Ultraglass UVGO

Marabu

UV screen printing ink for packaging and restaurant glass, as well as float glass suited for indoor use, ceramics, metals, anodized aluminium, and varnished surfaces

High gloss, fast curing, excellent dish washer resistance, very good alkaline and chemical resistance

Vers.10
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Field of Application

Substrates and field of use

Ultraglass UVGO is a UV curable screen printing ink especially suited for

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

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

Furthermore, the glass surface must absolutely be 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 necessarily to be carried out. Best possible adhesion is achieved by Uvitro® or Pyrosil® pretreatment.

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

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

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

UVGO is a fast curing ink and therefore also suited for high printing speeds at white glass production of up to 80 passes/min.

Adjustment of the ink

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

2% of UV-HV 8: colour shades, black, 4-colour process shades and varnish
4% of UV-HV 8: white, opaque white, high-opaque colours and colour matches with a percentage of white > 50%, bronzes and etch imitation effects

For vertical screen printing, as well as automatic ink feeding, the viscosity can further be reduced by adding 1-10% of thinner UVV 6 to the ink. During the curing process, the thinner will be chemically crosslinked and must therefore not be overdosed.

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Curing
Ultraglass UVGO is a fast curing UV-ink. A UV-curing unit with one medium pressure Mercury Vapour Lamp (180- 200 W/cm) will cure UVGO at a belt speed of 4800 passes/h. UVGO 170 Opaque White, all high opaque shades and bronzes cures more slowly due to their high amount of pigments (approx. 3300 passes/h).

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

Oven drying
After UV-curing, the following oven drying forced by heat is necessary:

160° C for 20 min. **or** 140° C for 30 min.

By doing this, the best possible adhesion to the glass as well as high resistance is achieved.

In the case of lower requirements to the final product, IR drying can be used or also completely done without IR or oven drying. The ink will post-cure within the first 24 hours and resistances can be tested only after that time. Preliminary tests, however, are always necessary.

Fade resistance
Pigments of medium to high fade resistance are used in the Ultraglass UVGO ink type. Owing to the binding agent used, however, all UVGO shades are suited to a limited outdoor use of up to 3 months.

Stress resistance
The following resistances are referred to oven-dried prints:

- domestic dish washer minimum 300 cycles (65°C for 130 min with customary cleaner Type B/low alkaline detergent)
- Winterhalter glass dish washer (85° C for 3 min), minimum 3000 cycles
- alkaline resistance: 2.3% of NaOH (80° C for 30 min)
- 500 double rub strokes (350 g): ethanol and glass cleansing agent were found to be o.k.
- 100 double rub strokes (350 g): acetone was found to be in order
- resistance to perfume: after 24 h long term test o.k.
- ink adhesion after frost test at -18° C was o.k.

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

Range

Basic Shades - System Ultracolor

922	Light Yellow	952	Ultramarin 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
132	Scarlet Red
152	Ultramarine Blue
162	Grass Green
170	Opaque White
180	Opaque Black

Etch imitations

913	Milky matt
914	Satin Gloss Transparent
916	Structured

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Shades for 4-colour process printing

If 4-colour process shades are required, please refer to the ink line UVGL. Thanks to similar product properties, the UVGL 4-colour process shades are fully compatible with UVGO.

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 (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.

All shades are based on organic pigments, therefore, the heavy metal content complies with the EEC regulations EN 71, part 3, "Safety of toys" - migration of specific elements.

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

Additives

Special Binder UVGO 904

Addition: 1 - 25% parts by weight

An addition of Special Binder UVGO 904 will accelerate the curing speed reducing, however, the opacity. It is not highly transparent.

Overprint Varnish UVGO 910

Highly transparent overprint varnish for overvarnishing or an individual addition of varnish, also suited as a bronze binder for high-gloss bronzes as well as for window decorations on obscured glass surfaces.

Varnish UVGO 65495910ZS#

Silicone-free printing varnish, featuring even higher transparency. Suitable as a primer for hot stamping foils, as overprint varnish or extender, as bronze binder for high-gloss bronzes, and for window decorations on acid-frosted glass substrates.

Bronzes

Various bronze pastes are available which can be mixed with UVGO 910. They can be chosen according to the required opacity, cost limit, visual impression, and curing characteristics.

Low-priced, slightly structured Bronze Pastes

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

Shelf life varnish + bronze: 6 months
Shelf life varnish + bronze + HV 8: 8 hours

High-gloss fine bronzes

excellent 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

Shelf life varnish + bronze: 24 hours
Shelf life varnish + bronze + HV 8: 8 hours

Due to the reduced rub resistance, an overprint with UVGO 910 is recommended.

High-opaque metallic bronzes

Slightly structured, excellent rub resistance

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

Shelf life varnish + bronze: 12 hours
Shelf life varnish + bronze + HV 8: 8 hours

All figures in brackets are guidelines which can be varied according to opacity and curing speed. The ratio figures in brackets refer to the

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mixture Bronze Binder UVGO 910 to bronze powder whereas the first figure is standing for the parts by weight of UVGO 910.

Prior to printing, it is to add 4% Adhesion Modifier UV-HV 8 to the mixture UVGO 910 plus high-gloss bronze/paste and to stir homogeneously. The processing time (pot life) is min. 8 h referred to a room temperature of max. 25° C.

Auxiliaries

Adhesion Modifier UV-HV 8

Prior to printing, it is to add Adhesion Modifier UV-HV 8 to the ink (pot life approx. 8 h). More details see the chapter "Adjustment of the ink" on page 1.

Thinner UVV 6

Addition: 1 - 10 % parts by weight

Thinner for reducing the printing viscosity at vertical screen printing or automatic ink feeding by pump operation.

Cleaning

For manual cleaning of screen printing stencils and tools our cleaner UR 3 (flash point 42° C) or UR 4 (flash point 52°C) can be used.
Ink residues mixed with adhesion modifier must be removed from the screen immediately after printing.

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) instead.
A high and uniform screen tension (>16 N) is further important to guarantee a defined ink deposit.
UVGO can be processed with all solvent-resistant stencil technics such as capillary films (15-20µ), photo emulsions or combination stencils.

Mileage

Mileage is about 50-70 m^2/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 2 years for an unopened ink if stored in a dark room at a temperature of 15°C to 25°C. Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, Marabu's warranty expires.

Labelling

For our ink type UltraglassUVGO and its additives and auxiliaries there are current Material Safety Data Sheets available according to EC-regulation 1907/2006, 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.

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Safety Regulations for UV Screen Printing Inks

UV inks contain skin irritating material. Therefore, 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 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 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.

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