

## Technical Product Information

### CHAMELEON MASTERBATCH

**Functionality:** Reversible Thermochromic Masterbatch

**Article No:** 8000

**Revision:** 01

**Last Revision:** 09/06/2015

#### Description

CHAMELEON Masterbatch is composed of thermochromic microcapsules blended with a carrier. The Thermochromic pigment is loaded at approx. 20 % in mixed resin carrier allowing compatibility with PE, HDPE, PP, PS, SAN, TPU, TPE. It is incompatible with PET and PC.

#### Application and Dilution

The product is supplied as plastic pellets. Recommended mixing ratio depends on wall thickness of the finished item. For acceptable colour intensity, 3 to 8 % CHAMELEON Masterbatch loading is recommended when wall thickness is larger than 1 mm, for wall thickness lower than 0.6 mm, CHAMELEON Masterbatch should be loaded at 10% or more depending on colour intensity required. More intense colours are obtained with higher pigment loading; however, residual colour will increase accordingly. Residual colour is the remnant colour when the thermochromic has been heated approx. 3 to 5°C above its clearing point. Avoid using regrind as this may lead to colour disruption.

#### Processing conditions

- Recommended moulding temperatures are 200 to 220°C. Ideal moulding temperature is 220°C. 240 C is the maximum temperature that should be considered for the Moulding operation. Higher temperatures can have a negative impact on Thermochromic properties.
- Ideal extrusion temperature is 200°C. Extrusion temperature is ideally tested at 200°C prior running full operation. Temperature Higher than 220°C can have a negative impact on Thermochromic properties.

Ice water can be used to assess colour change. Taking samples periodically help ensuring colour consistency.

#### Product Properties

##### Thermochromic properties

CHAMELEON masterbatch brings **reversible colour changing properties** to moulded items. The moulded item is fully coloured 3 to 6 degrees below the activation temperature and colourless above the activation temperature. However, speed of colour change properties may be affected by the

insulating effect created by the plastic itself.

Colour to colour change are available using the CHAMELEON masterbatch and regular pigments. However, the regular pigment should be lighter in shade than the CHAMELEON colour. Addition of white to CHAMELEON masterbatch will produce a lighter shade than the original CHAMELEON colour.

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.

### Additional Product Properties

<b>Pigment Content (%)</b>	<b>Approx. 20%</b>
<b>Pigment Size (µm)</b>	<b>90% less than 6 microns</b>
<b>MFI (190C@2.15 Kgf)</b>	<b>15-25g/10 mn</b>
<b>Density</b>	<b>0.6g/cm3</b>
<b>Pellet size</b>	<b>2-4 mn</b>

### Light fastness

Thermochromic pigments 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 masterbatch colours are as follows:\*

Green	1
Red, Orange & Magenta	1-2
Yellow, Blue, Purple	2

\*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 loose colour intensity below the activation temperature.

### Handling and Storage

CHAMELEON Masterbatch will remain stable for 12 months if stored away from solvents, sources of UV light and high temperatures, and kept in the original unopened container.

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

Please consult MSDS prior to use. Material Safety Data Sheet No: 8000 or 8002

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