

Ultrapack UVK+



UV curable screen printing ink for pre-treated polyethylene and polypropylene

Very fast curing, high gloss, excellent water and steam resistance, high filler resistance, thixotropic adjustment

Vers. 03
2012
20th Feb

Field of Application

Substrates

Ultrapack UVK+ is a UV-curable screen printing ink which is well-suited for printing onto flame-treated polyethylene HDPE /LDPE and polypropylene PP.

Before printing onto PE and PP, please keep in mind that the non-polar and thus small surface tension of the substrate surface must be treated by flaming in the usual way. With this process, surface tension will rise and a very good adhesion from 44 mN/m is possible. The surface treatment can be tested by appropriate test inks.

Furthermore, the substrate surface must be absolutely free of contaminating residues such as grease, oil, and finger sweat.

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 as well as a sufficient adhesion.

Field of use

UVK+ has been especially developed for direct container and packaging printing. It can be used both on single and multi-colour printing machines at a printing speed of up to 7,000 bottles per hour (for more information, see chapter 'Curing').

UVK+ is, therefore, best suited for high-quality prints onto bottles, cans, cups, and cartridges.

UVK+ may be used, by an appropriate printing process, to print on to the non food-contact surface of any material or article intended to come into contact with foodstuffs. However, full compliance with the regulation (EC) Nr. 2023/2006 must be ensured. In case of any queries please contact our Marabu product safety department directly.

Characteristics

Ink characteristics

In regard of viscosity and rheology, all Ultrapack UVK+ colour shades are press-ready and brilliant at a best possible opacity and high gloss. All UVK+ shades can be embossed with suitable hot stamping foils.

Adjustment of the ink

Ultrapack UVK+ is press-ready. However, stir well before printing.

To further improve the chemical resistance, we recommend to use Hardener H 3. For more details about this auxiliary, please see chapter 'Additives and Auxiliaries'. By adding Hardener H 3 to the ink, adhesion as well as water resistance will be enhanced.

Curing

Ultrapack UVK+ is a very fast curing UV ink. A UV-curing unit (medium-pressure mercury lamp or fusion) of 120 to 200 W/cm is therefore necessary. The curing speed of the ink is generally dependant upon the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the printed ink film thickness, colour shade, substrate in use, as well as belt speed of the UV-curing unit.

Marabu

Ultrapack UVK+



Adhesion of the ink is usually controlled by a tape test after the printed bottles have cooled down to room temperature.

Ultrapack UVK+ is a post-curing UV ink which will achieve its best adhesion and resistance after 24 hours.

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 (96% ethanol), finger sweat, and further common alkaline and acid fillers.

Especially these resistances can be improved by adding 2-4% Hardener H 3.

Range

Basic Shades - System Ultracolor

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

Further Color Shades

170	Opaque White	180	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.

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-Color Manager 2.4 (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 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 packaging for food or similar goods, we recommend carrying out a migration test with the final product.

Additives

Special Binder UVK+ 904

Addition: 10 - 15% parts by weight

Special Binder UVK+ 904 can be used as bronze binder, extender for basic shades, or overprint varnish. An addition of UVK+ 904 will accelerate the curing speed reducing, however, the opacity at the same time.

Bronzes

Various bronze pastes are available which can be mixed with UVK+ 904. They can be chosen according to the required opacity, cost limit, visual impression, and curing characteristics.

Low-priced, slightly structured Bronze Pastes

6 months pot life, fair 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

Ultrapack UVK+



High-gloss, fine Bronzes

24h pot life, high opacity

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

Due to the reduced rub resistance, an overprint with UVK+ 904 is recommended.

High-gloss, metallic Bronzes

Slightly structured, excellent rub resistance, max. 12h pot life

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 UVK+ 904 to bronze paste whereas the first figure is standing for the parts by weight of Special Binder.

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.

Hardener H 3

Colour shades + Black: 2-4% parts by weight
White 970 + 170: 2% parts by weight

Water resistance, adhesion, as well as chemical resistances of UVK+ can be improved by adding Hardener H 3. H 3 is to be stirred well and homogeneously. The mixture UVK+ and H 3 cannot be stored for a longer time and must therefore be processed within 6-8 hours.

Thickening Agent STM

Addition: 0.5-2% parts by weight

Increases the ink's viscosity without influencing the gloss degree significantly. STM is to be stirred well, we recommend to use a stirring tool.

Thinner: UVV 3

Addition: 1-10% parts by weight

UVK+ is press-ready but, if necessary, the viscosity can be reduced by adding Thinner UVV 3. Due to the addition of thinner, the odour of the cured ink film will increase accordingly.

We do not recommend to add a higher quantity of thinner since this will cause a reduction of the surface's hardness. UVV3 is part of the cross-linked matrix when UV-cured.

Levelling Agent UV-VM

Addition: 0.5-1.5% parts by weight

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.

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 UR4 (flash point 52°C) can be used.

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

Ultrapack UVK+



Fabrics, stencil

Selection of the fabric depends on the printing conditions, the required curing speed and productivity, as well as the requested opacity. Generally, fabrics of 140-31 to 180-31 can be used. A uniform screen tension (>16 N) of all fabrics used is further important.

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

Mileage

Mileage is about 60-80 m²/kg 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 two years for a originally closed can stored in a dark place at 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 available 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.

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 utilised by you with respect to any and all damages not caused intentionally or by gross negligence.