

Screen Printing Ink

Satin-gloss finish, semi-opaque, fast drying 2-component-ink-system, dishwasher-proof



Marabu

Glass Ink GL

For glass, ceramics, metals, aluminium, chrome-plated parts, coated substrates and thermo-setting plastics

Field of Application

Substrates

The screen printing ink Glass Ink GL is excellently suitable for printing onto glass, but it is also very well suited for ceramic items, as well as metals, chrome-plated parts, thermosetting plastics, and coated surfaces.

Since all the print substrates mentioned may be different in their printability, even within an individual type, preliminary trials are essential to determine suitability for the intended use.

Field of use

The Glass Ink GL is primarily designed to print onto glass and ceramic, as used in the glass and cosmetic industry, but also to decorate promotional items made of glass or ceramic. The bond of this ink to these surfaces is excellent, and it is highly resistant to water, compared to other 2-component ink systems. The ink is therefore, suitable for printing onto give-away items, where a limited dishwasher-resistance is required.

The Glass Ink GL also adheres very well onto a variety of metals, such as chrome-plated writing instruments.

The Glass Ink GL can also be processed with a spray gun, but preliminary trials are necessary for this process. We recommend to filter the thinned ink (25 µm screen) before processing, as otherwise there could be bubbles in the ink film.

Characteristics

Mixing ratio

Before the ink is printed, it is essential to add Hardener GLH in the correct quantity. For each colour shade, the ratio is as follows:

20 parts by weight of ink: **1** part by weight of hardener

Pot life (processing period)

The pot life of the ink/hardener mixture at room temperature will be about 8-10 hours. Higher temperatures reduce pot life. If the mentioned times are exceeded, the ink's adhesion and resistance may be reduced, even if the ink characteristics show no noticeable change.

Drying/Hardening

Parallel to physical drying, i. e. the evaporation of the solvents used, the actual hardening of the ink film is caused by the chemical crosslinking reaction between ink and hardener.

The standard values concerning progressive crosslinking reaction (hardening) of the ink film are as follows:

Extent of drying	temperature	time
touch-dry	20 °C	approx. 25 min
ready for overprinting	20 °C	approx. 50 min
final hardness	20 °C	approx. 4-6 days
	140 °C	approx. 30 min.
pot life	20 °C	8-10 hours

Chemical crosslinking can be accelerated by higher temperatures.

For very high demands for water-resistance (dishwasher etc.), this screen printing ink must be baked at 140 °C for 30 min. Any final testing of ink adhesion and scratch resistance should be carried out after 24 h.

For multi-colour-printing, we point out that the previous printed ink films should not be entirely cured before the consecutive ink film is printed on top of it. Only after all ink films have been applied, should they be baked.

The processing and curing temperature should not be lower than 15 °C as irreversible damage can occur. Also avoid high humidity for several hours after printing as the hardener is sensitive to humidity.

Fade resistance

Only pigments of high fade resistance are used in the Glass Ink GL range.

Shades mixed by adding printing varnish or other colour shades, especially white, have reduced fade and weather resistance. The fade resistance also decreases if the printed ink film thickness is reduced.

Weather resistance of the prints with Glass Ink GL is limited, due to its chemical structure. The prints tend to chalk, the surface of epoxide resin coats are attacked when used outdoors, and thus pigments and filling products are set free. Therefore, the GL must **not** be used in the open air, if direct humidity contact to the ink is possible.

The pigments used are resistant to solvents and plasticizers.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub and scratch resistance and is dishwasher-proof. In tests, the prints have resisted more than 300 dishwasher programs.

For higher demands to rub-resistance, we recommend to overcoat with Overprint Varnish GL 910 or Marapoly P 910.

Range

Shades

Compare colour card "Pad Printing Inks"

Glass Ink GL is included in our computerized colour matching system Marabu-ColorManager (MCM).

