



ChromaZone® Slurry Technical Data

Description

'ChromaZone® slurries' are thermochromic micro capsules in an aqueous based dispersion form. They have been specially designed for use in aqueous based ink systems although their use is not limited to this. They can be used to formulate Water based flexographic, UV, Screen and Epoxy Ink formulations (for non aqueous applications we would recommend using an alternative ChromaZone® product). 'ChromaZone® slurries' are coloured below a specific temperature, and change to colourless or to another, lighter colour as they are heated through the temperature range. These pigments are available in various colours and activation temperatures.

Standard activation temperatures	15°C, 31°C and 47°C.
Special activation temperatures	-10° c to +69°C.

The activation temperature is defined as the temperature above which the ink has almost achieved its final clear or light colour end point. The colour starts to fade at approximately 4° C below the activation temperature and will be in between colours within the activation temperature range. The colour change is "reversible," i.e., the original colour will be restored upon cooling.

Standard colours	Black, Blue, Magenta, Green, Orange and Red.
Special custom colours	Purple, Brown and Turquoise.

Special Care and Storage / Handling Instructions

'ChromaZone® slurries' are more sensitive to the influences of solvents, UV light, pH, Shear and temperature than many other types of pigment. It should be noted that there are differences in performance of the various colours so that each should be thoroughly tested before commercial application.

'ChromaZone® slurries' have excellent stability when stored away from heat. Store below 25°C. Do not allow to freeze as this will damage the thermochromic capsules. A shelf life of 12 months is guaranteed provided that the material is stored in a cool and dark environment. Long term exposure to UV light or elevated temperature can cause loss of thermochromic function. Storage longer than twelve months is not recommended. Consult product MSDS prior to use.

TECHNICAL DETAILS

Solids	48% +/-2%
Particle Size	97% <6µm
pH (Dispersion)	5.0 – 5.5
Light Fastness (blue wool scale)	1 – 2
Shelf Life	12 months

All raw materials used for production of CHROMAZONE® pigments are listed in: EINECS, TSCA and DSL/NDSL

SENSITIVITY

CHROMAZONE® thermochromic microcapsules are sensitive to adverse environmental conditions. These are listed below, along with a description of the nature of the sensitivity, and recommendations with regards to them.

MIXING:

'ChromaZone® slurries' should be mixed thoroughly before use as contents may settle on transit. They can withstand most standard mixing procedures. No intense shear is necessary as the capsules are in primary particle form. If too much shear energy is used (e.g. bead mills) then the micro capsules can be crushed and the thermochromic function destroyed.

LIGHT:

Long exposure to UV and some fluorescent lights can degrade colour intensity. Extreme exposure of more than several days of direct sunlight may degrade the colour of the microcapsules, though it will probably still change colour. More than 600 hours of a strong fluorescent light may also cause a loss of colour in the thermochromic.

HEAT:

Extended exposure to high temperatures of 50°C or higher can degrade the pigment. With heat the exposure only has an effect if a given temperature is constantly maintained for a given amount of time. ChromaZone® thermochromic microcapsules can survive temperatures >200°C however they can only be exposed to these temperatures for a very short periods of time (<10 seconds).

CHEMICALS:

CHROMAZONE® can be incorporated into many types of aqueous and UV curing formulations however thermochromic materials are sensitive to chemical exposure. Care must be taken to avoid the use of polar solvents such as alcohols, acetates etc. as these can damage the micro capsule walls.

ALL APPLICATIONS USING COLOUR-CHANGING PIGMENTS AND INK OF ANY KIND SHOULD BE THOROUGHLY TESTED PRIOR TO APPROVAL FOR PRODUCTION.

For further information or assistance, please contact Thermographic Measurements Ltd +44 1244 818348.

Information in this Product Data Sheet is compiled from our general experience and data obtained from various technical publications. While we believe that the information provided herein is accurate at the date hereof, no responsibility for its completeness or accuracy can be assumed. Tests at TMC 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. TMC do not accept 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.