

# Ultrapack UVK



**UV screen printing ink for pre-treated polyethylene and polypropylene, polyester and PVC**

**High gloss, press-ready, good opacity, high product resistance**

Vers.03  
2007  
1<sup>st</sup> Mar

## Field of Application

### Substrates

Ultrapack UVK is a universal UV screen printing ink, suitable for printing onto pre-treated polyethylene PE and polypropylene PP, pre-treated polyester PET, and PVC.

For an optimal adhesion and resistance to chemicals/water of the ink on different substrates, various adhesion modifiers are available (see chapter "Additives and Auxiliaries").

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

### Field of use

Ultrapack UVK is a 1-component ink which has been developed particularly for the requirements and different substrates of container printing. Therefore, it is best suited for the printing of plastic bottles of any kind.

Ultrapack UVK is higher viscous and suitable for printing speeds of up to 3000 prints/h.

## Characteristics

### Ink characteristics

Ultrapack UVK colour shades are high-opaque, brilliant, high-glossy, and press-ready. Further characteristics are:

- fast curing
- flexible ink film for tubes
- high resistance to filling materials
- high water resistance
- opaque white 170 for dark substrates
- can be overembossed with hot embossing foil

### Adjustment of the ink

Ultrapack UVK is press-ready, however, please stir homogeneously before printing. Due to the different printing conditions and UV dryers existing in the market, UVK can be modified with various additives in its reactivity, viscosity, water resistance and adhesion characteristics (see chapter "Additives and Auxiliaries").

### Curing

Ultrapack UVK is a fast curing UV ink. A UV drying unit with one or two medium pressure Mercury vapour lamps (capacity 120-180 W/cm) is hardening at a belt speed of 1500-3000 prints/h. UVK Opaque White 170 and the Opaque Black 273 are drying more slowly, due to their high amount of pigments.

Generally, the hardening speed of the ink depends on the type of UV dryer (reflectors), the number, age and capacity of the UV tubes, the printed coat thickness, the colour shade, the substrate used and the belt speed (number of strokes) of the UV dryer.

Ultrapack UVK is a slightly post curing UV ink. The ink should pass a cross hatch tape test after exiting the curing unit and cooled to room temperature. After 24 hours, the printed ink film has achieved its maximum product and water resistance as well as rub-resistance.

### Fade resistance

UVK is only partially fading and weather resistant and therefore suitable only for short outdoor use.

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## Stress resistance

After proper and thorough drying, the ink film is excellently rub, scratch, and block-resistant and adheres very well. It is resistant to solvents, alcohol, water and fillers of any kind.

## Range

### Basic shades

(Compare colour chart for "UV inks")

UVK 021	Med. Yellow	UVK 051	Violet
UVK 023	Orange	UVK 057	Brilliant Blue
UVK 026	Light Yellow	UVK 067	Grass Green
UVK 031	Scarlet Red	UVK 068	Brilliant Green
UVK 032	Carmine Red	UVK 070	White
UVK 037	Purple Red	UVK 073	Black

### Further shades available

UVK 170	Opaque White
UVK 273	Opaque Black

All shades are intermixable. Mixing with other ink types should be avoided in order to maintain the special characteristics of this outstanding ink range.

The basic shades according to System Ultracolor are included in our Marabu-ColorFormulator. They build the basis for the calculation of individual colour matching formulas, as well as for shades of the common colour reference systems Pantone®, HKS®, RAL®, and System 21. All formulas are stored in the Marabu-Color Manager 2 (MCM 2) software.

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 for direct prints onto toys as we cannot exclude the potential content of unpolymerized monomers and reduction products of photoinitiators.

To print onto packagings for food or consumer goods, we recommend a migration test of the finished product.

### Bronzes

(to be mixed with Bronze Binder UVK 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)

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

Due to the larger pigment size of bronze pigments, we recommend a fabric of 120-34 or 120-31. Bronze mixtures cannot be put into storage for later use. Prepare fresh mixes daily (to be processed within 8 h).

