

94700 – 947371 Fluorescent Dyes

94700	Fluorescent Yellow, Perylen
94720	Fluorescent Red, Perylen
94730	Fluorescent Violet, Naphthalimid
94736	Fluorescent Blue- <i>new</i>
94737	Fluorescent Green- <i>new</i>
94738	Fluorescent Orange - <i>new</i>
94739	Fluorescent Pink- <i>new</i>

Fluorescent Varnishes

Fluorescent dye with Paraloid® B 72, solved in Ethyl Acetate

94701	Fluorescent Yellow Varnish
94711	Fluorescent Orange Varnish
94721	Fluorescent Red Varnish
94731	Fluorescent Violet Varnish
947361	Fluorescent Blue Varnish
947371	Fluorescent Green Varnish

A new type of dye/coloring matter:

Fluorescent dyes reflect absorbed light by fluorescence. These dyes seem to glow in black light and can be excellently applied in clear synthetic resins. As a varnish, Fluorescent Violet is almost translucent, but glows in black light.

As a clear synthetic resin, we suggest, Paraloid B 72, dissolved in ethyl acetate.

150 g Paraloid B 72 and 1 g fluorescent pigment in 1 Liter ethyl acetate.

Physical form Powder

Shelf life Practically unlimited if the products are stored in a dry place.

Properties

Mass density at 20°C

94700	94738	94720	94730	
Fluorescent	Fluorescent	Fluorescent	Fluorescent	
Yellow	Orange	Red	Violet	
1.27	1.36	1.4	1.28	g/cm ³

Optical data

	Emission	Absorption	
	λ max. (nm) in CH ₂ Cl ₂	λ max. (nm) in CH ₂ Cl ₂	in PMMA
94700	490	476	473
94720	613	578	578
94730	413	378	374
94738	539	524	525

Quantum Yield Φ

94700	> 85
94738	> 90
94720	> 90
94730	> 85

Solubility at 20°C (g/l)

Solvent	Yellow	Orange	Red	Violet
	94700	94738	94720	94730
Acetone	0.5	2	10	5
Ethanol 99.5%	< 0.1	< 1	< 1	< 1
Isopropyl alcohol	< 0.1	< 0.5	< 1	< 0.5
Solvenon PM	< 0.5	2	10	4
Ethyl acetate	0.2	< 0.5	20	1
Butyl acetate 100 %	0.2	< 0.5	30	5
Dimethylformamide	3	15	70	7
Mineral spirit	< 0.1	< 0.5	< 1	< 0.5
Xylene	0.5	< 1	30	15
Toluene	< 1	< 2	80	10
Benzyl alcohol	1	3	30	30

Heat stability (°C)

	0.02 %	0.02 %
	in PMMA	in PC
97400 Fluorescent Yellow	300	300
94720 Fluorescent Red	300	300
94730 Fluorescent Violet	300	300
94738 Fluorescent Orange	300	300

Fastness to weathering

0.02 % in PMMA injection-moulded swatches of 2 mm thickness.

Residual fluorescence (%) after 80 days accelerated exposure in the Xenotest 1200

97400 Fluorescent Yellow	> 90
94720 Fluorescent Red	> 95
94730 Fluorescent Violet	> 80
94738 Fluorescent Orange	> 85 (after 60 days)

The most suitable carrier material for Fluorescent dyes when outdoor exposure is involved is PMMA. However, the fastness to weathering can be impaired by foreign substances in the PMMA.

Panels produced from PMMA monomer normally contain residual amounts of monomer and initiator. It has been observed that they have much poorer fastness to weathering. If they are produced by casting, then temperature during curing must be controlled to ensure complete elimination of these residual monomers.

This problem does not occur if the PMMA is injection molded.

It has been observed in outdoor exposure trials that the fluorescence is reversible in some cases. Thus it decreased somewhat during exposure in summer, but recovered again during the dark winter phase and almost attained its original value.



Application

In all crystal-clear plastics.

Migration must be expected in plastics that contain butadiene and plasticizers or that are partially crystalline. These are points that must be checked in any event if Fluorescent dyes are to be used in systems of this nature.

Processing

The dry dye powder is uniformly distributed on the plastics pellets, grit or powder in low-speed or high-speed mixers. As a rule, the dye adheres to the surface of the plastic as a result of electrostatic charging.

It is advisable to homogenize the mixture thus obtained on an extruder before it is further processed.

Safety

We know of no ill effects that could have resulted from using the Fluorescent dyes for the purpose for which they are intended and from processing them in accordance with current practice.

According to the experience that we have gained up to now and other information at our disposal, the Fluorescent dyes do not exert any harmful effects on health, provided that they are used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our Safety Data Sheets are observed.

Note

The information submitted in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.