

# UltraFlex UVF

## System Ultracolor:

	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

## Further Shades:

	170 Opaque White
	180 Opaque Black
	409 Transparent Mass
	904 Special Binder

<b>UltraFlex UVF</b>	
<b>Informacija o proizvodu</b>	
Sistem boja	UV 2-komp.
Sušenje	brzo
Stepen sjaja	sjajna
Pokrivnost	srednja
Otpornost na spoljnu temperaturu	srednja
Specijalne karakteristike	fleksibilan sloj boje
Osnovne nijanse	13
Procesne nijanse	-
Ostalo	
Specifičnost	dekujuća bela, dekujuća crna

<b>Dodaci</b>	
Razređivač	UVV 6
Razređivač, srednje jačine	-
Usporivač	-
Usporivač, sporji	-
Usporivač pasta	-
Učvršćivač	UV-HV2/4
Lak nakon štampanja, vezivo za bronzu	UVF 904
Transparentna baza	UVF 409
Čistač	UR 3

<b>Podloge</b>	
Polistiren (PS)	
ABS / SAN	
Samolepljiva PVC folija	I
Tvrđi PVC	I
Meki PVC	<sup>2</sup> I
Polikarbonat (PC)	I
Reljefni poliester	I
PETG, PETA	
Klirit (PMMA)	
PE, PP, tretirani	<sup>1</sup> I
PP, netretirani	
Poliamid (PA)	
Poliacetat (POM)	
Termostabilna plastika	
Papir, talasasta lepenka	I
Slojevite podloge	
Eloksirani aluminijum	
Metal	
Staklo	
Drvo	
Tekstil, sintetika	
Tekstil, pamuk	
Tipične ili dopunske aplikacije	nalepnice

## Legenda

I - odgovara      m - delimično odgovara

<sup>2</sup> - predtretman sa IPA

<sup>3</sup> - predtretman plamenovanjem ili koroniranjem

<sup>1</sup> - predtretman

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Since July, 2004: New formula with batch code 428



**UV screen printing ink for coated polyester foils, soft PVC, PVC and PE self adhesive foils, polycarbonate**

**Glossy, NVP- free, fast curing, good opacity, good flexibility, high chemical resistance**

Vers. 02  
2004  
23 July

## Field of Application

### Substrates

Ultraflex UVF is a flexible and universal UV screen printing ink, suitable for the following substrates:

- PVC and corona pre-treated or top-coated PE self adhesive foils
- soft PVC
- coated polyester foils
- polycarbonate PC

For an optimum adhesion of the ink on different substrates, various adhesion modifiers are available. For more information, please see chapter "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

- Labels of PVC or pre-treated PE self adhesive foil. UVF is suitable as a supplement to our Ultrastar UVS if very thin and soft foils must be printed and the ink film has to be die-cut.
- Book covers of soft PVC as UVF is highly block- and plasticizer-resistant.
- Membrane switches of polycarbonate PC or coated polyester foil. UVF excels due to its high resistance to touching as well as to embossing and adhesives.

## Characteristics

### Ink characteristics

UVF colour shades are high-opaque and brilliant. For dark substrates, UVF 170 Opaque White should be used. Further characteristics:

- very flexible UV ink
- trouble-free adhesion of hot embossing foils
- transparent colour shades on soft PVC foils can be welded
- limited embossing characteristic
- high resistance to adhesives

### Adjustment of the ink

Ultraflex UVF is press-ready, however, please stir homogeneously before printing.

Due to the different substrates and printing machines, printing speeds, as well as UV drying units available on the market, UVF can be modified in its reactivity, viscosity and adhesion by using several additives and auxiliaries. For this kind of information, please refer to the chapter "Additives and Auxiliaries".

### Curing

Ultraflex UVF is a fast curing UV ink. A UV dryer with two medium pressure Mercury Vapour Lamps (80-120 W/cm power) is curing UVF at a belt speed of 15-30 m/min.

Due to their high amount of pigments, Opaque White UVF 170 and Opaque Black UVF 180 are curing more slowly (approx. 10-20 m/min).

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Generally, the curing speed of the ink depends on the type of UV dryer (reflectors), number, age and capacity of the UV tubes, the printed coat thickness, the colour shade, the substrate in use and the belt speed (number of passes) of the UV drying unit.

Ultraflex UVF is not a post curing UV ink. The ink should pass a cross hatch tape test after having cooled down to room temperature.

## Fade resistance

UVF is only partially fade and weather-resistant and therefore suitable for a short-term outdoor use of up to 6 months.

## Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch, and block resistance and has a high chemical resistance to alcohol, hand perspiration and usual filling goods.

