAR® UV Screen Ink on a 70T mesh is approx 14g per sqm. When obliterating an image, 2 to 3 passes may be required.

## **Dilution**

The printing ink is supplied in a format that is at printing viscosity. Should the ink need to be thinned to suit application then UV thinners such as TPGDA or TMPEOTA should be used. Care must be taken with the use of diluents as thermochromic inks can be susceptible to damage with various reagents. Do not add more than 10% of diluents to the mixture.

## **Curing**

The ink should be cured using conventional UV curing methods.

## **Cleaning recommendations**

After use, screens can be cleaned with a standard general purpose cleaner/screen wash. Use a clean screen free of solvents when printing THERMOSTAR® UV Rotary Screen Ink since thermochromic effect can be affected by the presence of solvents.

## **Handling and Storage**

THERMOSTAR® UV Rotary Screen Ink is a 1 part ink system that will remain stable for 3 months if kept in the unopened container. THERMOSTAR® UV Cure Rotary Screen Ink should be stored at temperatures lower than 20 C, away from solvents, sources of UV light. Do not freeze. Contents may settle on transit. Ink should be thoroughly mixed prior to application. Do not freeze.

Shelf Life 3 Months

Please consult SDS 1490 series

Information in this Product Data Sheet is compiled from our general experience and data obtained from various technical publications. Whilst 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.