

Ultrapack UVPO



UV curing screen printing ink for pre-treated polyethylene and polypropylene, PET, PET-G and PVC

High gloss, press-ready, high opacity, good water and product resistance

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Field of Application

Substrates

Ultrapack UVPO is a universal UV-curing screen printing ink which is well suited to print onto the following substrates:

- pre-treated polyethylene HDPE /LDPE and polypropylene PP
- flame treated and non-treated PET and PETG
- PVC

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

UVPO has been especially developed for direct container printing. It can be used both on single and multi-colour printing machines at a printing speed of up to 3200 bottles per hour (for more detailed information, see chapter 'Curing'. UVPO is, therefore, extremely well suited for high-quality prints onto bottles, cans, tubes and beakers. For applications at higher printing speeds, e. g. when printing onto rigid tubes (e. g. silicone), it is necessary to use ink types with a higher reactivity such as UVPK.

Characteristics

Colour shades

All UVPO shades are press-ready, high-glossy and brilliant at a best possible opacity. The ink's viscosity and thixotropy have been optimized in a way so that it can be processed at even higher room and machine temperatures (>30°C).

It has a tendency not to drip through the screen. Further characteristics are as follows:

- flexible ink film, e. g. for printing onto tubes
- high product resistance
- good resistance to water and condensation of water (refrigerator)
- can be embossed with a hot stamping foil
- high printing quality at positive or negative letters, even at extremely small characters
- good overprintability

Colour adjustment

Ultrapack UVPO is press-ready and must be stirred homogeneously before printing. In the case of higher requirements to the ink's resistance or reactivity, as well as for a changed viscosity, there are different additives available. For more details, please refer to the chapters 'Additives' and 'Auxiliaries'

Curing

Ultrapack UVPO is a fast curing UV ink for a printing speed of up to 3200 bottles per hour. A UV-curing unit (medium-pressure mercury lamp or fusion) of 150 to 200 W/cm is therefore necessary.

The curing speed of the ink is generally depending on the kind of UV-curing unit (reflector), the number, age and power of the UV-lamps, the printed ink film thickness, the colour shade, the substrate in use, as well as the printing speed/number of sequences. The adhesion of the ink is usually controlled by the tape test after the printed bottles have cooled down to room temperature.

Ultrapack UVPO is a strongly postcuring UV ink which will achieve its best resistances after 24 hours.

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Fade resistance

Pigments of middle to high fade resistance (blue wool scale 5 to 8) are used in the UVPO range. Owing to this, all UVPO shades are generally suited to a short-term outdoor use of up to 1 year related to the moderate Central European climate.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance and is resistant to solvents (see DIN 16 524), alcohol (99,8 % ethanol), finger sweat and further common alkaline and acid fillers. In some cases, these resistances (also water resistance) may be improved by adding 2-4 % of Hardener H 2 (pot life > 8 hours).

Fabrics, productivity

All common polyester or nylon fabrics with a thread number of 140-180 threads/cm and a thread thickness between 27 and 34 µ can be used. The fabric is to choose according to printing conditions, required curing speed, productivity, as well as to desired opacity. Best stencil resolutions and edge definition can be reached by a uniform screen tension and a plain weave.

According to the type of fabric, the ink will be enough for 60-80 m²/kg corresponding to approx. 6000-6500 bottles at full area printing (110cm²/per bottle) or to 25000 bottles with text motif (opaquing degree 25% at 27,5cm² per bottle).

Stencil

UVPO can be processed with all solvent-resisting stencil technics such as capillary films (15-20µ), photo emulsions or combination stencils.

Cleaner

The appropriate cleaner is UR3. We generally recommend to clean the tools immediately after printing, especially if cross-linked adhesion modifiers have been used.

Range

The UVPO range consists of 13 monopigmented basic shades in the Ultracolor Colour System. This ink type is also included in our computerised Marabu-ColorManager (MCM 2.2).

