



UV screen printing ink for flat glass used indoors, packaging and restaurant glass, glazed ceramic, metals, anodized aluminium, and varnished surfaces

Fast curing, glossy, very high scratch resistance, excellent alkaline, chemical, and dish washer resistance, no additional oven drying

Field of Application

Substrates

UVGL is suited for the following substrates:

- Pre-treated flat glass for indoor use, e. g. mirrors, glass for furniture and dividers, gambling machines, etc.
- Pre-treated, cold-end coated packaging glass, e.g. drinking bottles
- Pre-treated cosmetic bottles
- Pre-treated restaurant glass, e.g. drinking glasses, ashtrays, vases
- Ceramics
- Metals
- Anodized aluminium
- Varnished surfaces

For a good adhesion, a uniform surface tension of the substrate with > 44 mN/m is generally important.

Furthermore, the glass surface must be absolutely free from graphite, silicone, dust or residues like grease or similar (e.g. fingerprints).

A pre-treatment of the glass by flaming immediately before printing will generally enhance the adhesion of the ink to the substrate. When using cold end coated glass, the flaming is critical. Best possible adhesion is achieved by Uvitro[®] or Pyrosil[®] pre-treatment.

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.

Characteristics

Ink characteristics

UVGL is a 2-component ink system. Prior to printing, it is essential to add Adhesion Modifier UV-HV 8 in the correct quantity and to stir homogeneously. This mixture has a pot life of min. 10 hours referred to a room temperature of 18° to 25° C.

All UVGL basic shades are glossy and brilliant. They can also be metal-coated if required.

Adjustment of the ink

Before printing, it is to adjust Ultraglass UVGL with Adhesion Modifier UV-HV 8 as follows (pot life approx. 10 h):

Basic shades, black, 4- 2% UV-HV 8
colour process shades
and varnish

White, opaque white, 4% UV-HV 8
high-opaque colours,
colour matches con-
taining > 50% white,
etch imitations, and
primers

Metallics 5% UV-HV 8

Curing

Ultraglass UVGL is a fast curing UV-ink. A UV-curing unit with one medium pressure Mercury Vapour Lamp (180- 240 W/cm) will cure the UVGL standard shades at a belt speed of 4800 passes/h resp. 20 m/min.

Ultraglass UVGL



UVGL 170 Opaque White, the etch imitations, as well as high-opaque shades, metallics, and primers cure much slower (3600 passes/h, resp. 12 m/min ca.).

The curing speed of the ink is generally depending on the kind of UV-curing unit (reflector), number, age and power of the UV-lamps, the printed ink film thickness, the inherent colour of the glass, as well as the number of passes of the UV-curing unit.

After UV-curing, no additional heat-forced oven drying is necessary. The ink will post-cure within the first 24 hours and achieve its full chemical and mechanical resistance by then. It is a must, however, to carry out preliminary tests prior to printing.

Fade resistance

Pigments of medium to high fade resistance are used for the Ultraglass UVGL colour shades. Owing to the binding agents used, however, all UVGL shades are suited to a limited outdoor use of up to 3 successive months.

Stress resistance

The following resistances can be achieved: (UVGL standard shades and UVGL Primers without foil)

- domestic dish washer minimum 500 cycles (65°C for 130 min with customary cleaner Type B/ low alkaline detergent)
- Winterhalter glass dish washer (85° C for 3 min), minimum 3500 cycles
- alkaline resistance: 2.3% of NaOH (80° C for 30 min)
- Passes 500 double rub strokes (350 g): ethanol and glass cleansing agent
- Passes 100 double rub strokes (350g): acetone
- resistance to perfume: after 24 h test: Pass
- ink adhesion after frost test at -18° C: Pass

Bright colour shades, e.g. white, may darken if the print is constantly exposed to temperatures >40° C.

Range

Basic Shades

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

High opaque shades

122	Light Yellow
124	Medium Yellow
130	Vermillion
132	Scarlet Red
152	Ultramarine Blue
162	Grass Green
170	Opaque White
180	Opaque Black

Etch imitations

913	Milky matt
914	Satin Gloss Transparent

4-colour process shades

425	Process Yellow
435	Process Red (Magenta)
455	Process Blue (Cyan)
485	Process Black

Primer

UVGL-PG	Primer for hot stamping Gold
UVGL-PS	Primer for hot stamping Silver

Further products

409	Transparent base
904	Special binder

UVGL 904 is not super-transparent.

If required, these 4-clr-process shades can be used in combination with the ink line Ultraglass UVGO.

Any favoured design can simply be printed with UVGL Primers on the glass surface. The printed motif then acts as a cliché for the hot

Ultraglass UVGL



stamping foil which is applied by roll-on or stroke stamping, and only adheres to the areas where UVGL Primer is applied before.

Suitable foils:

We recommend the foil types GXO or GXI by Peyer Graphic.

Other types of foils by other suppliers can also be used, but must be checked in advance.

All shades are intermixable. Mixing with other ink types (also with UVGO!) 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 (MCF). 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-ColorManager software.

Please note that there is no FDA approval for UVGL as we did not use explicitly FDA approved materials for the formulation of the ink.

Metallics

Metallic Paste

S-UV 191	Silver	14-25%
S-UV 192	Rich Pale Gold	14-25%
S-UV 193	Rich Gold	14-25%
S-UV 291	High-gloss Silver	10-25%
S-UV 293	High-gloss Rich Gold	10-25%
S-UV 296	High-gloss Silver	11-17%
S-UV 297	High-gloss Rich Pale Gold	11-17%
S-UV 298	High-gloss Pale Gold	11-17%

These metallics are to be added to UVGL 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

UV-HS 1	Hot stamping Additive	8-20%
UV-HV 8	Adhesion Modifier	2 – 5%
UVV 6	Thinner	1 – 10%
UV-B1	Accelerator	1 – 2%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

UV-HS 1 allows hot stamping at lower temperatures and is only added to the primer if applied onto painted glass or in combination with multi-coloured UV screen prints. Recommended addition: 10%

Prior to printing, Adhesion Modifier UV-HV 8 must be added in the correct quantity and the mixture must be stirred homogeneously. The mixture has a pot life of approx. 8 hours referred to an ambient temperature of 18-25°C.

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

Fabrics, stencils

The fabric selection depends on the desired curing speed and productivity, as well as the requested opacity. Generally, all fabrics from 120-34 to 165-27 (1:1 plain weave) can be used but we especially recommend a 140-31 mesh. For the printing of 4-colour process shades, we recommend a fabric between 150-27 and 180-27 (1:1 plain weave).

A high and uniform screen tension (>16 N) is further important to guarantee a defined ink deposit.

UVGL can be processed with all solvent-resistant stencil techniques such as capillary films (15-20 μ), photo emulsions or combination stencils (Primers: 1:3 = squeegee side: substrate side).

Mileage

According to the type of fabric and substrate, the ink mileage will be approx. 50-70 m²/kg.

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 an unopened ink 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, Marabu's warranty 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 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.

Labelling

For our ink type Ultraglass UVGL and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC-regulation 1907/2006 available, covering in detail all relevant safety data including the labelling according to the present EC regulations as to health and safety labelling requirements. Such data may also be obtained from the respective label.

Safety Regulations for UV Screen Printing Inks

UV-inks contain skin irritating material. We recommend that all UV-curing screen printing inks and auxiliaries should be handled with particular care. Skin polluted with ink must be cleaned immediately with water and soap. Please also pay attention to the notes on labels and safety data sheets.