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Advanced Thermographic Technologies



Technical Product Information

THERMOSTAR® UV CURE SCREEN INK SCREN INK 1420

Thermochromic Function: Reversible

Article No: 1420

Revision: 02

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Description

Thermostar® UV Cure screen printing 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

Thermostar® UV Cure Screen printing ink ideally suited to flat bed 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

THERMOSTAR® UV Cure screen ink brings **reversible colour changing properties** to printed items. The print is fully coloured 3 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 al so available.

Adhesion

THERMOSTAR® UV Cure Screen printing 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 Cure Screen printing Ink 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 where a thermochromic ink activated at cold temperatures (less than 20°C / 68°F) is printed, 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 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. 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 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 effect the print as follows:

- Below the activation temperature, colour intensity is increased
- Beyond the activation temperature, the level of residual colour 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 THERMOSTAR® UV cure 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 THERMOSTAR® UV Cure Screen printing Ink since thermochromic effect can be affected by the presence of solvents.

Handling and Storage

THERMOSTAR® UV Cure Screen printing Ink is a 1 part ink system that will remain stable for 3 months if kept in the unopened container. THERMOSTAR® 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

SDS number: 1420 or 1422

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.