Mara® *Cure* HY

Marabu

Solvent-based and UV-curable Dual-Cure screen print varnishes for polycarbonate PC, PMMA, ABS, PVC

Very flexible, highest resistances, 2-component system

Vers. 3
2016
04. Jul

Field of Application

Substrates

Mara® *Cure* HY is a universal, very fast curing hybrid solution (solvent-based/UV) for screen printing applications on the following substrates:

- Polycarbonat (PC)
- PMMA
- ABS
- PVC

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® *Cure* HY is particularly suited for industrial indoor and outdoor applications, such as interior and exterior applications for the automotive industry, or as surface protection of furniture.
The processing steps are as below:

1. Printing of the motif
2. Drying / tempering
3. In case of 3D-applications: Moulding
4. UV-curing process
5. Cutting/stamping/back injection moulding

Characteristics

Mara® *Cure* HY is highly reactive and features a very flexible ink film, allowing post-processing steps like moulding (before the UV-curing process), and cutting, stamping or back injection moulding (after the UV-curing process).

Mara® *Cure* HY 911 is silicone-free. For silicone-free products it is important to use only thoroughly cleaned stencils, squeegees, ink pumps, tubes (in the case of an automatic ink supply), and injectors for the manual ink filling of the stencil, etc.

If cleaning is carried out with automatic screen washing systems, we recommend prior to printing an additional manual cleaning with a fresh cleaner not having had any contact with ink residues containing silicone.

Ink Adjustment

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

Mara® *Cure* HY is a 2-component ink system. Prior to printing, it is essential to add hardener in the correct quantity.
This ink/hardener mixture must be stirred homogeneously and adjusted to the right printing viscosity by adding thinner (stir again). Additional venting under vacuum reduces the remaining air and allows printing a most homogeneous surface.

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.

Pot life
The ink/hardener mixture is chemically reactive and can only be processed within 8 hours, referred to an ambient temperature of 20°C. Higher temperatures reduce the pot life. If the room temperature (> 30° C) or the mentioned

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times are exceeded, the ink's adhesion and chemical resistance may be reduced even if the ink is still fluid and therefore seems processable.

Drying

The drying/curing takes place in two steps:

1. Solvent evaporation
2. UV-curing

Between these two processes the printed item can be moulded.
1. Solvent evaporation
Forced drying, example (15 m / min):

1. Zone	Air 100 %	80 °C
2. Zone	Air 100 %	90 °C
3. Zone	IR	70 %
4. Zone	IR	80 %
Cooling	Auto	100 %

After this procedure the ink film is dust-dry and flexible but not scratch resistant yet. Before the moulding, please allow Mara® *Cure* HY to post-cure for 24 h or alternatively, the ink film can be post-tempered for 1 h at 80°C. We recommend using a rack for intermediate storage. Preliminary trials are essential.

2. UV-curing
2D-applications: A UV-curing unit (medium-pressure mercury lamp) of 120 to 200 W/cm is necessary. A UV-curing unit with two medium-pressure mercury lamps (80 - 120 W/cm) cures Mara® *Cure* HY at a belt speed of 15 m/min (e.g. Kühnast UV-Integrator UV 250-410 nm, max. 365 nm).

3D-applications: 3D-applications require a special 3D-UV-curing unit.

After the UV-curing process you can immediately start with post-processing steps such as cutting, stamping or back injection moulding. Mara® *Cure* HY is a post-curing UV ink which will achieve its best adhesion and resistance after 24 hours.
The curing speed of the ink is generally dependant upon the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the printed ink film thickness, colour shade, substrate in use, as well as the printing speed.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance and passes various tests of the automobile industry such as chemical resistance according to GMW 14445 or mechanical resistance according to Oesterle DBL 9202.

Range

911	Overprint Varnish, with UV-Absorber
914	Satin Transparent Varnish

Mara® *Cure* HY 911 is silicone-free and therefore not mixable with HY 914.

Auxiliaries

H 1	Hardener	10%
MP	Matting Powder	5-15%
PV	Thinner	1-5%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

Hardener H 1 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 mixture ink/hardener is not storable and must be processed within pot life.

By adding Matting Powder MP the ink film can be matted individually.

Thinner can be added to the ink/hardener mixture to adjust the printing viscosity.

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.

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Printing Parameters

Selection of fabric depends on the printing conditions, the desired curing speed and mileage as well as the required opacity. Generally, fabrics of 90-40 bis 120-34 can be used. A uniform screen tension (> 16 N) of all fabrics used is further important.
All commercially available capillary films (15-20 µm) or solvent resistant photo emulsions and combined stencils can be used.

Shelf Life

In order to avoid frost damages, Mara® *Cure* HY should under no circumstances (not even shortly) be exposed to temperatures lower than 5 °C during transport and storage.

If permanently stored at a temperature range of 15–25 °C, the shelf life of the unopened ink container is
• 2 years for HY 914
• 1 year for HY 911

Under different conditions, particularly differing 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.
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® *Cure* HY 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.

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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