

Technical Product Information

THERMOCHROMIC CONVENTIONAL UV CURE SCREEN INK TI 12000

Thermochromic Function: Reversible

Description

This conventional UV Cure Thermochromic 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.

Application

Screen printing ink ideally suited to flatbed screen printing processes and 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.

Product Properties

Thermochromic properties

Thermochromic Conventional UV Cure Thermochromic 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, 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

Thermochromic Conventional UV Cure 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 be 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.

Overprint ability/lamination Properties

Thermochromic Conventional UV Cure 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 would recommend the use of a matt 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 (%)	30 ± 1.5
Pigment Size (µm)	95% less than 6
Solvent	N/A
Supplied Viscosity (cps) ¹	9000-12000

¹ 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 should be used to slow degradation caused by UV light.

Light fastness properties of supplied Thermochromic 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 Thermochromics are showing thermal Hysteresis. This means temperature against color curves on the heating cycle does not match the cooling cycle curve. Thermochromic prints can experience far more than 1000 heating/cooling cycles above their activation temperature. Thermochromics consistently heated up at 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.

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, color intensity is increased
- Beyond the activation temperature, the level of residual color is increased accordingly

	Activated Below 20°C European/US Measurement	Activated Above 20°C European/US Measurement
Recommended Mesh Size	120T / 310	70T / 195
Minimum Mesh Size	150T / 379	150T / 379

Ink consumption

Typical ink consumption for Thermochromic conventional UV Screen Ink on a 70T mesh is approx 20g per sqm. When obliterating an image, 2 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 Thermochromic Conventional UV Cure Screen Ink since thermochromic effect can be affected by the presence of solvents.

Handling and Storage

Thermochromic Conventional UV Cure Screen Ink is a 1 part ink system that will remain stable for 3 months if kept in the unopened container. Thermochromic Conventional UV Cure Screen Inks should be stored away from solvents, sources of UV light and high temperature Contents may settle on transit.

Ink should be thoroughly mixed prior to application.

Please consult MSDS prior to use.

Shelf Life

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.