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Advanced Thermographic Technologies

Technical Product Information

CHAMELEON LOW LINEAR POLYETHYLENE MASTERBATCH

Functionality: Reversible Thermochromic plastic

Article No: 8000

Revision: 02

Last Revision: 10/09/2012

Description

CHAMELEON Low Linear Polyethylene (LLPE) Masterbatch is composed of thermochromic microcapsules blended with a LLPE carrier. The Thermochromic pigment is loaded at 20 % in the LLPE carrier. The masterbatch is mostly designed to be used with polyolefins materials (PE, PP). 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. 4 to 8 % CHAMELEON Masterbatch loading is recommended when wall thickness is larger than 1 mm, for acceptable colour intensity. For wall thickness lower than 0.6 mm, CHAMELEON LLPE 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.

Recommended molding temperatures is 180 to 200 C. Higher temperatures can have a negative impact on Thermochromic properties. 235 C is the maximum temperature that should be considered for the Molding operation.

Product Properties

Thermochromic properties

CHAMELEON LLPE masterbatch brings **reversible colour changing properties** to moulded items. The moulded item is fully coloured 3 to 4 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 LLPE masterbatch and regular pigments. However, the regular pigment should be lighter in shade than the CHAMELEON colour.

Addition of white to CHAMELEON LL PE 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

Pigment Content (%)	20%
Pigment Size (µm)	95% less than 8 microns

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 LL PE 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.

Please consult MSDS prior to use.

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

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 ensure safe handling.