

seriplas

dyes for transfer printing



description

Seriplas dyes are selected disperse dyes with high subliming properties which are suitable for the heat transfer printing process, particularly onto polyester fibres.

Seriplas TP dyes are pure dried presscakes with no dispersants or other additives present. They have not been milled and are variable in crystal sizes, so are recommended for the production of solvent or water-based inks where the preparation involves a milling or particle size reduction process. A fine dye particle size is essential to ensure full tinctorial strength and print levelness after transfer.

Seriplas TPM dyes are TP dyes which have been micronised to break down the larger crystal sizes, and generally show a maximum size up to 20-30 microns. Thus they will mill more quickly and are particularly useful for triple roll milling of offset inks and bead milling of solvent gravure inks.

Seriplas Liquid dyes are aqueous preparations of Seriplas powder dyes at high tinctorial strength, typically 35-45%, finely milled in presence of non-ionic dispersing agents. They can be mixed directly into aqueous ink bases and require no further particle size reduction. The current range is available on request.

paper printing

Transfer inks are applied commercially by gravure, flexographic, offset lithographic, flat screen or rotary screen printing processes. The ink formulations, viscosities and rheology are therefore very much dependant on the method of application. Solvent-based inks are widely used, although aqueous inks can also be applied by most printing methods, except offset inks which are oil-based.

Seriplas TP and TPM dyes can be used in solvent, oil or water-based media provided the dye remains insoluble as a fine dispersion. Dye solubilisation can lead to crystallisation on ink storage.

The other main ink components are resins, which bind the dye to the paper and prevent mark-off, and also act as viscosity modifiers to adjust the rheological properties of the printing ink. For transfer applications, the resins should not have affinity for the disperse dye or hinder sublimation during transfer, and be stable at the transfer temperatures employed (typically 210°C).

fas

transfer properties

Typical heat transfer conditions for polyester are 30 seconds at 210°C and these have generally been applied for the dyes illustrated. Dye selection will need to take into account transfer rate, compatibility in admixture, and light and wet fastness properties on polyester.

The transfer rate or amount of dye transferred under different transfer times and temperatures, and the degree of penetration into the polyester fabric are affected by the subliming properties of each dye and its affinity for polyester. Seriplas dyes have been placed in the following categories, class A - rapid, class B - medium fast, class B/C - medium, class C - medium slow, class D - very slow.

other fibres

Polyamide (nylon) and acrylic fibres provide affinity for disperse dyes and are used in heat transfer printing at temperatures around 200-205°C for 30 seconds. Colour yields are generally higher on polyamide than acrylics. From assessments of colour yield, penetration and fastness properties, a guide to suitability is given in the table under the following abbreviations:-









- ++ Recommended
- + Recommended with reservations
- o Not recommended

combination shades

In mixture shades it is recommended that dyes with similar transfer rates be selected in order to avoid colour separation or chromatographic effects, and to maintain good shade reproducibility if minor temperature variations should occur.

fastness tests

Fastness tests were carried out on the polyester prints which had been transferred from paper printed with 10% dye concentration in the ink (15% for blacks) using ISO Standard test methods. A 1/4 depth was also tested for Xenon B02 light fastness. The results are listed in the table overleaf.

		Transfer Rate	Fastness Tests										Other Fibres	
Seriplas			Xenon B02	Perspiration E04, pH 8			Washing C03, 60°C			Rubbing		PA	PAC	
	2.5% ink	10% ink	1 1/4	CC	PES	PA	CC	PES	PA	D	W			
Yellow 3GL-TPS		C	6	6	5	5	4-5	5	5	3-4	4-5	4-5	++	+
Yellow 2G-TP		C	5-6	6	5	5	4-5	5	5	5	5	4-5	o	+
Orange 2RL-TP		C	5-6	5	5	4-5	4	5	5	4	4	4-5	++	++
Brown 2R-TP		A	5-6	5	5	5	4-5	5	5	4-5	4-5	4-5	++	o
Brown RL-TP		B/C	6	5-6	5	5	4-5	5	5	4-5	4-5	4-5	++	o
Red GL-TP		B	6	6	5	4-5	4-5	5	5	4	4	4	++	+
Red 2BL-TP		B/C	5-6	6	5	5	4-5	5	5	4	4	4	+	o
Pink B-TPM		A	6	6	5	5	4-5	5	4-5	4	4-5	4-5	+	o

		Transfer Rate	Fastness Tests										Other Fibres	
Seriplas	2.5% ink 10% ink *		Xenon B02 1 1/4	Perspiration E04, pH 8 CC PES PA			Washing C03, 60°C CC PES PA			Rubbing D W		PA	PAC	
<div></div> Red X3B-TP	<div></div>	B/C	5 5	5 5 4-5	5 5 4	5 5 4	5 5	++	++					
Blue 5RLN-TPS	<div></div>	B/C	6 6	5 5 5	5 5 4-5	4-5 5	+	o						
Blue 6R-TP	<div></div>	B/C	5-6 5	5 4-5 4	5 4-5 4	4 4	o	o						
<div></div> Blue G-TP	<div></div>	A	3 3	5 5 4	5 5 4	5 5	++	++						
Blue 3GL-TPM	<div></div>	B/C	5 5	5 4-5 4-5	5 4-5 4-5	4 4-5	++	o						
Blue 2GN-TP	<div></div>	D	6 6	5 5 5	5 5 5	4 4-5	o	o						
<div></div> Black SG-TP	<div></div>	B	5 4	5 5 4	5 4-5 3	4-5 4	++	++						
<div></div> Deep Black R-TP	<div></div>	B/C	5-6 5	5 4-5 4	5 4-5 4	4 4	o	o						

*Dye concentration 4% and 15% for Black SG-TP and Deep Black R-TP