



Baking Ink for glass and metal applications

Highly chemical-resistant screen and pad printing ink, high gloss, high opacity, single component ink system

Vers. 5
2020
08. May

Field of Application

Substrates

Mara® Tech MGO is excellently suited to print onto

- Glass
- Ceramics
- Metals (incl. thinly anodised aluminium)
- Varnished surfaces

Very good results are also achieved on stainless steel (with/without coating).

Ideal printing conditions include a room temperature of 20-25°C and 45-60% humidity, and equal surface tension of at least 40 mN/m ensures good adhesion. Furthermore, the glass surface must be clean and absolutely free of graphite, silicone, dust, or grease (e.g. finger prints).

In the case of glass bottles, any existing surface coating must be completely removed by suitable pre-treatment.

Flame pre-treatment right before the start of the printing process generally improves adhesion.

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

Mara® Tech MGO is suited for applications on glass for restaurants, cosmetics, and furniture, for sensitive applications, particularly baby bottles, for 3C applications (touch panels), and metals, e. g. stainless steel panels.

Characteristics

Owing to the unique ink characteristics, the ink container must be completely resealed in

order to avoid exposure to air after using parts of the ink.

Ink Adjustment

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

Mara® Tech MGO is a single component ink system, which is unusual for this application range. This narrows the chance for incorrect ink adjustment while increasing the process safety as well as the user-friendliness.

Drying

The time between printing and drying process should be as short as possible, and must not exceed 24 hours.

The standard values concerning progressive cross-linking reactions of the ink film (thickness 5-12 µm) are as follows:

<u>Overprintable</u>	<u>Temperature</u>	<u>Time</u>
Oven drying	140°C	3-5 min.
IR tunnel drying	160-200°C	3-5 m/min
Final drying	140 - 180°C	30 min.

The times mentioned vary according to substrate, depth of cliché / mesh count (ink film thickness), drying conditions, and the auxiliaries used.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion, as well as rub and scratch resistance. The printed ink film must be tempered for 30 min at 140°C.

Dish washer resistance:

- Domestic dish washer at least 200 cycles (65°C at 130 min with customary cleaner Type B/ low alkaline detergent)



Chemical Resistance:

- Ethanol and glass cleansing agent: 500 DRS
- Aceton/MEK: 100 DRS

Test device: Taber® Abraser 5700,
DRS: Double Rub Strokes (350 g)

Humidity resistance:

- Condensation Water Test 70°C/100% RH/30 min
- Cold Water Immersion Test / 24h
- Constant Climate Test 48 h

In order to increase the surface hardness and the resistance to humidity, we recommend a baking temperature of 180°C.

Range

Basic Shades

920	Lemon
922	Light Yellow
924	Medium Yellow
926	Orange
930	Vermilion
932	Scarlet Red
934	Carmine Red
936	Magenta
940	Brown
950	Violet
952	Ultramarine Blue
954	Medium Blue
956	Brilliant Blue
960	Blue Green
962	Grass Green
970	White
980	Black

High Opaque Shades

122	High Opaque Light Yellow
130	High Opaque Vermilion
152	High Opaque Ultramarine Blue
162	High Opaque Grass Green
170	Opaque White
180	Opaque Black

Further Products

910	Overprint Varnish
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All shades are intermixable. Mixing with other ink types or auxiliaries must be avoided in order to maintain the special characteristics of this ink.

The output of inks that are filled by weight may

vary considerably owing to the specific gravity of the respective colour shade. This must be considered especially for white and mixtures with white.

Auxiliaries

*Please note:

Thinner UKV 1 and Retarder SV 3 are not suited for sensitive applications.

TPV 2	Thinner, fast	15-25%
TPV 9	Thinner, medium	15-25%
TPV	Thinner	10-20%
GLV	Thinner, slow	10-20%
UKV 1	Thinner, *	10-20%
SV 3	Retarder, *	5-20%
SV 12	Retarder	5-20%
STM	Thickening Agent	1-2%
ES	Printing Modifier	1-2%
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

Thinner is added to the ink to adjust the printing viscosity (UKV 1 or GLV for screen printing / TPV, TPV 2, or TPV 9 for pad printing). The choice of thinner and the amount added are highly depending upon the local climate and the printing speed.

For slow printing sequences and fine motifs, it may be necessary to add retarder to the thinner. For an additional thinning of the ink containing retarder, only pure thinner should be used.

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.

Cleaner UR 4 is recommended for manual cleaning of the working equipment. Cleaner UR 5 is recommended for manual or automatic cleaning of the working equipment.

Printing Parameters

Screen printing

All types of commercially available polyester

fabrics and solvent-resistant stencils can be used. A suitable mesh range for thin ink films is 90-40 -165-27.

Pad printing

All commercially available clichés made of ceramic, photopolymer, thin steel, and chemically hardened steel (10 mm) can be used. The recommended cliché depth is 18-21 µm.

As per our experience, all common printing pads consisting of materials cross-linked by condensation or addition can be used. Mara® Tech MGO is suitable for closed ink cup systems as well as for open ink wells. Depending on type and usage of the machine, it is to accordingly adjust type and amount of the thinner used.

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 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. All characteristics described in this Technical Data Sheet refer exclusively to the standard products listed under "Range", provided that they are processed in accordance with their intended use and only when used with the recommended auxiliaries. 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 Mara® Tech MGO 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.

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