Tampa® *Cure* TPC

Marabu

Pad printing ink for ABS, rigid PVC, some PC, PS, and PMMA materials, pre-treated PE and PP, PA as well as some metals, and varnished surfaces

UV-curable, high gloss, good opacity, 1- or 2-component ink system, resistant to chemicals

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Field of Application

Substrates

The UV-curable pad printing ink Tampa® *Cure* TPC is particularly suited to print onto

- ABS
- rigid PVC
- polycarbonate (PC)
- polystyrene (PS)
- acrylic (PMMA)

By adding hardener, Tampa® *Cure* TPC adheres excellently to many other substrates such as

- pre-treated polyethylene (PE)
- pre-treated polypropylene (PP)
- polyamide (PA)
- varnished surfaces
- some metals

When printing on polyethylene and polypropylene, please note that the surface of the substrate must be pre-treated by flaming or corona discharge. Experience has shown that good adhesion can be achieved with a surface tension of at least 48 mN/m. In the case of PP, the surface can also be pretreated by applying a thin layer of our primer P 2.

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

The UV-curable Tampa® *Cure* TPC is particularly suited when printed parts are immediately to be processed further, resp. if excellent mechanical and chemical resistances are required.

With multicolour printing, it is important to note that Tampa® *Cure* TPC can be printed wet-on-wet, without an intermediate UV-curing. When printing overlapping motives with opaque colour shades, however, the individual ink films must be cured individually.

If the different ink layers do not overlap, it is possible to cure all printed layers with one single pass through the curing unit. Nevertheless, preliminary tests are always essential.

This ink series is not suitable for direct food contact nor for printing on food contact materials as substances contained in the formulation or introduced by contamination may migrate under certain conditions. Materials that constitute a natural migration barrier are excluded.
If this ink series is nevertheless used for printing on permeable food contact materials, the manufacturer of the printed product is responsible for ensuring that its products comply with legal or industry-specific requirements.
For printing on permeable food contact materials (= without appropriate migration barrier), we recommend our specially designed ink systems UVFP / TPX.

Characteristics

Ink Adjustment

Recommendation
The ink should be stirred homogeneously before printing and if necessary during production.
Tampa® *Cure* TPC is not press-ready and must therefore be adjusted to the required viscosity with the corresponding thinners prior to printing. In the case of higher requirements to the ink's resistance or reactivity, there are different additives available.

Using TPC as a 2-component ink
According to the substrate and the required ink characteristics, it is possible to add hardener to Tampa® *Cure* TPC before printing. Required

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quantity to be added see "Auxiliaries".

Pre-reaction time
It is recommended to allow the ink/hardener mixture to pre-react for 15 min.

Pot life
The ink/hardener mixture is chemically reactive and must be processed within 12-16 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.
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.

Drying

Tampa® *Cure* TPC contains solvents. Parallel to physical drying and the evaporation of the solvents used, the actual hardening of the ink film is caused by a chemical cross-linking reaction started by the UV-light.

Tampa® *Cure* TPC is a slightly post-curing UV ink which will achieve its best resistances after 24 h. If hardener was added, the curing speed will be reduced. Due to this, adhesion and scratch resistance should be tested only after 24 h. A final curing of the ink film will be reached after approx. 48 h.

UV-Curing
According to the required curing speed, a UV-curing unit (medium-pressure mercury lamps) of 100-140 W/cm is necessary.

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. The adhesion of the ink is usually tested by a tape test after the ink film has cooled down to room temperature (approx. 20 °C).

As with all UV-curable printing inks, the presence of residual monomers and photoinitiators' decomposition products cannot be completely ruled out even after sufficient curing. If these traces are relevant for the application, this must be taken into account in individual cases, as this depends on the actual printing and curing conditions.

Fade resistance

For the production of Tampa® *Cure* TPC, pigments of good to high light fastness are used. This enables short-term outdoor use of up to one year, referred to the temperate Central European climate.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding rub and scratch resistance and is resistant to a large number of chemicals, oils, greases, and solvents, as well as perspiration. These resistances can be improved by adding 5 % hardener.

