

Ultragraph UVSP



UV-curable screen printing ink for rigid PVC, polystyrene, polycarbonate, PETG, paper, and card-board

High gloss, very fast curing, press-ready, excellent detail printing, high chemical resistance

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Field of application

UVSP is a very fast curing UV-screen printing ink covering a certain range of tasks and substrates in graphic screen printing.

Substrates

UVSP is suited for the following substrates:

- rigid PVC
- polystyrene (PS)
- polycarbonate (PC)
- PETG
- paper and cardboard

There are some restrictions with UVSP due to a possible material embrittlement of foamed rigid PVC foils, especially if printed double-sided (in this case, we recommend to use Ultrastar UVS or Ultraform UVFM).

Since all the print substrates mentioned may be different in printability even within an individual type, preliminary trials are essential to determine the suitability for the intended use.

Field of use

UVSP is suited for graphic indoor and outdoor prints like promotional boards, system inscriptions, posters, displays, and many more. UVSP is highly reactive and particularly suited for fast running, fully automatic machines (also multicolour presses) as well as for UV-curing units having a reduced power.

Characteristics

Ink characteristics

All UVSP basic and 4-colour process shades are high gloss. Further typical features are the very high block resistance as well as its low odour.

Attention: Due to the high reactivity of the ink, the printed ink film will considerably lose in flexibility. Substrates in use must therefore be checked as to their brittleness and following post-processing procedures like e. g. folding.

Colour adjustment

Ultragraph UVSP is press-ready but must be stirred homogeneously before printing.

Curing

UVSP is a very fast curing UV-ink. A UV-curing unit with one medium-pressure mercury lamp (120 W/cm) is curing the ink at a belt speed of 30 m/min.

The curing speed is generally depending on the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the printed ink layer thickness, colour shade, substrate in use, as well as belt speed of the UV-curing unit.

UVSP is a post-curing ink. The ink film has to withstand a cross-cut tape test after having cooled down to room temperature.

Fade resistance

Depending on the colour shade, pigments of good to excellent fade resistance (blue wool scale 6-8) are used for the UVSP range. All standard and 4-colour process shades are

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therefore suitable for outdoor use of two years if placed vertically and referred to the middle European climate.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance. Chemical resistance of UVSP to common cleaners, hand perspiration, petrol, and alcohol is excellent.

Due to their formulation, resistance of the colour shades white and opaque white is slightly inferior compared to other shades.

Range

Basic shades

(see shade card System Ultracolor)

UVSP 922	Light Yellow	UVSP 952	Ultramarine Blue
UVSP 924	Medium Yell.		
UVSP 926	Orange	UVSP 956	Brilliant Blue
UVSP 932	Scarlet Red	UVSP 960	Blue Green
UVSP 934	Carmine Red	UVSP 962	Grass Green
UVSP 936	Magenta	UVSP 970	White
UVSP 950	Violet	UVSP 980	Black

All shades are intermixable. Ultragraph UVSP should not be mixed with other types of ink to maintain the special characteristics of this out-standing ink range.

All basic shades are included in our Marabu-ColorFormulator (MCF). They build the basis for calculating the individual colour matching formulas, as well as for shades of the common colour reference systems HKS®, PANTONE®, and RAL®. All formulas are stored in the Marabu-ColorManager 2 (MCM 2) software.

Further shades

UVSP 170	Opaque White
UVSP 180	Opaque Black

Shades for 4-colour process printing

(Glossy, for white substrates)

UVSP 425	Process Yellow	density 1.4-1.5
UVSP 435	Process Red (Magenta)	density 1.4-1.5
UVSP 455	Process Blue (Cyan)	density 1.4-1.5
UVSP 485	Process Black	density 1.8-1.9

4-colour process shades with a higher density

(Glossy 4-clr. process set for e. g. back-lit, transparent substrates)

UVSP 428	Process Yellow	density 1.7-1.8
UVSP 438	Process Red (Magenta)	density 2.1-2.2
UVSP 458	Process Blue (Cyan)	density 2.4-2.5
UVSP 488	Process Black	density 2.3-2.4

Basis for the density values is a 150-31 mesh whereas many further printing parameters may also influence this value.

The pigments used in the above mentioned standard shades, based on their chemical structure, correspond to the EEC regulations EN 71/part 3, safety of toys - migration of specific elements.

Due to a possible direct contact with the mouth, **we do not recommend** to use this ink neither for baby bottles or toys nor for food packages in direct touch with food since the possible presence of residual monomers and decomposition products of the photoinitiators cannot be excluded even when sufficiently cured.

When printing onto exterior packagings for food or similar goods, we recommend a migration test at the final product.

Additives

Special Binder UVSP 904

Special Binder UVSP 904 is used as a bronze binder or mixing varnish for colour shades. Its addition (1-25%) will reduce the ink's opacity.

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Overprint Varnish UVSP 910

Glossy overprint varnish for full-area or partial overprinting of UVSP prints.

Mesh: 140-31/ 150-31 (polyester quality).

