

# Ultra Pack UVPHR



**UV-curable screen printing ink for flame-treated and non-treated PETG/PETA, polyethylene, and polypropylene**

**Very fast curing, high gloss, excellent water resistance, universal use**

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## Field of Application

### Substrates

Ultra Pack UVPHR is suited for the following substrates:

- Flame-treated and non-treated PETG/PETA
- Pre-treated polyethylene HDPE /LDPE and polypropylene PP

Before printing onto PE and PP, please keep in mind that the substrate surface must be pretreated by flaming. 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. The substrate surface must be absolutely free of contaminating residues such as grease, oil, and finger sweat.

Due to the processing parameters, PETG/PETA substrates can have great differences in surface tension which can be rectified by a pre-treatment with a 'soft' gas flame.

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

UVPHR has been especially developed for direct container and packaging printing.

## Characteristics

The high reactivity of Ultra Pack UVPHR delivers very good curing results even if the curing conditions are rather insufficient. Printing onto hot substrates will not impair the degree of gloss.

### Ink Adjustment

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

#### Use as 2-component ink

Depending upon the substrate and the requirements, hardener can be added to the ink before printing.

When using hardener, the processing and curing temperature must not be lower than 15°C as irreversible damage can occur. Please also avoid high humidity for several hours after printing as the hardener is sensitive to humidity.

#### Pre-reaction time

It is recommended to allow the ink/hardener mixture to pre-react for 15 minutes.

#### Pot life

The ink/hardener mixture is chemically reactive and must be processed within 6-8 h (referred to 20° C and 50% RH). Higher temperatures reduce the pot life. If the mentioned times are exceeded, the ink's adhesion and resistance may be reduced even if the ink still seems processable.

### Drying

Ultra Pack UVPHR is a very fast curing UV ink. A UV-curing unit (medium-pressure mercury lamp) of 120 to 200 W/cm is 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 the printing speed.

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Ultra Pack UVPHR is a post-curing UV ink which will achieve its final adhesion and resistances after 24 hours. The ink film should pass a tape test after having cooled down to room temperature.

## 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 acetone and methanol. These resistances can be further improved by adding hardener.

## 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

### High Opaque Shades

170	Opaque White
180	Opaque Black

### Further Products

904	Special Binder
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.

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

These Metallics are added to UVPHR 904 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. Owing to the smaller pigment size of Metallic Pastes it is possible to work with finer fabrics like 140-31 to 150-31.

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

## Auxiliaries

H 3	Hardener	2-4%
UVV 3	Thinner,	1-7%
UVV 6	Thinner,	1-7%
UV-B1	Accelerator	1-2%
STM	Thickening Agent	0.5-2%
UV-VM	Levelling Agent	0.5-1.5%
UV-SA 1	Slip Additive	0.4-0.8%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

Hardener H 3 is sensitive to humidity and is always to be stored in a sealed container. Hardener H 3 can be added for increased resistance and adhesion. The mixture ink/hardener is to be stirred well and homogeneously. The mixture ink/hardener is not storable and must be processed within pot life.

The addition of thinner reduces the ink viscosity if necessary. An excessive addition of thinner will cause a reduction of the curing speed, as

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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 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 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 addition of UV-SA 1 can permanently increase the surface smoothness, gloss, and surface hardness.

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

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. For UV inks, all commercially available capillary films (15-20  $\mu\text{m}$ ) or solvent resistant photo emulsions and combined stencils can be used.

## Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature. It is 1 year 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 Pack UVPHR 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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