

UV-curable ink for roller coating onto flat glass

Opaque, 2-component, very good adhesion and resistance

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Field of Application

UV-curable Liquid Coatings are applied in a roller-coating process, utilizing either a smooth or grooved applying roller to coat the substrate.

If digital prints are involved, you are obliged to conduct your own preliminary trials to confirm the compatibility for the intended use.

Substrates

Mara® Shield UV-CGL is suitable for roller-coating onto flat glass.

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

UV-curable digital printing inks are usually not opaque enough for full-area prints on glass or blocking layers. In addition, compared to the roller coating process, digital printing is rather time-consuming.

With UV-CGL, full area opaque ink layers can be achieved rather quickly.

Characteristics

For best results if coating/priming onto Float Glass, it is recommended to coat the fire side and not the tin side; easily determinable with tin side detectors.

For a good adhesion, a uniform surface tension of the substrate with > 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). Pre-cleaning with an appropriate glass cleaner and post-cleaning with demineralised water is recommended.

A pre-treatment of the glass by flaming immediately before printing will generally enhance the adhesion to the substrate.

Ink Adjustment

Recommendation

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

Mara® Shield UV-CGL must be mixed homogeneously with Adhesion Modifier UV-HV8 prior to processing.

Addition: 4% parts of weight

Pot life

The pot life of UV-CGL + UV-HV 8 is approx. 8h, based on 18-25°C room temperature and 30-60% humidity.

If the mentioned times are exceeded, the ink's adhesion and resistance may be reduced even if the ink printing characteristics show no noticeable change.

Pre-reaction time

It is recommended to allow the ink/ hardener mixture to pre-react for 15 minutes.

Drying

Dependant upon the application, one or two medium-pressure mercury lamps (120W/cm) cure UV-CGL at a belt speed of 5 to 10 m/min. The curing speed is generally dependant upon the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the layer thickness, substrate in use, as well as belt speed of the UV-curing unit.

For a layer thickness of 40 g/m², we recommend to use a medium pressure gallium lamp first, followed by a medium pressure mercury lamp.

Mara® Shield UV-CGL



Final adhesion (cross-cut and tape test) is achieved after:

Post-curing at room temperature: 24 h
Oven (140°C/30min): after having cooled down
IR Flow Dryer: e.g. 140 °C/30 sec.: 8 h

Fade resistance

UV-CGL is not suited for outdoor applications as the resin tends to chalk. Therefore, we recommend UV-CGL for indoor use only.

Stress resistance

UV-CGL is resistant against water and also very resistant against alcohol-based customary cleaners. The chemical and mechanical resistance increases with the thickness of the layer.

Range

Basic Shades

970 White
 980 Black

High Opaque Shades

122 High Opaque Light Yellow
 124 High Opaque Medium Yellow
 126 High Opaque Orange
 132 High Opaque Scarlet Red
 134 High Opaque Carmine Red
 136 High Opaque Magenta
 150 High Opaque Violet
 152 High Opaque Ultramarine Blue
 156 High Opaque Brilliant Blue
 160 High Opaque Blue Green
 162 High Opaque Grass Green
 170 Opaque White
 180 Opaque Black

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

Auxiliaries

UV-HV 8	Adhesion Modifier	4%
UVV 6	Thinner	1-5%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

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.

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.

Printing Parameters

Roller Coater Settings

Variable parameters like the speed of the applying, transport, and doctor roller, as well as the regulation of the dosing unit must be adjusted individually dependant upon the application and the speed of production.

A speed ratio of 4:1 between applying roller and doctor roller is recommendable. Please refer to the machine manual for further details. The viscosity of the Mara® Shield UV-CGL Liquid Coatings is attuned to common roller coater machines.

Layer thickness

The thickness of the layer can be influenced by various machine parameters such as the choice of applying roller (smooth or grooved), the regulation of the dosing unit, the roller pressure and the belt speed.

In general, the chemical and mechanical resistance is dependant upon the layer thickness.

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Best results have been achieved if a 20µm layer is applied with a grooved roller.

Shelf Life

The shelf life for an unopened ink container if stored in a dark room at a temperature of 15 - 25 °C is:

- 1 year for Basic Shades 970 & 980
- 2 years for High Opaque Shades 122 - 180

The ambient temperature may fall below this value only once for max. 2-3 days. Under different conditions, particularly other 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 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® Shield UV-CGL 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 the present EEC regulations as to health and safety labelling requirements. Such health and safety data may also be derived from the respective label.

Safety rules for UV printing inks

UV-inks contain some substances which may irritate the skin. Therefore, we recommend to take utmost care when working with UV-curable printing inks. Parts of the skin soiled with ink are to be cleaned immediately with water and soap. Please read the notes on labels and safety data sheets.

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