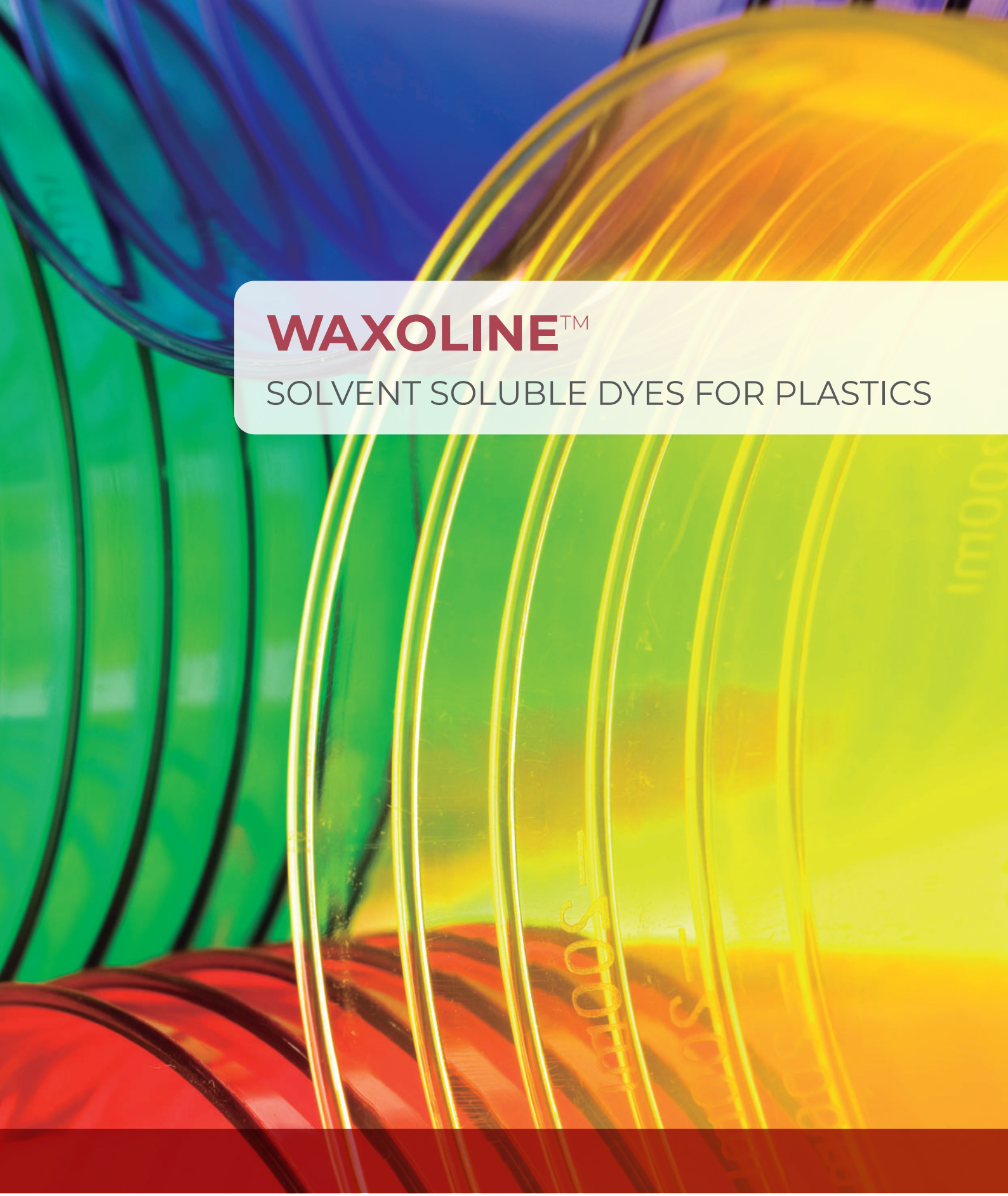

WAXOLINE™

SOLVENT SOLUBLE DYES FOR PLASTICS

WAXOLINE

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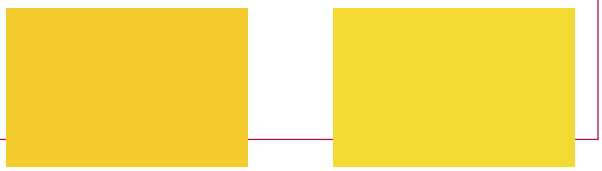
WAXOLINE™ Yellow 3GP FW (SY 114)