GL 20	Lemon	GL 55	Ultramarine blue
GL 21	Medium yellow	GL 57	Brilliant blue
GL 22	Yellow orange	GL 58	Dark blue
GL 32	Carmine red	GL 64	Yellow green
GL 35	Bright red	GL 68	Brilliant green
GL 36	Vermilion	GL 70	White
GL 45	Dark brown	GL 73	Black

All shades are intermixable. To maintain the special characteristics of this outstanding ink range, the Glass Ink GL should not be mixed with other ink types.

By using these basic shades in accordance with the mixing ratios provided by the Marabu-ColorManager (MCM) software, it is possible to produce shades of the popular colour reference systems HKS, RAL, and Marabu System 21.



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In addition to these standard shades, the following are available:

GL 273 High-gloss black
GLI Etch-imitation

For 4-colour-process-prints following shades are available:

GL 429 Process-Yellow GL 459 Cyan
GL 439 Magenta GL 473 Process-Black

Furthermore, three press-ready bronzes are available:

GL 191 Silver
GL 192 Rich Pale Gold
GL 193 Rich Gold

The pigments used in the above mentioned standard shades, based on their chemical structure, correspond to the EEC norm EN 71/part 3, safety on toys - migration of specific elements -. All colours are suitable for printing onto toys.

Additives

Transparent Base: GL 409
Overprint Varnish: GL 910 (can also be used as bronze binder)

Bronzes: (to be mixed with printing varnish GL 910)

S 181 Aluminium S 184 Pale Gold
S 182 Rich Pale Gold S 186 Copper
S 183 Rich Gold S 190 Aluminium (rub-resistant)

Due to their chemical structure, Pale Gold and Copper, mixed with hardener, have a reduced processing time. Please prepare mixtures daily, as they cannot be stored and must be processed within 8 h.

High-Gloss Bronzes

Furthermore, 3 high-gloss bronze concentrates are available, to be used by mixing them with bronze binder GL 910 (see separate Technical Data Sheet "High-Gloss Bronze Concentrates").

S 291 High Gloss Silver (5:1 - 10:1)
S 292 High Gloss Rich Pale Gold (5:1 - 10:1)
S 293 High Gloss Rich Gold (5:1 - 10:1)

Due to the smaller pigment size compared to bronze powder, it is possible to work with finer fabrics of 140-31 (S) to 150-34 (T) at an acceptable price. Bronze shades of high-gloss bronze concentrates are highly weather-resistant and have a very small dry abrasion.

Auxiliaries

Hardener: GLH
Mixing ratio: 20 parts ink : 1 part hardener
Thinner: GLV
Retarder: SV 1
Retarder: SV 9 (for slow printing sequences)
Cleaner: UR 1
Printing modifier: VM 1 (addition max. 1 %)
Matting powder: MP (1-3%)

Shortly before being used, the hardener should be stirred into the ink.

To adjust the printing viscosity, it is generally sufficient to add 5 - 10 % of the thinner GLV.

To produce a retarding effect for slow printing sequences, when printing fine motifs, the use of retarder SV 1 resp. SV 9 may become necessary which can be added to the thinner GLV.

For an ink mixture containing retarder, only thinner without retarder should be used for additional thinning during print run.

Hardener GLH is sensitive to humidity and always has to be stored in a sealed can.

Printing modifier VM 1 can rectify flow problems on critical substrates by adding up to 1 % by weight to the ink. If an excessive amount of printing modifier is added, flow problems are increased, and adhesion may be reduced, especially when overprinting.

GL can be matted by adding 1-3 % matting powder MP.

Fabrics and stencils

All types of commercially available fabrics and solvent-resistant stencils can be used.

Labelling

For our ink type Glass Ink GL and its additives and auxiliaries there are current Material Safety Data Sheets according to EC-regulation 91/155, informing in detail about 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. The hardener GLH is strongly irritant! Please pay special attention to proper usage of this hardener.

The ink has a flash point between 21 °C and 100 °C. Since the ink is not considered as a flammable liquid due to its pastous nature, any specific regulations for the handling of flammable liquids do not apply for the ink.

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.