

“Red Hot” to “Cool Blue” - Thermochromic Effects

Screen and Pad Applications and Technical Details

Screen/Pad

2016

7. Oct

One of the more eye-popping special effects, thermochromic pigments achieve their impact by changing colour under the influence of temperature. As soon as a predefined temperature limit has been reached, the colour of the printed ink film turns transparent; or vice versa, when the initial temperature returns, the print resumes its original colour (reversible). It is possible, for example, that a wine bottle label indicates the desired drinking temperature by exhibiting a desired colour when reaching this level.

Besides these reversible pigments, irreversible pigments exist as well. By turning colour they show for example whether a product was exposed to alternating temperatures. These irreversible pigments are **not** suitable for solvent-based or UV-curable inks.

The reversible thermochromic effect can be offered for selected solvent based and UV-curable Screen and Pad Printing ink series. These inks are tailor-made for the needs of our customers, and are therefore available upon request.






Transition from coloured to transparent

Following temperature ranges are available:

0 °C	+ 31 °C	
+ 5 °C	+ 45 °C	
+ 15 °C	+ 60 °C	
+ 18 °C	+ 65 °C	(upon request)

In order to be able to produce this effect without the use of bisphenol A, we do not offer change-over temperatures below 0 °C.

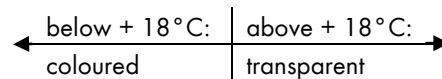
Available Colour Shades

	Light Yellow		Blue
	Red		Turquoise
	Magenta		Black
	Dark Blue		

Please note that the shown colour shades are exemplary

Please note: Not every temperature/colour shade combination is available.

Example: Transition Temperature + 18 °C



cool, at < + 5 °C

Room temperature

The transition point, however, is subject to tolerances: different colour shades, transition temperatures, and batches may show slight deviations.

For example: the conversion of a pigment which is defined for transition at + 18 °C regularly starts at approximately 16 °C, and ends at about 20 °C. Other batches of the same pigment may shift at a range of 14 - 18 °C or even 18 - 22 °C. Owing to this fact, mixed colours or repeat orders are likely to be non-conforming.

Please note that thermochromic pigments are **generally not suitable** for printing onto toys, or food packaging in direct contact with food.

When printing onto exterior packaging for food or similar goods, we recommend carrying out a migration test with the final product.

Suitable Product Lines

This effect can be offered in combination with:

Mara® Glass	MGL
Mara® Star	SR
Tampa® Plus	TPL
Ultra Glass	UVGL*
Ultra RotaScreen	UVRS*
Ultra Pack	UVC
Ultra Graph	UVAR

*reduced variety of colour shades available

Technical Details

- Mesh count/ cliché depth:
Solvent-based inks: 43-80 - 90-48
UV-curable inks: 68-64 - 140-34 (according to the desired intensity)
Cliché depth 25 - 30 µm
- The thicker the ink film, the stronger the effect colour
- The effect will show its full liveliness after the first activation
- The light fastness of these pigments is rather low (Blue Wool Scale 4)
- Effect can be activated up to 3.000 times
- A thermochrome pigment in the ink series MGL withstood 250 conventional dishwasher cycles (for processing details and baking temperatures, see Technical Data Sheet MGL)

Order Procedure

Thermochromic effect inks are available upon request and are not part of the standard range. Therefore, we kindly ask you to consider the following issues:

- The minimum order quantity is 3 kg
- Due to the complex manufacturing process, please allow a delivery time of approximately 5 weeks
- For details regarding offers and pricing, please contact your Marabu Partner

In the event of any queries, please contact:

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