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Advanced Thermographic Technologies

Technical Product Information

THERMOSTAR® SOLVENT BASED SCREEN INK 1440

Functionality: Reversible Thermochromic ink
Article No: 1440
Revision: 02
Last Revision: 15/09/2011

Description

THERMOSTAR® Solvent Based Screen Ink is suitable for a wide range of substrates including plastic (treated polyethylene and treated polypropylene, polycarbonate), 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 article.

Application

THERMOSTAR® Solvent Based Screen Ink ideally suited to flat bed screen printing processes. 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® Solvent Based 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℉). Activation temperatures included within -10 and +69℃ (14 and 149℉) are al l available.

Adhesion

THERMOSTAR® Solvent Based Screen Ink is most suitable for treated polyethylene and treated polypropylene, polycarbonate. It is recommended to ensure that the surface tension of the plastic surface is at minimum 42 dynes/cm.
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.

Overprintability / Lamination Properties

THERMOSTAR® Solvent Based Screen Inks can be overprinted. 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℃/68℉) we would recommend the use of a matt lam inate for optimum effect.

Additional Product Properties

Pigment Content (%)	**30 ± 1.5**
Pigment Size (µm)	**95% less than 6**
Solvent	**Approx 40%**

Light Fastness

Themochromic 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℃ (122℉) 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.

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

Ink consumption

Typical ink consumption for THERMOSTAR® Solvent Based Screen Ink on a 120T 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 please consult us for a suitable thinner. When printing at high ambient temperature, “drying in” on the screen might occur. Please consult us for a suitable slow thinner.

Drying

The ink should be dried using hot air dryers for 10 to 20 seconds or IR lamps set to a maximum temperature of 60℃/140℉.

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® Solvent Based Screen Ink since the thermochromic effect can be affected by the presence of foreign solvents.

Handling and Storage

THERMOSTAR® Solvent Based Screen Ink is a 1 part ink system that will remain stable for 3 months if kept in the unopened container. THERMOSTAR® Solvent Based 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℃/77℉
Do not freeze

SDS number: 1440 and 1442