

Photochromic Dye Technical Data

Description

Photochromic dyes are reversible raw dyes in crystalline powder form. Photochromic dyes reversibly change color upon exposure to ultraviolet light in the range of 300 to 360 nanometers. Full color change occurs in just seconds when using a flash gun to 20-60 seconds in the sunlight. The dyes change back to colorless when removed from the UV light source. Some colors may take longer to fade back to completely clear than others. Photochromic dyes can be mixed together to produce a wider range of colors.

Photochromic dyes can be extruded, injection molded, cast, or dissolved into an ink. Photochromic dyes can be used in various paints, inks and plastics such as PVC, PVB, PP, CAB, EVA, urethanes, and acrylics. The dyes are soluble in most organic solvents. Due to the wide variations in substrates, product development is solely the responsibility of the customer.

| Standard Colors | Item Number | PMS Approximation** |
|-----------------|-------------|---------------------|
| Blue 1 | UD01/BL1 | 2995U |
| Rose 1 | UD01/R1 | 1797U |
| Yellow 1 | UD01/Y1 | 116U |
| Plum 1 | UD01/PL1 | 229U |
| Red 2 | UD04/R19 | 2405U |
| Orange 4 | UD04/O17 | 1495U |
| Purple 1 | UD04/P1 | 254U |
| Turquoise 1 | UD02/T1 | 3115U |
| Gold 1 | UD02/GO1 | 1235U |

** Note that exact color depends greatly on the system in which the dyes are dissolved.

Storage and Handling Instructions

Photochromic dyes have excellent stability when stored away from heat and light. Photochromic dyes have a shelf life in excess of 12 months provided that the material is stored in a cool and dark environment.

Sensitivity

The dyes are EXTREMELY affected by the matrix in which they are incorporated. Matrix effects may drastically change the performance of the dyes or even destroy the dye. Because of these effects the same dye in multiple ink systems may result in slightly different colors upon activation by UV light.

MIXING:

Photochromic dyes can withstand most standard mixing procedures.

LIGHT:

Photochromic dyes are sensitive to UV degradation over time. The life expectancy of the dyes depends greatly on the matrix into which they are dissolved, the additives used to stabilize them, and the intensity and duration of UV exposure.

HEAT:

Photochromic dyes can be subjected to processing temperatures of 180°C to 240°C without degradation, for a short period of time. Thermal degradation is a function of the combination of time and temperature. The shorter the time and the lower the temperature, the less thermal degradation will occur.

CHEMICALS:

Photochromic dyes can be incorporated into many types of solvent based inks.

ALL APPLICATIONS USING COLOR-CHANGING PIGMENTS AND INK OF ANY KIND SHOULD BE THOROUGHLY TESTED PROIR TO APPROVAL FOR PRODUCTION

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 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.

