

Pad printing ink for ABS, rigid PVC, some PC, PS, and PMMA materials, pre-treated PE and PP, 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 onto metals, an addition of Adhesion Modifier UV-HV 1 may improve the adhesion of the ink.

In the case of printing onto polyethylene and polypropylene, please make sure to pre-treat the surface of your substrate by flaming or Corona discharge as usual. As per our experience, you can achieve a good adhesion at a surface tension of at least 48 mN/m. On polypropylene, you can also apply a thin film of our colourless Primer P 2 for surface pre-treatment. 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.

## 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:

20 parts of ink : 1 part of hardener

#### Pre-reaction time

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

#### Pot life

The pot life (processing period) at room temperature (approx. 20°C) with hardener will be about 12-16 h. Higher temperatures reduce pot life. If the mentioned times are exceeded, the ink's adhesion and resistance may be reduced even if the ink characteristics show no

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noticeable change. 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 hours. If hardener was added, the curing speed will be reduced. Due to this, adhesion and scratch resistance should be tested only after 24 hours. A final curing of the ink film will be reached after approx. 48 hours.

## 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).

## Fade resistance

Pigments of medium to high fade resistance are used in Tampa® Cure TPC. Owing to this, all TPC shades are generally suited for a short-term outdoor use of up to one year, referred to the 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

920	Lemon
922	Light Yellow
924	Medium Yellow
926	Orange
930	Vermilion
932	Scarlet Red
934	Carmine Red
936	Magenta
940	Brown
950	Violet
952	Ultramarine Blue
954	Medium Blue
956	Brilliant Blue
960	Blue Green
962	Grass Green
970	White
980	Black

### High Opaque Shades

170	Opaque White
180	Opaque Black

### Further Products

910	Overprint Varnish
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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-ColorManager software.

We do not recommend this ink for toys due to the foreseeable contact with the mouth since the possible presence of residual monomers and decomposition products of the photo-initiators cannot be excluded even when sufficiently cured.

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## 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, 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	Thinner, slow	5-10%
TPV 2	Thinner	5-10%
TPV 7	Thinner, slow	5-10%
H 1	Hardener	5%
H 2	Hardener, fast	5%
MP	Matting Powder	2-3%
UV-HV 1	Adhesion Modifier	2%
UV-B1	Accelerator	1-2%
OP 170	Opaquing Paste	0-15%
ES	Printing Modifier	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.

Hardener H 1 and H 2 are sensitive to humidity and is always to be stored in a sealed container. H 1 or H 2 can be added for increased resistance and adhesion. Shortly before use, the hardener is 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 (preliminary trials in terms of adhesion and resistance are essential, white shades addition max. 2%).

UV-HV 1 may be added to rectify adhesion problems on metals. UV-HV 1 is not suited for applications on plastic. It must be stirred well into the ink. Ink mixtures with UV-HV 1 are not storable, so we recommend to prepare mixtures which can be processed within 8 h.

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.

Printing Modifier ES contains silicone and can be used to rectify flow problems on critical substrates. If an excessive amount is added, flow problems are increased and adhesion may be reduced, especially when overprinting. The use of ES may reduce the degree of gloss.

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.

## Printing Parameters

### Clichés

All commercially available clichés made of ceramic, photopolymer, thin steel, and chemical-

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ly 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 traditional 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. It is 2 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 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, in-

forming 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.

Marabu