Transparent Base UVSP 409

Thixotropic auxiliary for 4-clr. process printing, fine details, and reverse printing. By adding the transparent base to 4-clr. process shades, the ink's density will be reduced and can be adjusted according to the print copy.

Bronzes

(To be mixed with Bronze Binder UVSP 904)

S 181	Aluminium (6:1)
S 182	Rich Pale Gold (5:1)
S 183	Rich Gold (5:1)
S 184	Pale Gold (5:1)
S 186	Copper (4:1)
S 190	Aluminium, rub-resistant (6:1)

Due to the bigger size of bronze pigments, we recommend a coarser fabric, e. g. 120-31.

Bronze mixtures cannot be put into storage for later use. Due to this, we recommend to prepare fresh mixes for a working time of 8 h. By over-varnishing, it is also possible to enhance the rub resistance.

High-gloss Bronzes, Pastes

There are 8 high-gloss bronze pastes available which can be mixed with UVSP 904 Special Binder. They can be chosen according to the required opacity, cost limit and curing characteristics.

Low-priced Bronzes (slightly structured)

(6 months pot life without addition of hardener, lower opacity)

S-UV 191	High-gloss Silver (4:1- 7:1)
S-UV 192	Rich Pale Gold (4:1- 7:1)
S-UV 193	Rich Gold (4:1- 7:1)

High-gloss, fine Bronzes

(24h pot life without addition of hardener, very high opacity, lower rub resistance)

S-UV 296	High-gloss Silver (6:1-9:1)
S-UV 297	High-gloss Rich Pale Gold (6:1-9:1)
S-UV 298	High-gloss Pale Gold (6:1-9:1)

High-gloss, metallic Bronzes

(slightly structured, good rub resistance, pot life without addition of hardener max. 12 h)

S-UV 291	High-gloss Silver (4:1 – 10:1)
S-UV 293	High-gloss Rich Gold (4:1 – 10:1)

All figures in brackets are guidelines which can be changed according to opacity and curing speed. The ratio figures in brackets refer to the mixture Special Binder UVSP 904 to bronze paste whereas the first figure is standing for the parts by weight of Special Binder.

Auxiliaries

Thinner UVV 1

Addition: 1 - 5 % parts of weight

Thinner for reducing the ink's viscosity if used on fast running printing machines. An excessive addition of thinner may cause a reduction in curing speed, as well as in surface hardness of the printed ink film. UVV 1 is chemically bound in the ink film when UV-cured and may slightly change the inherent odour of the printed and cured ink film.

Thinner UVV 2

Addition: 1 - 5 % parts of weight

An alternative to UVV 1 for obtaining the lowest possible odour (referred to the cured ink film).

Levelling Agent UV-VM

Addition: max. 0.5 % parts by weight

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Helps to eliminate flow problems (e. g. bubbles, etc.) which may arise due to residuals on the substrate's surface or incorrect adjustment of the machine. A higher proportioning may reduce the ink's adhesion when overprinting. UV-VM is to be stirred well und homogeneously before printing.

Thickening Agent STM

Addition: 0.5 - 2 % parts by weight

Auxiliary to enhance the ink's viscosity without significantly influencing the degree of gloss. Please stir well, the use of an automatic mixing machine is recommended.

Accelerator UV-B1

Addition: 1 - 2% parts by weight

Accelerates the curing reaction of the ink and increases the adhesion to the substrate owing to a better depth curing.

Fabrics, stencil

The selection of the fabric depends on the printing conditions, the desired curing speed, and mileage as well as on the required opacity. Generally, fabrics of 120-34 to 165-27 can be used.

Control and reduction of the printed ink film are fundamental for 4-colour process printing with UV-curable inks. We recommend a mesh count between 150-27 and 165-31 threads (plain weave). A uniform screen tension (>16 N) of all fabrics used is further important.

Mileage

Mileage is about 60-80 m²/kg of printed surface according to mesh and substrate chosen.

Cleaning

Cleaners UR 3 (flame point 42°C) or UR 4 (flame point 52°C) can be used.

Shelf life

Shelf life depends very much on the formula/ reactivity of the ink system as well as the storage temperature. It is 2 years for an unopened ink if stored in a dark room at a temperature of 15 to 25°C.

Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, the warranty given by Marabu expires.

Labelling

For Ultragraph UVSP and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC regulation 1907/2006 informing in detail about all relevant safety data including labelling according to the present EEC regulations as to health and safety labelling requirements. Such health and safety data may also be derived from the respective label.

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Safety rules for UV screen printing inks

UV-inks contain some substances which may irritate the skin. Therefore, we recommend to take utmost care when working with UV-curable screen printing inks. Parts of the skin dirtied with ink are to be cleaned immediately with water and soap. Please pay also attention to the notes on labels and safety data sheets.

Note

Our technical advice whether spoken, written, or through test trials corresponds to our current know-ledge to inform about our products and their use. This is not meant as an assurance for certain properties of the products nor their suitability for each application.

You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The selection and testing of the ink for specific application is exclusively your responsibility. Should, however, any liability claims arise, they shall be limited to the value of the goods delivered by us and utilized by you with respect to any and all damages not caused intentionally or by gross negligence.