## Range

### Basic shades

(see shade card System Ultracolor)

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

All shades are intermixable. Ultraflex UVF should not be mixed with other types of ink 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® and RAL®.

All formulas are stored in the Marabu-Color Manager 2 (MCM 2) software.

## Further colour shades

UVF 170	Opaque White
UVF 180	Opaque Black

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.

We **do not** recommend, however, printing on-to toys for small children due to possible direct mouth contact as we cannot exclude the since the possible presence of residual monomers and decomposition products of the photoinitiators cannot be excluded even if sufficiently cured.

For the print on packings for food or consumer goods, we recommend a migration test of the finished product.

## Additives

### Special Binder, Bronze Binder and Overprint Varnish UVF 904

Very flexible and transparent binder to be used for an individual addition of varnish to basic shades (up to 25%), also suitable as overvarnish, as well as bronze binder.

The addition of UVF 904 accelerates the hardening speed and reduces at the same time the opacity.

### Transparent Base UVF 409

Thixotropic auxiliary to aid prints of fine lines or reverse printing.

Addition: 5-25 % parts by weight

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## Bronzes

(to be mixed with Bronze Binder UVF 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 depending on opacity and curing speed. The ratio figures in brackets refer to the mixture Bronze Binder UVF 904 to bronze powder or paste whereas the first figure is standing for the parts by weight of Bronze Binder UVF 904.

Due to the bigger pigment size of bronze pigments, we recommend a coarser fabric, e. g. 120-31. Bronze mixtures cannot be put into storage for later use. Therefore, prepare fresh mixes daily (to be used within 8 h).

## High-Gloss Bronze Pastes

There are 5 high-gloss bronze pastes available to be mixed with UVF 904 Bronze Binder. The mixing ratio can be varied according to the required opacity, ink price, 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)

These 3 bronze mixtures have a shelf life of at least 6 months, they are glossy with medium opacity having an acceptable price.

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

These both bronzes are high-glossy and have a good opacity whereas the ink price is higher, pot life is approx. 1 day.

Due to the smaller pigment size compared to the above bronze powders, it is here possible to use thinner fabrics, e. g. 140-31 or 150-31. For more details, please see our separate data sheet "High-Gloss Bronzes, Pastes".

## Auxiliaries

### Thinner UVV 6

Thinner for decreasing the print viscosity, also suitable for bronzes.

Addition: max. 1-10 % parts by weight

If an excessive amount is added, curing speed and surface durability of the printed ink film may be reduced.

UVV6 is chemically bonded in the ink film during UV curing.

Thinner UVV 1 can also be used but the flexibility of the printed ink film may decrease somewhat in this case.

### Adhesion Modifier UV-HV 2

- Improves the adhesion on materials with a high content of plasticizers (soft PVC)
- improves the adhesion on critical rigid PVC substrates
- increases the curing speed
- UV-HV 2 is **not** suitable for polycarbonate substrates
- avoids in many cases the necessity to pre-clean the substrate

Addition: max. 1-5 % parts by weight

Please always check the intercoat adhesion of the ink and use as few UV-HV 2 as possible. Ink mixtures of UVF/UV-HV 2 cannot be put into storage for later use. Prepare fresh mixes daily (to be used within 8 h).

### Adhesion Modifier UV-HV 4

UV-HV 4 improves the adhesion of UVF on highly cross-linked substrates or when overprinting overcured colour shades. The best possible adhesion and scratch resistance is achieved after 12 - 24 h (preliminary trials are necessary!).

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Addition: 0.5-4 % parts by weight  
White 970 + 170: 0.5-2 % parts by weight

UV-HV 4 must be stirred well into the ink.  
Mixtures cannot be put into storage for later use and must be processed within 2-4 h.

## Accelerator UV-B 1

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

## Accelerator UV-B 2

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

Addition: 1-4% parts by weight

## 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-max. 1.5 % parts by weight

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

## Thickening Agent STM

Auxiliary to enhance the ink viscosity without influencing significantly the degree of gloss. Stir well! The use of an automatic mixing machine is recommended.

Addition: 0.5-2 % parts by weight

## Fabrics, Yield

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 180-27 can be used (1:1 plain weave).

Generally, a high even stretching of the fabric (>16 N) is important allowing a smooth ink application.

Depending on fabric and substrate, the approximate yield is about 60-80 sqm. per kg of ink.

## Stencils

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

## Cleaner

The appropriate cleaner is UR 3 or UR 4. 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 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 Ultraflex UVF 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 EEC regulations as to health and safety labelling requirements. Such health and safety data may also be obtained from the respective label.

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## Safety Regulations for UV Screen Printing Inks

We recommend that UV screen printing inks and auxiliaries should be handled with particular care. Please 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.