Ultragraph UVAR

Marabu

UV-curable screen printing ink for PVC self-adhesive foils, rigid PVC, polystyrene, ABS, polycarbonate, PETG, pre-treated PP, paper, and cardboard

Glossy, for universal use, fast curing, press-ready, flexible ink film, excellent detail printing, good chemical resistance

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Field of application

UVAR is a universal and fast curing UV-screen printing ink covering a wide range of tasks and substrates in graphic screen printing.

Substrates

UVAR is suited for the following substrates:

- self-adhesive PVC foils and rigid PVC
- polystyrene (PS) and ABS
- polycarbonate (PC)
- PETG
- pre-treated polypropylene (PP), also for corrugated materials
- paper and cardboard

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

Field of use

UVAR is especially suited for graphic prints placed indoor as well as outdoor such as promotional boards, system inscriptions, posters, displays and many more.

Characteristics

Ink characteristics

All UVAR basic shades are glossy (4-colour process shades satin glossy) and are highly reactive. The printed ink film is very flexible so that it is best suited for the following processsing steps such as stamping, cutting, and grooving.

Colour adjustment

Ultraform UVAR is press-ready but must be stirred homogeneously before printing.

Curing

UVAR is a very fast curing UV-ink. A UV-curing unit with two medium-pressure mercury lamps (120 W/cm) is curing UVAR at a belt speed of 30 m/min.
The curing speed of the ink 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.
UVAR 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 UVAR 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. This value drops to 6 months if Ultragraph UVAR has been mixed with Ultrastar-M UVSM (new formulation).

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance. Chemical resistance of UVAR to common cleaners, hand perspiration, and alcohol is good.
Due to their formulation, the resistance of White and Opaque White is slightly inferior compared to other colour shades.

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Range

Basic shades – System Ultracolor

UVAR922	Light Yellow	UVAR952	Ultramarine Blue
UVAR 924	Medium Yell.		
UVAR 926	Orange	UVAR956	Brilliant Blue
UVAR 932	Scarlet Red	UVAR960	Blue Green
UVAR 934	Carmine Red	UVAR962	Grass Green
UVAR 936	Magenta	UVAR970	White
UVAR 950	Violet	UVAR980	Black

All shades are intermixable. Ultragraph UVAR should not be mixed with other types (except for Ultrastar-M UVSM) 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 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 2.4 (MCM 2) software.

Further shades

UVAR 170	Opaque White
UVAR 180	Opaque Black

Shades for 4-colour process printing

(satin gloss for white substrates)

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

4-colour process shades with a higher density

Satin-gloss 4-clr. process set with an increased density for e. g. back-lit transparent substrates.

UVAR 428	Process Yellow	density 1.7-1.8
UVAR 438	Process Red (Magenta)	density 2.1-2.2
UVAR 458	Process Blue (Cyan)	density 2.4-2.5
UVAR 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

Transparent Base UVAR 409

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

Special Binder UVAR 904

Addition: 1 - 25% parts by weight

Special Binder UVAR 904 is used as a bronze binder or mixing varnish to colour shades. The addition of UVAR 904 accelerates the hardening speed and reduces at the same time the opacity.

Overprint Varnish UVAR 910

Glossy overprint varnish for full-area or partial overprinting of UVAR prints. It can be used either as a protection of the surface or for increasing the degree of gloss of 4-colour process prints.

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

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Bronzes

Various bronze pastes are available which can be mixed with UVAR 904. They can be chosen according to the required opacity, cost limit, visual impression, and curing characteristics. Due to the bigger pigment size of bronze pigments, we recommend a coarser fabric, e. g. 120-34.

Bronze Powder

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

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

Low-priced, slightly structured Bronze Pastes

Pot life 6 months, reduced opacity

S-UV 191	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 pigmented Bronzes

Excellent opacity, pot life 24 hours

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, excellent rub resistance, pot life 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 Bronze Binder UVAR 904 to bronze powder or paste whereas the first figure is standing for the parts by weight of Bronze Binder UVAR 904.

Miscibility

The high gloss of UVAR can be decreased by adding the matt Ultrastrar-M UVSM. 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 only.

Auxiliaries

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.

Thickening Agent STM

Addition: 0.5 - 2 % parts by weight

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

Thinner UVV 6

Addition: 1 - 5 % parts of weight

Thinner for reducing the viscosity of the ink if used on fast running printing machines. An excessive addition of thinner will cause a reduction of the curing speed, as well as of the printed ink film's surface hardness. UVV 6 is chemically bound in the ink film when UV-cured.

Levelling Agent UV-VM

Addition: max. 0.5 % parts by weight

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 machines.

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A higher proportioning may reduce the ink's adhesion when overprinting. UV-VM is to be stirred well und homogeneously before printing.

Cleaning

For manual cleaning of screen printing stencils and tools our cleaner UR 3 (flash point 42° C) or UR 4 (flame point 52°C) can be used. In the case of longer machine stops (> 30 min), it is important that the ink remaining in the screen open area is removed with UR 3/ UR 4 as otherwise it may dry in and clog the meshes.

Fabrics, stencils

Selection of fabric depends on the printing conditions, the desired curing speed and yield as well as 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 of one litre of Ultragraph UVAR is about 60-80 m^2 of printed surface according to mesh and substrate chosen.

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, Marabu's warranty expires.

Labelling

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

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.

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