

Screen Printing Ink for bottle crates made of pretreated polyethylene (PE) and polypropylene (PP)

Glossy, opaque, fast drying 2-component ink system with high chemical resistance

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Field of Application

Substrates

Marapoxy Y was especially developed for the following substrates:

- Pretreated polyethylene (PE)
- Pretreated polypropylene (PP)

The ink series is also suited for these substrates:

- Thermosetting plastics
- Anodized aluminium
- Varnished surfaces

Before printing onto PE and PP, please keep in mind that the substrate surface must be pretreated by flaming. With this process, surface tension will rise and a very good adhesion from 44 mN/m is possible. The surface treatment can be tested by appropriate test inks or a water test, where a wetted PE or PP surface must hold the closed water film for about 20 sec.

The substrate surface must be absolutely free of contaminating residues such as grease, oil, and finger sweat.

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

Marapoxy Y is mainly used for printing onto bottle crates made of polyethylene (PE) and polypropylene (PP), but also for other applications like indoor signs. The ink can be processed either manually, or on semi- or full automatic printing lines.

In the field of bottle crates, best ink adhesion is achieved on sprayed bottle crates made of PE or PP virgin pellets. Adhesion may be decreased if more than 20% regrind is added due to an unpredictable degree of contamination. Therefore, preliminary trials are essential.

Characteristics

Ink Adjustment

Prior to printing, it is necessary to add hardener YH 9 to the undiluted ink in the proper mixing ratio as below:

Black 980

500 g ink + 185 g (= 37 %) hardener YH 9

Varnish 910

300 g varnish + 120 g (= 40 %) hardener YH 9

Other basic shades

800 g ink + 120 g (= 15 %) hardener YH 9

If basic shades are mixed with varnish or black, the proper addition of hardener must be calculated in the correct ratio. The hardener quantity 185 grams YH 9 for black 980 is no standard size and must be weighed exactly.

Pre-reaction time

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

Pot life (processing period)

The mixture ink/hardener is chemically reactive and must be processed within 16 hours (referred to 20 °C ambient temperature). Higher processing temperatures reduce the pot life.

If the mentioned times are exceeded, the ink's adhesion and resistance may be reduced, even if the ink still seems processable.

Drying

Parallel to physical drying (evaporation of the solvents), the actual hardening of the ink film is caused by the chemical cross-linking reaction between ink and hardener.



The following standard values can be assumed concerning the progressive cross-linking reaction (Mesh 90-55, single print):

Dryness degree	Temperatur	Time
overprintable	20 °C air drying	20 min.
overprintable	Hot air drying	3 min.
cured	20 °C air drying	5 Tage
cured	80 °C oven drying	40 min.

The mentioned drying times are only guidelines as they depend on the printed ink film thickness, air humidity, drying conditions, and the selection of auxiliaries such as thinner and/or retarder.

If multicolour prints are dried with enforced heat between printing sequences (by hot air or infrared), the time for overprinting is reduced to approx. 3-5 min. Due to extreme stress on crates and ink, we do not recommend flaming. Generally, extended drying time is necessary for overprints.

The processing and curing temperature should not be lower than 15°C within the first 12 hours as irreversible damage can occur.

High air humidity (> 60%) or direct contact with water (rain) must be prevented categorically during the first 12 h (at 20 °C) or 24 h (at 15 °C) for otherwise the linkage between the ink and the substrate will be impaired significantly.

The ink film underneath must not be chemically cured when overprinted. If the ink film is dried at room temperature 20 °C, overprinting must be carried out within 16 hours. We recommend overprinting as soon as possible, in order to guarantee a good adhesion between the ink layers.

Fade resistance

Only pigments of excellent fade resistance are used in the Marapoxy Y range. They are also resistant to solvents and plasticizers.

Please note, however, that Marapoxy Y is not suited for long-term outdoor applications due to the used binder. The ink tends to chalk when exposed to UV radiation (sunlight), and the printed ink film will be decomposed on the surface, and pigments and filling materials will be released, the gloss is reduced and becomes whitish.

On bottle crates, this chalky effect is prevented by the regular washing of the crates during the refilling process.

If bottle crates printed with Marapoxy Y are stored outside for longer than one month, they have to be covered with a protecting tarpaulin (after the ink film is completely cured).

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion, as well as rub, and scratch resistance, and resistance against:

- Water storage
- Water mixed with 10% alcohol
- 2 % sodium hydroxide solution (up to 70 °C) for 30 min.
- 2 % Teepol solvent (up to 80 °C) for 3 hours
- Oil, grease and diluted acids

Range

Basic Shades

920	Lemon
924	Medium Yellow
926	Orange
930	Vermilion
932	Scarlet Red
934	Carmine Red
950	Violet
952	Ultramarine Blue
954	Medium Blue
960	Blue Green
970	White
980	Black

Further Products

910	Overprint Varnish
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Marapoxy Y



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

All basic shades 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 HKS®, PANTONE®, and RAL®. All formulas are stored in the Marabu-Color Manager software.

Metallics

We recommend using Marapur PU silver and gold bronzes for printing onto bottle crates.

Auxiliaries

YH 9	Hardener, fast	15-40%
YV	Thinner	5-10%
UKV 1	Thinner, fast	5-10%
VM 1	Levelling Agent	0.5-2%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 78°C)	
SV 3	Retarder, for slow printing	
SV 5	Retarder	

Hardener YH 9 is sensitive to humidity and is always to be stored in a sealed container. Shortly before use, the hardener must be added to the ink and stirred homogeneously. The mixing ratio depends on the colour shade, see 1st page. The mixture ink/hardener is not storable and must be processed within pot life.

Thinner is added to the ink to adjust the printing viscosity. 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.

Printing Modifier VM 1 (silicone-free) can be added to rectify flow problems. An excessive amount reduces the intercoat adhesion.

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

All types of commercially available polyester and nylon fabrics and solvent-resistant stencils can be used. For a good opacity on dyed substrates, we recommend a fabric thickness between 68-64 and 90-48, for the print of finest details 100-40 to 120-34.

Mileage

Mileage is about 60-80 m²/kg of printed surface according to mesh and substrate chosen.

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 Marapoxy Y and its additives and 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.

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