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Advanced Thermographic Technologies

CHAMELEON®
THERMOCHROMIC SHEETFED OFFSET INK

Functionality: Reversible Thermochromic ink

Revision: 02

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Description

CHAMELEON® Sheetfed Offset Ink is an oil based Thermochromic ink for absorbent paper and board substrates. Supplied as a 1 part ink system ready formulated and easy to use, CHAMELEON® Sheetfed Offset Ink allows flexibility in application and optimization in appearance of printed articles.

Application

CHAMELEON® Sheetfed Offset Ink is an offset lithography printing ink suited to wet offset printing processes and applications such as labels, tags, tickets etc. As with all Thermochromic inks the printed effect is dependent upon several factors including press speed, substrate, drying time/temperature. Since the film weight in offset printing process is considerably lower than that of other printing methods such as Flexo or Screen, the colour intensity in the finished print is reduced accordingly.

Thermochromic offset inks cannot be used to overprint a base image so as to hide the print underneath. For this application we recommend using screen printing methods.

CHAMELEON® Sheetfed Offset Ink is not suitable for 4 colours process due to inherent properties of thermochromic colours.

Product Properties

Thermochromic properties

CHAMELEON® Sheetfed Offset 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 all available.

Adhesion

CHAMELEON® Sheetfed Offset Ink is designed to be printed onto absorbent paper. 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 high level of resistance is required than a suitable over varnish or laminate can be used.

Over printability/Lamination Properties

Both heat and cold set laminates can be used with CHAMELEON® Sheetfed Offset Inks 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°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

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

Solid Content (%)	**90 ± 2.0**
Solvent	**Mineral Spirits**
Supplied Viscosity (cps) [1]	**15000-18000**

[1] Mixed ink measured on a LVT Brookfield Viscometer

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 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. Thermochromic prints can experience 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

Press configuration

The optimum printing configuration depends on several factors, the most important of which is the desired opacity and colour intensity of the finished product. When printing

CHAMELEON® Sheetfed Offset Inks, a higher thickness of ink deposit than conventional Sheetfed Offset Inks will be required to gain a satisfactory effect.

Thoroughly clean all press equipment and rollers of any traces of ink and solvents. Any contamination will have a negative effect on both the aspect of the print and the Thermochromic properties.

Dilution

Thermochromic inks are sensitive to various reagents. Avoid contact with solvents of any kind. If diluents are required a small amount of high boiling mineral oil can be used. Fount solutions with high alcohol content could also have an adverse effect and should be avoided.

Drying

The ink should be dried using conventional drying methods. Care should be taken not to use excessive heat on drying (above 100°C/212°F).

Cleaning recommendations

After use cylinders and ink trays can be cleaned with a standard general purpose cleaner/blanket wash. Care must be taken not to contaminate the ink with any cleaning material as this can inhibit the thermochromic function of the ink.

Handling and Storage

CHAMELEON® Sheetfed Offset Ink is a 1 part ink system that will remain stable for 12 months if kept in the unopened original container and if stored away from solvents, sources of UV light and high temperatures.

Please, consult MSDS prior to use.

Shelf Life 12 Months

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

Do not freeze