### High-Gloss Bronze Pastes

Furthermore, five high-gloss bronze pastes are available to be mixed with UVK 904. The mixing ratio can be varied as to the required opacity, ink price, and curing conditions.

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)

The above bronze mixtures can be stored for at least 6 months, they have a high gloss and an acceptable price at medium opacity.

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

These both bronzes have a high gloss and a good opacity, they are very brilliant at a higher ink price and pot life of one day. For further details, refer to the technical data sheet 'High-gloss Bronzes'.

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## Additives

### UVK 904 Special Binder

- to increase cure speed
- to dilute the ink
- as bronze binder or printing varnish

An addition of Special Binder UVK 904 (0.5-25% parts by weight) accelerates the hardening speed of colour shades and at the same time reduces opacity.

### UVK 409 Transparent Base

Thixotropic auxiliary to aid fine detail or reverse printing. When adding transparent base, the density of the standard shades may be reduced.

## Auxiliaries

### UVV1 Thinner

Thinner for further individual adjustment of print viscosities and for processing bronzes.

Addition: 1-10 % max. parts by weight

Curing speed and surface durability will be reduced by adding more UVV1 Thinner. UVV1 will be bonded chemically in the ink film during curing.

### H 2 Hardener (as an adhesion modifier)

By adding H 2, the water resistance and in special cases, adhesion to the substrate can be improved.

Addition: 2-4 % parts by weight  
White 070, 170: 2 % parts by weight

H 2 must be stirred well into the ink. UVK mixtures with H 2 cannot be stored for later use. Please prepare fresh mixes (to be processed within 4 to 6 h).

### UV-B1 Accelerator

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

### UV-B2 Accelerator

Accelerates the curing speed, and increases the surface hardness of the ink further improving the degree of gloss.

Addition: 1-4% parts by weight

### UV-VM Levelling Agent

To eliminate flow problems (e.g. bubbles etc.) which may be caused by the substrate or adjustment of the press conditions.

Addition: 0.5-1.5 % parts by weight

A higher proportioning may affect the inter-coat adhesion. UV-VM must be stirred well and homogeneously.

### STM Thickening Agent

Auxiliary to enhance the ink's viscosity without influencing the degree of gloss significantly.

Addition: 0.5 - 2% parts by weight

Please stir well, the use of an automatic mixing machine is recommended.

## Mileage

According to the type of fabric, the ink will be enough for 60-80 m<sup>2</sup>/kg corresponding to approx. 6,000-6,500 bottles at full area printing (110 cm<sup>2</sup> per bottle) or to 25,000 bottles with text motif (opaquing degree 25% at 27.5cm<sup>2</sup> per bottle).

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## Fabrics, Stencils

The selection of fabric depends on the printing conditions, the desired hardening speed and mileage, as well as the requested opacity.

Generally, fabrics of 120-34 to 165-34 or finer can be used. For bronze shades, we recommend a fabric of 120-34 or finer mesh counts. A high smooth stretching of the fabric is important which allows a smooth ink application.

All commercially available capillary films (15-20 µm) or solvent resistant photo emulsions and combined stencils can be used for UV-inks.

## Cleaning

The suitable cleaner is UR 3. Ink residues mixed with adhesion modifier must be removed from the screen immediately after printing.

## Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well the storage temperature. It is two years for an unopened ink, 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.

## Labelling

For our ink type Ultrapack UVK and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC-regulation 91/155, covering in detail all relevant safety data including the labelling according to the present EC regulations as to health and safety labelling requirements. Such health and safety data may also be obtained from the respective label.

## Safety Regulations for UV Screen Printing Inks

We recommend that UV screen printing inks and auxiliaries should be handled with particular care. Follow the instructions given on the labels and in the Material Safety Data Sheets.

### 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 selection and testing of the ink for specific application is exclusively your responsibility.

Should, however, any liability claims arise, such claims 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.