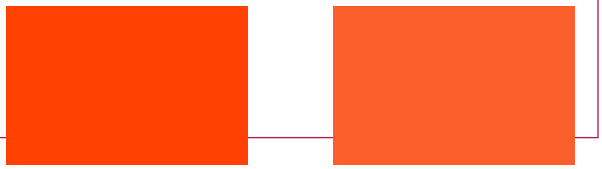


WAXOLINE™ Yellow G FW (SY 141)

WAXOLINE™ Orange 3GP FWN (SO 60)

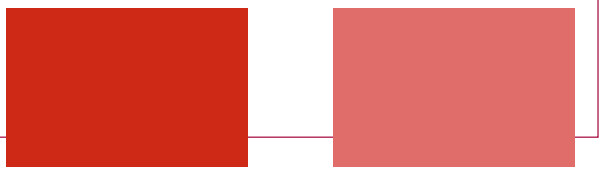
WAXOLINE™ Orange RP FW (SO 105)

WAXOLINE™ Orange 2RP FW (SO 107)



WAXOLINE™ Red MP FWN (SR 111)

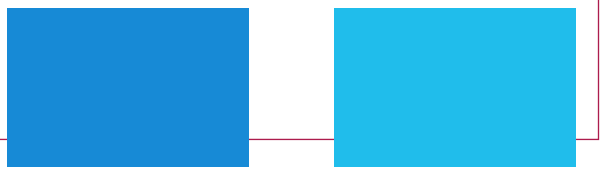
WAXOLINE™ Red YP FWN (SR 135)



WAXOLINE™ Red BP FW (SR 195)

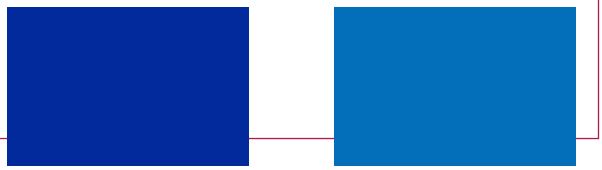
WAXOLINE™ Rubine TR FWN (SR 52)

WAXOLINE™ Blue TP FW (SB 67)

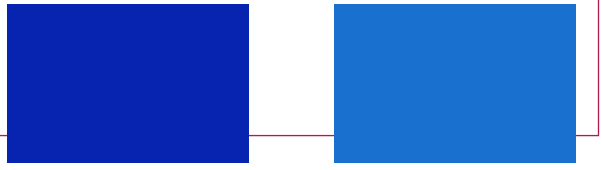


WAXOLINE™ Blue 2RP FW (SB 104)

WAXOLINE™ Blue AP FWN (SB 36)



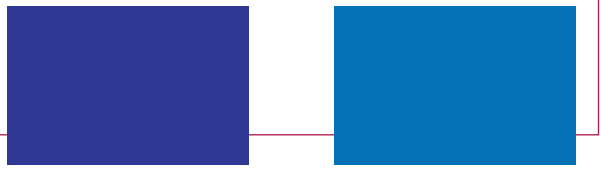
WAXOLINE™ Blue RP FW (SB 35)



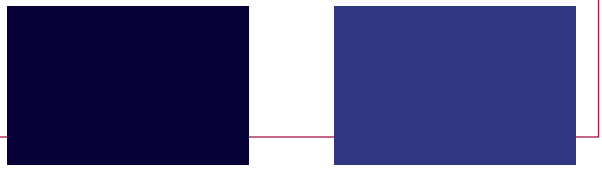
WAXOLINE™ Green 6G FWN (SG 28)

WAXOLINE™ Green G FW (SG 3)

WAXOLINE™ Violet 3RP FW (SV 59)



WAXOLINE™ Violet A FW (SV 13)



WAXOLINE™ Black 3BRP FW

Full Shade / Tinting Shade: WAXOLINE™ Solvent Dyes 0.05% in Polystyrene / + 0.3% TiO_2
Shades may differ from the real color due to optical and printing influence.

