

## Technical Product Information

### THERMOCHROMIC WATER BASED GRAVURE INK TI 31000

**Functionality:** Reversible Thermochromic ink

#### Description

This Water Based Thermochromic Gravure ink is suitable for absorbent papers and board substrates. Supplied as a 1 part ink system ready formulated, Thermochromic Water Based Gravure Ink allows flexibility in application and optimisation in appearance of printed articles.

#### Application

Thermochromic Water Based Gravure ink is suitable for in line gravure printing onto paper, carton 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.

#### Product Properties

##### Thermochromic properties

Thermochromic Water Based Gravure 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 156°F) are also available.

##### Adhesion

Thermochromic Water Based Gravure Ink is suitable for absorbent papers and board substrates. However, due to the wide variety of substrates it is recommended that this ink is evaluated fully prior to any commercial use.

##### Rub Resistance

The ink exhibits good rub resistance properties on absorbent substrates. If a higher level of resistance is required or if the printed product is going to be exposed to humid conditions then a suitable over varnish or laminate should be used.

##### Overprintability/Lamination Properties

Both heat and cold set laminates can be used with Thermochromic Water Based Gravure Ink. Thermochromic WB Gravure Inks 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.

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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

|  |                        |
|--|------------------------|
| <b>Pigment Content (%)</b>                   | <b>24 ± 1.5</b>        |
| <b>Pigment Size (µm)</b>                     | <b>95% less than 6</b> |
| <b>Solid Content (%) <sup>1</sup></b>        | <b>50 ± 2.0</b>        |
| <b>Solvent</b>                               | <b>Water</b>           |
| <b>Supplied Viscosity (cps) <sup>2</sup></b> | <b>55 ± 3.0</b>        |

<sup>1</sup> AMB50 Moisture Content Analyzer

<sup>2</sup> Mixed ink measured on a LVT Brookfield Viscometer at 25°C

## 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

### Cylinder Configuration

The optimum cylinder 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 cylinder is

crucial for the desired effect. Using a higher theoretical ink volume will increase the intensity of Color of the product when below its activation temperature.

