



LCR Hallcrest Ltd.
Riverside Buildings, Dock Road,
Connah's Quay, Flintshire,
CH5 4DS U.K.
Tel: +44 (0)1244 817107
Fax: +44 (0)1244 818502
Email: sales@lcrhallcrest.com
Web: www.lcrhallcrest.com

Advanced Thermographic Technologies

CHAMELEON® **THERMOCHROMIC WATER BASED SCREEN INK**

Functionality: Reversible Thermochromic ink

Revision: 03

Last Revision: 14/09/2011

Description

Water based Thermochromic ink for absorbent paper and board substrates. CHAMELEON® Water Based Screen Ink is supplied as a 1 part ink system.

Application

CHAMELEON water based Screen printing ink is ideally suited to flat bed screen printing processes onto absorbent paper 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 and mesh count.

The prints exhibit a matt finish. Therefore, it is always recommended that over laminate or spot varnish is used to give a glossy aspect.

Product Properties

Thermochromic properties

CHAMELEON® Water Based Screen Ink brings **reversible colour changing properties** to printed items. The print is fully coloured 3 to 4 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 also available.

Adhesion

CHAMELEON® Water Based Screen Ink is suitable for absorbent paper and boards. Due to the wide variety of substrates it is recommended that this ink is evaluated fully prior to any commercial use.

Rub Resistance

An over varnish or laminate is necessary if any resistance to abrasion is required as resistance to pressure is low.

Overprintability/Lamination Properties

Both heat and cold set laminates can be used with CHAMELEON® WB Screen Ink. CHAMELEON® WB Screen Ink 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.

When CHAMELEON® WB Screen Ink is overprinted onto a surface pre-printed with offset ink, it is recommended that the offset ink is wax free. For applications where Thermochromic ink activates at cold temperatures (lower than 20°C/68°F), we recommend the use of a matt laminate for optimum visual effect. For inks activated at warm and hot temperatures (20°C/ 68°F and above), we recommend a gloss laminate.

Additional Product Properties

Pigment Content (%)	24 ± 1.5
Pigment Size (µm)	95% less than 6 microns
Solvent	Water
Supplied Viscosity (cps) ¹	5000-40000 cps

¹ Mixed ink measured on a LVT Brookfield Viscometer Spindle #2

Light fastness

Thermochromic inks are inherently susceptible to damage by UV light. They are only recommended for use in applications where minimal exposure to UV light is expected. UV protective varnish can be used to slow degradation caused by UV light.

Light fastness properties of supplied CHAMELEON® 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.

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

When printing CHAMELEON® Water based Screen Ink, the Use of a clean screen free of solvents is required because the Thermochromic function can be affected by traces of solvents.

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°C European	Activated Above 20°C European/US Measurement
Recommended Mesh Size	90T	70T
Minimum Mesh Size	150T	150T

Do not allow the ink to sit dormant on the screen as this will cause 'drying in' on the screen and effect print definition and quality.

Ink Consumption

Typical ink consumption for CHAMELEON® Water Based Screen Ink on a 70T mesh is approximately 30–35gms per sqm.

When obliterating an image, 2 passes may be required.

Dilution

The printing ink is supplied in a format that once mixed is at printing viscosity. Should the ink need to be thinned to suit application then only water should be used. No alternative thinners should be used as these will affect both the performance of the ink and Thermochromic function. No more than 10% water should be added to the ink system.

Drying

The ink is dried using hot air dryers or IR lamps set to a maximum temperature of 70°C/158°F.

Care should be taken when stacking the finished product as if too much pressure is applied to uncoated ink (not varnished or laminated) offsetting of the print can occur.

Cleaning recommendations

CHAMELEON® Water Based Screen Ink is cleaned on screen using water only. Use of glycol based cleaners may result in damage to the thermochromic function of the ink.

After use the screens can be cleaned with water. A high powered water jet may be required to remove all ink remnants.

Handling and Storage

CHAMELEON® Water Based Screen must be stored away from solvents, sources of UV light and high temperature. When stored in the correct conditions shelf life is 3 months. As the product is water based, it is important to keep the containers tightly shut to avoid evaporation and skinning of the product. Mix thoroughly the ink before use.

Please consult MSDS prior to use.

Shelf Life of Ink

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. 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.