WAXOLINE™

COLOURS FOR THE PLASTIC INDUSTRY

WAXOLINE

		Physical Properties	Fastness Properties Polymer-soluble dyes for PS			
	Color Index	Melting Point T (°C)	Dye conc. %	Contact bleed	Light fastness (Xenon)	Heat stability T (°C)
WAXOLINE Yellow 3GP FW	SY 114	230	0.02	5	≥ 7	≥ 300
WAXOLINE Yellow G FW	SY 141	180	0.02	5	≥ 7	≥ 300
WAXOLINE Orange 3GP FWN	SO 60	230	0.1	5	≥ 7	≥ 300
WAXOLINE Orange RP FW	SO 105	173.9	0.05	5	5	250
WAXOLINE Orange 2RP FW*	SO 107	-	-	-	-	-
WAXOLINE Red MP FWN	SR 111	170 - 172	0.1	5	6d	≥ 300
WAXOLINE Red YP FWN	SR 135	> 320	0.1	5	≥ 7	≥ 300
WAXOLINE Red BP FW*	SR 195	-	-	-	-	-
WAXOLINE Rubine TR FWN	SR 52	273	0.05	5	≥ 7	≥ 300
WAXOLINE Blue TP FW	SB 67	222	0.05	5	≥ 7	260
WAXOLINE Blue 2RP FW	SB 104	240	0.1	5	≥ 7	300
WAXOLINE Blue AP FWN	SB 36	170.31	0.05	5	≥ 7	250
WAXOLINE Blue RP FW	SB 35	222	0.05	5	6r	300
WAXOLINE Green 6G FWN	SG 28	300	0.05	5	≥ 7	≥ 300
WAXOLINE Green G FW	SG 3	230	0.05	5	≥ 7	≥ 300
WAXOLINE Violet 3RP FW*	SV 59	-	-	-	-	-
WAXOLINE Violet A FW	SV 13	188	0.05	5	≥ 7	300
WAXOLINE Black 3 BRP FW*	Mixture	-	-	-	-	-

* All product data will be provided in short.

WAXOLINE™ polymer-soluble dyes provide an outstandingly economical means of colouring plastics, with the following benefits:

- High heat fastness and stability.
- Brilliant colours, with total clarity in transparent polymers.
- High purity, selected grades with FW suffix are recommended for plastics intended to be use in food-contact (food packaging) or toy applications .

The data included in this table are related to the application in Polystyrene, for the rest of applications please contact us for further information.

WAXOLINE™

SOLVENT SOLUBLE DYES FOR PLASTICS

WAXOLINE

WAXOLINE™ polymer-soluble dyes provide an outstandingly economical saving in colouring plastics. Used alone they give brilliant colours with total clarity in transparent plastics. In opaque plastics, when used in combination with titanium oxide, **WAXOLINE™** dyes produce attractive pastel shades. They can be also used in combination with pigment colours either as shading components or as major ingredients in a mixture, in order to give combinations of intensity and translucence that are often not obtainable with insoluble pigment alone.

One of the important features of **WAXOLINE™** dyes is that they are completely dissolved in polymer melt and retained by the solid plastic, no blooming nor bleeding are observed under normal conditions from the recommended polymers. As migration of colour from the finished product is likely to be unacceptable, it is possible to use some **WAXOLINE™** dyes in stretched polypropylene products (tapes, twines, packaging cords). This is due to the fact that the stretching procedure gives the polymer a certain physical structure capable of retaining selected polymer soluble dyes.

Appropriately selected **WAXOLINE™** polymer-soluble dyes give excellent all-round performance in: PS, SAN, ABS, PMMA, PC, PETP and PETB, POM, unplasticised PVC and PPO. On the other hand, **WAXOLINE™** dyes are not recommended for any general use in moulded, coated or extruded plastic based on: soft PVC, polyethylenes (LDPE, LLDPE, HDPE), PP.

Resistances (strengths) of **WAXOLINE™** against different phenomena that affect dye's performance:

1. Light fastness: persistence of a colour after having received a certain amount of UV radiation.
2. Chemical fastness: colour resistance in chemically aggressive environments (acidic or basic).
3. Heat fastness: colour resistance to temperature, mainly during processing.
4. Migration fastness: migration of dye.

Regulatory Compliance Information

The **WAXOLINE™** dyes are used in different applications of coloured plastics: food packaging, toys, electronic devices and consumer goods, where is very important that the colouring agent must not bleed or migrate from the plastic. The migration must be checked for each formulation according to the regulations of the uses of the mixture.

