Mara® *Poxy* Y

Marabu

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

Vers. 9
2022
01. Sep

Field of Application

Substrates

Mara® *Poxy* 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

Mara® *Poxy* 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

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

Mara® *Poxy* Y is a 2-component ink system. Prior to printing, it is essential to add hardener in the correct quantity and to stir homogeneously.

Colour Shade/ Content	Hardener addition YH 9
White 970 (800 g)	prev. formulation: 120 g new formulation: 160 g
Black 980 (500 g)	160 g
Varnish 910 (300 g)	120 - 160 g*
Other Basic Shades (800 g)	120 - 160 g*

*For increased resistance we recommend an addition of 160 g hardener.
If basic shades are mixed with varnish or black, the proper addition of hardener must be calculated in the correct ratio.
When using hardener, the processing and curing temperature must not be lower than 15°C as irreversible damage can occur. Please also avoid high humidity for several hours after printing as the hardener is sensitive to humidity.

Pre-reaction time

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

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Pot life (processing period)
The ink/hardener mixture is chemically reactive and must be processed within 16 h (referred to 20-25 °C and 45-60 % RH). Higher 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	Temperature	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 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 Mara® *Poxy* Y range. They are also resistant to solvents and plasticizers.
Please note, however, that Mara® *Poxy* 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 Mara® *Poxy* 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

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Further Products

910 Overprint Varnish

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 Mara® *Pur* PU silver and gold metallics for printing onto bottle crates.

Auxiliaries

YH 9	Hardener	15-53%
QNV	Thinner	5-10%
UKV 1	Thinner, fast	5-10%
SA 1	Surface Additive	3-5%
VM 1	Levelling Agent	0.5-2%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°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 page 1.** 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.

The addition of surface additive SA 1 can increase the resistance against abrasion and other mechanical stress (max. addition 10%).

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.

Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature. It is 3.5 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",

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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® *Poxy* Y 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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