

# Ultra Graph UVSP



**UV-curable screen printing ink for rigid PVC, polystyrene, polycarbonate, PETG, paper, and cardboard**

**High gloss, very fast curing, excellent detail printing, high chemical resistance**

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## Field of Application

### Substrates

Ultra *Graph* UVSP is suited for the following substrates:

- Rigid PVC
- Polystyrene (PS)
- Polycarbonate (PC)
- PETG
- Paper and cardboard

The suitability of UVSP on foamed rigid PVC, especially if both sides are printed on, is very limited due to possible embrittlement of this material (in this case, we recommend to use Ultra Star UVS or Ultra Form 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

Ultra *Graph* 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

All UVSP basic and 4-colour process shades feature very high block resistance, high gloss, and a remarkable low odour.

**Attention:** Owing to the high reactivity of the ink, the printed ink film will considerably lose in flexibility. The substrates must therefore be checked in regard to their brittleness and post-processing procedures like e. g. folding.

### Recommendation

The ink should be stirred homogeneously before printing and if necessary during production.

### Drying

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



## Range

### Basic Shades

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

### 4-Colour Process Shades Standard

425	Process Yellow
435	Process Magenta
455	Process Cyan
485	Process Black

### High Opaque Shades

170	Opaque White
180	Opaque Black

### Further Products

409	Transparent Base
910	Overprint Varnish

All shades are intermixable. Mixing with other ink types or auxiliaries must be avoided in order to maintain the special characteristics of this ink.

All basic shades are included in our Marabu-ColorFormulator (MCF). They build the basis for the calculation of 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 software.

We do not recommend this ink for toys due to the foreseeable contact with the mouth since the possible presence of residual monomers and decomposition products of the photo-initiators cannot be excluded even when sufficiently cured.

## Metallics

### Metallic Pastes

S-UV 191	Silver	15-25%
S-UV 192	Rich Pale Gold	15-25%
S-UV 193	Rich Gold	15-25%
S-UV 291	High Gloss Silver	10-25%
S-UV 293	High Gloss Rich Gold	10-25%
S-UV 296	High Gloss Silver	11-17%
S-UV 297	High Gloss Rich Pale Gold	11-17%
S-UV 298	High Gloss Pale Gold	11-17%

### Metallic Powders

S 181	Aluminium	17%
S 182	Rich Pale Gold	20%
S 183	Rich Gold	20%
S 184	Pale Gold	20%
S 186	Copper	25%
S 190	Aluminium, rub-resistant	17%

These metallics are added to UVSP 910 in the recommended amount, whereas the addition may be individually adjusted to the respective application. We recommend preparing a mixture which can be processed within a maximum of 8 h since metallic mixtures usually cannot be stored. Due to their chemical structure, the processing time of mixtures with Pale Gold S 184 and Copper S 186 is even reduced to 4 h.

Owing to the smaller pigment size of Metallic Pastes it is possible to work with finer fabrics like 140-31 to 150-31. Owing to the larger pigment size of Metallic Powders we recommend the use of a coarser fabric like 100-40.

All metallic shades are displayed in the Marabu "Screen Printing Metallics" colour chart.

## Auxiliaries

UVV 1	Thinner	1-5%
UVV 2	Thinner	1-5%
UV-B 5	UV Accelerator	1-4%
UV-B1	UV Accelerator	1-2%
STM	Thickening Agent	0.5-2%
UV-TA 1	Thickening Agent	0.1-0.5%
UV-VM	Levelling Agent	0-0.5%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

# Ultra Graph UVSP



The addition of thinner reduces the ink viscosity if necessary. An excessive addition of thinner will cause a reduction of the curing speed, as well as of the printed ink film's surface hardness. The thinner becomes part of the cross-linked matrix when UV-cured and may slightly change the inherent odour of the printed and cured ink film.

UV-B 5 accelerates the surface curing.  
UV-B 1 accelerates the curing speed if necessary and may increase the adhesion to the substrate owing to a better depth curing.

The Thickening Agent STM enhances the ink's viscosity without significantly influencing the degree of gloss. Please stir well, the use of an automatic mixing machine is recommended.

The liquid Thickening Agent UV-TA 1 increases the viscosity and improves the dot definition at higher processing temperatures.

The Levelling Agent UV-VM helps to eliminate flow problems which may arise due to residuals on the substrate's surface or incorrect adjustment of the machines. An excessive amount may reduce the ink's adhesion when overprinting. UV-VM must be stirred homogeneously before printing.

The cleaners UR 3 and UR 4 are recommended for manual cleaning of the working equipment. Cleaner UR 5 is recommended for manual or automatic cleaning of the working equipment.

## Printing Parameters

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.

## Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature. It is 2.5 years for an unopened ink container if stored in a dark room at a temperature of 15-25°C. Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, the warranty given by Marabu expires.

## Note

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge 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 foregoing information is based on our experience and should not be used for specification purposes.

The selection and testing of the ink for specific applications is exclusively your responsibility. Should, however, any liability claims arise, they shall be limited to the value of the goods delivered by us and utilised by you with respect to any and all damages not caused intentionally or by gross negligence.

### Labelling

For Ultra Graph UVSP and its auxiliaries, there are current Material Safety Data Sheets available according to EC regulation 1907/2006, informing in detail about all relevant safety data including labelling according to EC regulation 1272/2008 (CLP regulation). Such health and safety data may also be derived from the respective label.

### Safety rules for UV printing inks

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

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