Range

Basic Shades

922	Light Yellow
926	Orange
932	Scarlet Red
934	Carmine Red
952	Ultramarine Blue
956	Brilliant Blue
970	White
980	Black

High Opaque Shades

170	Opaque White
180	Opaque Black

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

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Tampa® *Cure* TPC

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-ColorManager software.

Metallics

Metallic Pastes

S 291	High Gloss Silver
S 292	High Gloss Rich Pale Gold
S 293	High Gloss Rich Gold

Metallic Powders

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

These metallics are added to TPC 910 in the recommended amount, whereas the addition may be individually adjusted to the respective application. We recommend preparing a mixture which can be processed within a maximum of 8 h since metallic mixtures usually cannot be stored.
Due to their chemical structure, the processing time of mixtures with Pale Gold S 184 and Copper S 186 is even reduced to 4 h.

Owing to the bigger pigment size of Metallic Powders we recommend the use of a halftone cliché with a minimum depth of 25-30 µm.

All metallic shades are displayed in the Marabu "Screen Printing Metallics" colour chart.

Auxiliaries

TPV 2	Thinner	5-15%
TPV	Thinner, slow	5-10%
TPV 7	Thinner, slow	5-10%
H 1	Hardener	5%
H 2	Hardener, fast	5%
HX	Hardener	5%
SA 1	Surface Additive	3-5%
MP	Matting Powder	2-3%
UV-B 1	UV Accelerator	1-2%
OP 170	Opaquing Paste	0-15%
H 4	Hardener	0-10%
UV-HV 7	Adhesion Modifier	0-5%
UV-VM	Levelling Agent	0-1%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	
P 2	Primer	

Thinner is added to the ink to adjust the printing viscosity. The choice of thinner and the amount added are highly dependant upon the local climate and the printing speed.

All hardeners are sensitive to humidity and always to be stored in a sealed container. They can be added for increased resistance and adhesion and must be stirred well and homogeneously into the undiluted ink shortly before use. The mixture ink/hardener is not storable and must be processed within pot life.

The addition of Surface Additive SA 1 can increase the resistance against abrasion and other mechanical stress. At the same time, it is possible to improve the ink transfer from pad to substrate (recommended addition 3-5 %, max. 10 %).

By adding Matting Powder MP the ink film can be matted individually (preliminary trials in terms of adhesion and resistance are essential, white shades addition max. 2 %).

UV-B 1 accelerates the curing speed if necessary and may increase the adhesion to the substrate owing to a better depth curing.

By adding Opaquing Paste 170, the opacity of colour shades can significantly be increased without considerably influencing the chemical and dry abrasion resistance. OP 170 is not suited for white shades.

UV-VM eliminates flow problems; excessive use may reduce adhesion in overprint.

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.

Special Primer P 2 is used for manual pre-cleaning and pre-treatment of PP substrates.

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Printing Parameters

Clichés
All commercially available clichés made of ceramic, photopolymer, thin steel, and chemically hardened steel (10 mm) can be used. The recommended cliché depth is 16-22 µm.

Printing pads
As per our experience, all common printing pads consisting of materials cross-linked by condensation or addition can be used.

Printing machines
Tampa® *Cure* TPC is suited for closed ink cup systems as well as for open ink wells. As for solvent-based ink types, a certain quantity of thinner should be added during longer print runs in order to control the ink's viscosity.

Shelf Life

Shelf life depends very much on the formula/ reactivity of the ink system as well as the storage temperature. For an unopened ink container it is

• 2.5 years for all standard products

We recommend our products to be stored in a dark, dry and well-ventilated surrounding, providing an ambient temperature of 5 °C - 35 °C. Please protect from heat and direct sunlight. If storage conditions do not comply with this recommendation, the shelf life is no longer guaranteed.

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", 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 Tampa® *Cure* TPC 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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