

Pad printing ink for Thermoplastic Elastomers, different types of rubber, Soft-Touch coatings and decorative finish

Flexible, high gloss, good opacity, 2-component ink system, resistant to chemicals, universal use

Vers. 2
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Field of Application

Substrates

The flexible Tampaflex TPF is excellently suited to print onto pretreated Thermoplastic Elastomers, abbr. TPE's as well as Soft-Touch surfaces, different types of rubber for decoration or marking.

When printing onto TPE's, please make sure to pretreat the surface of your substrate by flaming or Plasma discharge as usual

An additional post treatment with air drying (300-400°C, 1-2 sec.) can improve adhesion onto difficult nonpolar TPE's.

As pretreatment you can also apply a thin film of our colourless Primer P2. Generally, for multiple colour printing, please consider that you should not flame the substrate between print sequences, as this may reduce intercoat adhesion.

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 application

Tampaflex TPF is made for applications where high chemical resistance is required, e.g. alcohol and is used in the automotive sector or for flexible, soft/hard injection molded components, e.g. handle bars.

Characteristics

Mixing ratio for flexible substrates

(TPE's such as handel bars, injection molded components)

Before printing the 2-k-ink Tampaflex TPF, it is essential to add the hardener H 1 and be stirred homogeneously. Irrespective of the colour shade the mixing ratio is 10% or

10 parts of TPF : **1** part of hardener H 1
100 g Tampaflex TPF + 10 g hardener H 1

Mixing ratio for unflexible substrates

(Soft-touch surfaces , decorative finish)

Before printing, it is essential to add hardener H 2 and be stirred homogeneously. Irrespective of the colour shade the mixing ratio is 25% or

4 parts of TPF: **1** part of hardener H 2
100 g Tampaflex TPF + 25 g hardener H 2

The addition of 25% hardener H 2 allows a good adhesion and high chemical resistance.

Pot life

The pot life (processing period) with H 2 will be approx. 8 hours at room temperature (about 20°C). Higher temperatures will 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 noticeable change.

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Drying

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

The following standard values concerning progressive cross-linking (hardening) of the ink film can be estimated at:

Drying times		H 2	H 1
touch-dry	20 °C	1-2 min	4 min
stackable	60 °C	30 min	60 min
final hardness	20 °C	3-5 days	7 days
final hardness	150 °C	30 min	30 min
pot life	20 °C	min. 6 h	8 h

Chemical cross-linking can be accelerated by higher temperatures. The times mentioned vary according to substrate, depth of cliché, drying conditions, and the auxiliaries used.

For an overprint in fast printing speed, the first lacquer layer can be dried with hot-air (ca. 200 °C, 2-3 sec.)

For multiple colour printing, we point out that the previous printed ink film should not be entirely cured before the consecutive ink film is printed on top of it. By drying at room temperature, the consecutive print should be carried out within 12 hours after the previous print.

The processing and curing temperature should not be lower than 15 °C as irreversible damage can occur. It's important to avoid high humidity for several hours after printing as the hardener is sensitive to humidity.

Fade resistance

Only pigments of high fade resistance are used in the Tampaflex TPF range. The pigments used are resistant to solvents and plasticizers.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch, and block resistance and is resistant to a large number of chemical products, oils, greases, and solvents

Clichés

All commercially available clichés made of photopolymer material, thin steel, and chemically hardened steel (10 mm) can be used. We recommend a cliché depth of 20-28 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

Tampaflex TPF is suitable for closed ink cup systems, as well as for open ink wells. Depending on type and usage of the machine, it is necessary to adjust type and amount of the thinner used accordingly.

Range

Basic shades

Refer to colour chart 'System Tampacolor'

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

(*semi-transparent/transparent)

All shades are intermixable. To maintain the special characteristics of this outstanding ink range, TPF should not be mixed with other ink types.

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The basic shades according to System Tampacolor are all included in our Marabu-ColorFormulator being build the calculation basis for individual colour matching formulas. The basic shades are further the basis for colour matches according to the common Pantone®, HKS®, and RAL®. All formulas are stored in the Marabu-Color Manager 2 (MCM 2) software.

Press-ready silver shade

TPF 191 Silver

Bronzes

(to be mixed with Overprint Varnish TPF 910)

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

Due to their chemical structure, Pale Gold S 184 and Copper S 186 have a reduced processing time. Please generally prepare fresh mixtures only as they cannot be stored and must be processed within 4 h.

Clears

TPF 910 Overprint Varnish, can also be used as bronze binder

The pigments used in the above mentioned standard shades, based on their chemical structure, correspond to the EEC regulations EN 71/part 3, safety of toys - migration of specific elements. All colours are suited for printing onto toys.

Auxiliaries

Hardener:	H 2, fast hardener H1, flexible hardener
Thinner:	TPV 6 (also for screen printing) PPTPV, fast thinner TPV 3, slow thinner
Retarder:	SV 1 VP, Retarder Paste
Matting Powder:	MP, addition 2-4%
Primer:	P 2, for polypropylene
Cleaner:	UR 4
Printing Modifier:	ES, addition: max. 0,5%

The hardener should be added to the ink briefly before printing in the correct ratio as mentioned before.

To adjust printing viscosity, it is generally sufficient to add 25-30% of thinner TPV 6 to the ink. Thinner PPTPV can be used for fast printing, TPV 3 for slow printing requirements.

By adding matting powder MP, the glossy effect of the ink is reduced to a silky or semi-matt finish. The addition of a low percentage of MP (in the case of 970 White, max. 2%) will not influence the resistances of the ink significantly but it will reduce its opacity.

For the printing of very fine motives, retarder SV 1 or retarder paste VP may be added to the ink. An excessive addition may result in ink transfer problems.

Attention

For an ink mixture containing retarder, only thinner should be used for additional thinning during the print run.

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Printing Modifier ES contains silicone. It can be used to rectify flow problems on critical substrates by adding up to 1% by weight to the ink. If an excessive amount of printing modifier is added, flow problems are increased and adhesion may be reduced, especially when overprinting.

Cleaning

To clean ink containers, clichés, and tools, please use our cleaner UR 4.

Recommendation

The ink should be stirred well before printing. To protect the ink in opened containers against excessive drying, it can be carefully covered with a layer of thinner which can then be later stirred into the ink prior to printing.

Labelling

For our ink type Tampaflex TPF and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC-regulation 1907/2009 informing in detail about all relevant safety data including labelling according to the present EEC regulations as to health and safety labelling requirements. Such data may also be derived from the respective label. The ink has a flash point $> 54^{\circ}\text{C}$.

Note

Please refer to the information in our technical data sheets of pad printing inks. 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 a concrete application are 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.