WAXOLINE™ is a wide range of soluble dyes in organic solvents and polymers, giving to the end material good performance due to the high purity and insolubility in water and dilute aqueous solutions, allowing their use as a plastic colouring agent in sensitive applications.

The **WAXOLINE™** dyes are under a non-stop process to be in compliance with the latest regulations for the fields:

- Food contact
- Toys
- Electronic devices

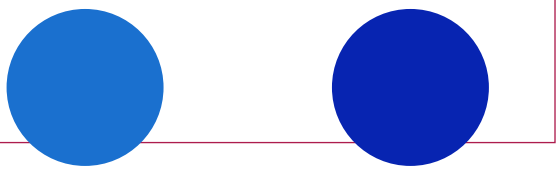
To consult the corresponding regulatory compliance of the products of interest, please contact: **info@waxoline.com**

WAXOLINE™ Blue TP FW (SB 67)

WAXOLINE™ Blue 2RP FW (SB 104)

WAXOLINE™ Blue AP FWN (SB 36)

WAXOLINE™ Blue RP FW (SB 35)



WAXOLINE™ Green 6G FWN (SG 28)

WAXOLINE™ Green G FW (SG 3)

WAXOLINE™ Violet 3RP FW (SV 59)

WAXOLINE™ Violet A FW (SV 13)

WAXOLINE™ Black 3BRP FW

WAXOLINE™ Yellow 3GP FW (SY 114)

WAXOLINE™ Yellow G FW (SY 141)

WAXOLINE™ Orange 3GP FWN (SO 60)

WAXOLINE™ Orange RP FW (SO 105)

WAXOLINE™ Orange 2RP FW (SO 107)

WAXOLINE™ Red MP FWN (SR 111)

WAXOLINE™ Red YP FWN (SR 135)

WAXOLINE™ RED BP FW (SR 195)

WAXOLINE™ Rubine TR FWN (SR 52)

Full Shade / Tinting Shade: WAXOLINE™ Solvent Dyes 0.05% in Polystyrene / + 0.3% TiO_2
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WAXOLINE™

SUGGESTED APPLICATIONS AND OUTLETS

WAXOLINE

Polystyrene	GH, HIPS, Expanded Polystyrene (EPS) including structural foams (wood grain effects): furniture; toys; packaging; sheet household items; injection moulding; extrusion and vacuum-forming material.
Acrylics	Cast acrylic sheets and moulding powders: car rear and indicator lamps; signal lenses. (Colours to withstand durability expected of these transparent polymers).
Styrene/Acrylonitrile (SAN) and **Acrylonitrile/Butadiene/Styrene** (ABS)	Particularly in full shades, high-intensity blacks and in opaque self-shades: automotive panels; sheeting; furniture; toys; radio and TV; packaging.
Polycarbonate	Many **WAXOLINE™** dyes exhibit the high heat fastness (300-350°C) required for this polymer.
Polyethylene terephthalate (PET)	The transparency and clarity of the polymer soluble dyes is often preferred in the production of stretch-blown bottles for use with foodstuffs such as soft-drinks, beers, wines and cooking oils. Moreover, the dyes are heat stable at processing temperatures.
Rigid PVC (UPVC)	**WAXOLINE™** colours are recommended for rigid unplasticized PVC where they show excellent resistance to migration, giving clear brilliant shades in film and sheet for folders and other stationery goods.
Cellulose acetate and other cellulose esters	Can be used for transparent cellulosic plastics. Migration and fastness depend on the plasticiser used and the specific application, hence trials are essential.
Food packaging and related applications	**WAXOLINE™** dyes with the FW "Food Wrap" suffix are strictly controlled, undergo testing to offer a guarantee regarding heavy-metal and extractable primary aromatic amine content, in order to meet the legal limits of food contact regulations.
Other Applications	Selected products are recommended for other applications such as the coloration of waxes, petroleum products, and fireworks.
NOT Recommended Applications	**WAXOLINE™** dyes are NOT recommended for the following polymers as migration of colour from the finished product may occur: Plasticized PVC, Polyethylene (HDPE, LDPE) and Polypropylene.

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OTHER APPLICATIONS OF SOLVENT DYES

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CANDLES

DETERGENTS

TEXTILE

RUBBER

MILITARY SMOKES

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