

A water based reversible Thermochromic Gravure ink that is suitable for absorbent papers and board substrates. Supplied as a 1 part ink system ready formulated, Thermotech Ink allows flexibility in application and optimisation in appearance of printed articles.

As with all Thermochromic Inks the printed effect is dependent upon several factors including press speed, substrate, drying time, temperature etc. Suitable for in line gravure printing for applications such as labels, tags, tickets and boards.

Features

- Fair Gloss is displayed, but this is mainly derived from overprint varnish
- High Speed printing can be achieved
- Displays good scuff and retention for bottling in particular.
- Can react at varying temperatures dependant on requirements i.e. cold or hot reaction i.e. 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.

• Properties

- Reversible colour change
 - Full colour display at 3°C below activation temperature
 - Colourless above activation temperature
 - Cross section of activation temperatures are available.
 - Good adhesion
 - Fair gloss
 - Low solvent retention
 - No blocking in reel form
 - Good heat resistance +- 160C
 - Low odour
 - Good flexibility
 - Good rub resistance (if the printed product is going to be exposed to humid conditions then a suitable over varnish or laminate should be used).
 - Light fastness only moderate and colour dependant as below: *
- | | |
|-----------------------|-----|
| Green | 1 |
| Red, Orange & Magenta | 1-2 |
| Yellow, Blue, Purple | 2 |
| Turquoise | 3 |
- Rating according to measurement on Blue Wool Scale
 - Excellent overprintability
 - Good slip properties
 - Excellent printability and wetting
 - Can accept both heat set and cold set laminations

General

- For Washing up purposes the recommended reducer may be utilised.
- Can be overprinted with UV Offset, UV Flexo or UVScreen Varnishes as well as Standard Gravure and Flexo overprint varnishes (Solvent or Water based)
- 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
AMB50 Moisture Content Analyzer
Mixed ink measured on a LVT Brookfield Viscometer at 25°C
- Reversible Thermochromics show thermal Hysteresis. This means temperature against colour curves on the heating cycle do 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:

Anilox/Cylinder Configuration

The optimum anilox/cylinder 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 anilox/cylinder is crucial for the desired effect. Using a higher theoretical ink volume will increase the intensity of colour of the product when below its activation temperature.

The maximum press speed is dependent on press setting, substrate, and chosen anilox/cylinder. With sufficient heating power press speeds of over 180 m/min are realistically achievable.

The ink should be dried using hot air dryers or IR lamps set to a maximum temperature of 70°C (substrate related i.e. watch for shrinkage or fit issues).



Solids Content

Pigment Content (%)	24 ± 1.5
Pigment Size (µm)	95% less than 6
Solid Content (%) ¹	50 ± 2.0
Solvent	Water

Substrates

Can be utilized on wet strength and metallised papers as well as board coated or uncoated.

Viscosity

Supplied Viscosity (cps) ²	55 ± 3.0
Print Viscosity	19-21 Din #4

Reducer

The printing ink is supplied in a format that is at printing viscosity. Should the ink need to be thinned to suit application then H₂O can be added. To increase drying speeds Isopropyl alcohol can be added. No more than 5% diluents should be added. No other diluents should be used as these can damage the Thermochromic functionality and ink performance.

Handling and Storage

Thermotech is a 1 part ink system that will remain stable if kept in the supplied container and stored in the correct storage conditions. As the product is water based, it is important to keep the containers tightly shut to avoid evaporation and skinning of the product.

Thermotech should be stored away from solvents, sources of UV light and high temperature. Ink should be thoroughly mixed prior to application.

Shelf Life 3 Months

Do not store in temperatures in Excess of 25°C/77°F

BCF

These inks have been formulated in accordance with the recommendation of the British Coatings Federation.

Waste disposal

Care should be exercised in the disposal of printing ink waste. This should be carried out in accordance with good industrial Practice observing all the appropriate regulations including the relevant guideline notes to the Environment Conservation Act and Regulations (73/1989).

Health and Safety

Full details appear on the Material Safety Data Sheets

The information outlined in this data sheet is given in good faith but does not constitute a guarantee. Since conditions of handling and application are beyond our control, the converter should assure himself of the suitability of the product for the particular end use.

It is recommended that advice be taken from Hi-Tech Inks' Technical Department for all new applications and it is preferable for trials to be carried out before full production runs are commenced.