Basic shades

UVPO 922	Light Yellow	UVPO 950	Violet
UVPO 924	Medium Yellow	UVPO 952	Ultramarine Blue
UVPO 926	Orange	UVPO 956	Brilliant Blue
UVPO 932	Scarlet Red	UVPO 960	Blue Green
UVPO 934	Carmine Red	UVPO 962	Grass Green*
UVPO 936	Magenta	UVPO 970	White
UVPO 940	Brown	UVPO 980	Black

Further shades available

UVPO 170	Opaque White	UVPO 180	Opaque Black
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By using these basic shades in accordance with the mixing ratios provided by the Marabu-Color-Manager software, it is possible to produce shades of the popular colour reference systems PANTONE® and HKS®.

All shades are intermixable. To maintain the special characteristics of this ink range, the UVPO should not be mixed with other ink types.

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.

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Additional products

Special binder UVPO 904

- bronze binder for high-gloss bronze pastes
- dilutes the ink
- accelerates the curing process
- can be used as an overcoat

The addition of Special Binder UVPO 904 (1-15% parts of weight) will accelerate the curing speed of colour shades reducing, however, the opacity at the same time.

High gloss bronze pastes

There are 5 high-gloss bronze pastes available which can be mixed with the UVPO 904

Special Binder. They can be chosen according to the required opacity, cost limit and curing characteristics.

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)

All 3 bronze mixtures have a pot life of at least 6 months, they are high-glossy at a reasonable price and medium opacity.

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

Both bronzes have a high gloss and a good opacity, they are very brilliant at a higher cost and pot life of 24 hours.

All figures in brackets are guidelines. The ratio figures in brackets refer to the mixture Special Binder UVPO 904 to bronze paste whereas the first figure is standing for the parts by weight of Special Binder UVPO 904.

For further information, please refer to our Technical Data Sheet 'High-gloss bronzes'.

Auxiliaries

Thinner: UVV 1

UVPO has a high viscosity which can be reduced by adding 1-10 % UVV 1 Thinner. The ink's reactivity will then increase accordingly, as well as the odour of the cured ink film. We do not recommend to add a higher quantity of thinner since this will cause a reduction of the surface's hardness. UVV1 part of the cross-linked matrix when UV-cured.

Hardener H 2, fast

Water resistance, adhesion to difficult substrates, as well as chemical resistances of the UVPO can be improved by adding Hardener H 2.

Addition:	2-4 % parts by weight
White 970 and 170:	2 % parts by weight

H2 is to be stirred well and homogeneously. The mixture of UVPO/ H 2 cannot be stored for a longer time and must therefore be processed within 8 hours.

Accelerator UV-B1

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

Addition:	1 – 2% parts by weight
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Levelling Agent UV-VM

Helps to eliminate flow problems (e. g. bubbles, etc.) which may arise due to residuals on the substrate's surface, insufficient screen tension or incorrect adjustment of the machines.

Addition:	0,5 - 1,5 % parts by weight
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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.

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Thickening Agent STM

Increases the ink's viscosity without influencing the gloss degree significantly.

Addition: 0,5 - 2 % parts by weight

STM is to be stirred well, we recommend to use a stirring apparatus.

Shelf life

The shelf life is strongly depending on the formulation/reactivity of the ink system, as well as on the storage temperature. It is max. 2 years for a originally closed can stored in a dark place at 15 - 25 °C. In the case of changed storing conditions and especially at higher storing temperatures, the shelf life will be reduced. In such cases, Marabu cannot be held responsible for any claims arising from that and our guarantee will no longer be valid.

Labelling

For our ink type Ultrapack UVPO and its additives and auxiliaries there are current Material Safety Data Sheets according to EC-regulation 91/155 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.

Safety rules for UV screen printing inks

We recommend to take utmost care when working with UV screen printing inks. Please pay also attention to the notes on labels and safety data sheets. Additional information will provide the brochure 'UV curing' issued by the employer's liability insurance association for printing and paper.

Note

Please refer to the information in our technical data sheets of pad printing inks. 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 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 utilised by you with respect to any and all damages not caused intentionally or by gross negligence.