



# MATSUI INTERNATIONAL CO. INC.

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## PRODUCT DATA SHEET

### PRODUCT IDENTIFICATION Photopia® Color

#### GENERAL INFORMATION

Photopia® Color is a light sensitive organic colorant that can be used to make an ink, paint, etc. that changes reversibly in the sunlight (or ultraviolet light).

#### PRODUCT SPECIFICATIONS

Photopia® will be colorless/lighter color indoors and change to a darker color outdoors

Color	Appearance	Change in color	Wavelength
Yellow	White powder	Colorless to Yellow	429 nm
Purple	Very light yellow powder	Colorless to Purple	578 nm
Blue	Light yellow powder	Light yellow to Blue	603 nm

#### USE

Dissolve the Photopia® Color into an aromatic organic solvent with heat at 80-90°C (approx. 1% concentration). Photopia® Color is soluble in most organic solvents. The chart below shows Photopia® Color's solubility with various organic solvents.

Solvent	B.P. (°C)	Yellow	Purple	Blue
[ALCOHOL]				
Methanol	64.5	Slightly soluble	Slightly soluble	Slightly soluble
Isopropyl Alcohol	82.4	About 0.1%	Slightly soluble	Slightly soluble
Isobutyl Alcohol	107.9	Above 0.1%	Slightly soluble	Slightly soluble
[HYDROCARBON]				
n-Hexane	68.7	About 0.1%	Slightly soluble	Slightly soluble
Cyclohexane	80.7	Above 0.3%	About 0.1%	Slightly soluble
Methyl Cyclohexane	100.9	Above 0.4%	About 0.3%	About 0.1%
Toluene	110.0	About 5%	Above 2%	About 1%
Xylene	140.0	About 5%	About 2%	About 1%
[HALOGENATED HYDROCARBON]				
Carbon Tetrachloride	76.8	About 3%	About 1%	About 0.5%
Trichloro Benzene	210.0	About 4%	About 1.5%	About 1%
[KEYTONE]				
Methyl Ethyl Ketone	79.6	About 1.5%	About 0.5%	About 0.3%
Cyclohexanon	155.6	About 4%	About 1.5%	About 1.5% (Ester)
Ethyl Acetate	77.2	About 1.5%	About 0.3%	About 0.2%
Butyl Acetate	126.0	About 2%	About 0.5%	About 0.3%
D.O.P.	282.0	About 4%	About 1.5%	About 1%
[CONTAINING NITROGEN]				

Nitro Ethane	114.0	About 3%	About 0.5%	About 0.3%
D.M.F.	153.0	About 3%	About 0.5%	About 0.3%
[OTHERS]				
Ethyl Cellosolve	135.8	About 1.5%	About 0.3%	About 0.2%

- 2) Next mix the Photopia/solvent mixture into the clear ink. (Approx. 1 parts Photopia/solvent to 20 parts clear.) Stir with mixer. Nitrocellulose resin components can not be used with Photopia Color and Photopia Color is insoluble in water. Compatible resin component examples are Acrylic resin, ICI Acrylics Co., Elvacite 2028, etc. Oil based screen systems are not recommended.
- 3) Viscosity of ink, mesh of screen plate, squeegee, etc. should be in accordance with normal screen/gravure printing methods.

Melting point:      Yellow      162-163°C (323.6-325.4F)  
                              Purple      237-238°C (458.6-460.4F)  
                              Blue      257-258°C (494.6-496.4F)

Toxicity:	<u>Mutagenicity</u>	<u>Acute Oral Toxicity LD50</u>	<u>Acute Dermal Toxicity LD50</u>
	(-)	> 2,000 mg / kg	> 2,000 mg / kg
	(-)	> 2,000 mg / kg	> 2,000 mg / kg
	(-)	>2,000 mg / kg	> 2,000 mg / kg

APPLICATION FOR VINYL CHLORIDE / PLASTICIZER

	<u>Amt. of Photopia®</u>	<u>Amt. of Light Stabilizer</u>
Yellow	0.02 – 1.0 parts	½ of Colorant's amount
Purple	0.01 – 0.3 parts	2-10 times the amt. of colorant
Blue	0.01 – 0.2 parts	2-10 times the amt. of colorant

If more Photopia® Color is used the color concentration will not improve. If less Photopia® Color is used the color concentration will be reduced.

Solubility of Photopia® Color towards DINP 100 parts (7°C/44.6°F):

Yellow – 3%  
 Purple – 1%  
 Blue – 0.8%

Using light stabilizer (HALS) with Photopia® Color will greatly improve the light fastness, especially in Purple and Blue.

For injection and extrusion molding : Mix vinyl chloride resin and the Photopia / light stabilizer together thoroughly using a Henschel mixer. Obtain a palletized compound using a normal extrusion machine and cutter.

For Plastisol Ink : Add Photopia / light stabilizer into vinyl chloride resin and mix thoroughly using a disperse model stirrer. After this, to ensure uniform dispersion, use a three roller mill.

SHELF LIFE, STORAGE, SAFETY HANDLING

Shelf life :              Almost unlimited

Storage : Store in a cool, dark place

Safety, handling : Wear dustproof mask, gloves, goggles

FOR SPECIFICS REFER TO MSDS