Product Data Sheet
Pad Printing Ink

SunChemical®
a member of the DIC group
Color & Comfort

TPI

Solvent Based Pad Printing Ink Range, 1-Component

APPLICATION
Pad printing inks for printing of thermoplastics, especially polystyrene (PS), rigid PVC, and plasticized PVC, however not for polyolefines (PE/PP). Also suitable for various coated surfaces.

PROPERTIES
- Ink range TPI are solvent based 1-component pad printing inks.
- TPI are physically quick drying inks resulting in a satin-gloss finish.
- With the exception of varnish E50, TPI inks are free of silicone.
- TPI prints exhibit good resistances against alcoholic cleaning agents and hand sweat.
- The colour shades of TPI-NT ink range are HF-weldable. (Exception: bronze colours. Black only as special adjustment).
- Solid TPI prints can be marked with pens. Because of the many different types of pens on the market, pre-tests are essential.
- TPI ink range is suitable for outdoor applications.
- Note: As thermoplastic injection moulds are sensitive to tension cracks pre-tests are essential.

COLOUR SHADES - OVERVIEW
- Mixing System: C-MIX 2000 — 12 colour shades for mixing of RAL, PMS and HKS colours.
- Opaque: Standard — Colour shades with medium to good opacity.
  Standard HD — Highly opaque colour shades.
- Special colour shades are available upon request.
- More information about available colour shades in the detailed tables in section Colour Shades.

CHOICE OF PIGMENTS AND LIGHT FASTNESS
Colour shades of TPI ink range contain pigments with a high light fastness. Light fastness and weather resistance will reduce if thinner layers are applied or if base colours are mixed with a high ratio of white or varnish.

Applied on suitable substrates pad printing inks TPI are suitable for outdoor applications.

ADJUSTMENT FOR PAD PRINTING
- Pad printing inks TPI are not supplied in a ready-to-print adjustment.
- The ink is adjusted for printing by addition of thinner or retarder (stir with mixer, agitator).
- Prior to printing, the inks should be stirred well to obtain a homogeneous dispersion of all ingredients.

THINNERS / RETARDERS
Depending on local conditions, the ink is adjusted for printing by addition of 15 to 35 % by weight thinner or retarder.
Generally, the thinner suitable for TPI is Additive A!
The additional products listed below should only be used if the required printing quality/ink transfer cannot be achieved using Additive A (e.g. drying too slow or too fast).

For adjustment of pad inks TPI, the following products are available:

Thinner:	○	Additive C	Extremely quick thinner, good solving power
	○	VD 40	Quick, very strong solving power
	○	Additive B	Quick thinner, good solving power
	■	**Additive A**	**Standard thinner**
	○	Additive U	Standard thinner, free of cyclohexanone
	○	VD 60	Slow thinner
Retarder:	○	TPD	Very slow retarder
	■= Preferred	○= If required	
Note:	**For printing with thick and thin steel clichés sensitive to corrosion**		
	○	Additive A/00	Standard thinner with anti-corrosion additive
	○	Additive B/00	Quick thinner with anti-corrosion additive

Depending on printing conditions, the products listed above can be mixed into the inks individually or as mixtures. Please note that depending on evaporation rate of the thinner/retarder used drying times may be longer.
Thinner/retarder should be mixed into the ink thoroughly using a mixer or agitator. In addition, inks should be stirred well prior to each processing to obtain a homogeneous dispersion of all ingredients.

ADDITIONAL AUXILIARY AGENTS

Application	Product	Addition in % by weight	Additional Information
Antistatic paste	LAB-N 111420	Max. 10%	Possibly slightly reduced gloss
Retarder paste	LAB-N 111420/VP	Max. 10%	Possibly slightly reduced gloss
Viscosity increase	Thickening powder	Max. 3%	Stir with mixer
Flow agent	VM 2	0.3 - 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint TPI inks with varnish. Basically, overprinting to achieve an enhanced protection of ink layers is possible with TPI/E50.

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours may be available upon request.
Printers can mix bronzes themselves using bronze pastes B 75, B 76, B 77 and B 79 as well as bronze powder B 78-POWDER. For examples of colour shades please refer to our Bronze Colour Card.

These “B“ bronze pastes and “B” bronze powder are mixed with varnish TPI/E50 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	TPI/E50	= 1 : 3 - 4
Silver bronze paste	to	TPI/E50	= 1 : 4 - 6

Bronzes B 75 to B 79 are prone to oxidation (Exception B 78-POWDER). Therefore, they should be overprinted, e.g. with TPI/E50. B bronzes are not recommended for long-term outdoor applications.

B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time. Colour of inks mixed with B 78-POWDER is similar to colour 78/AB as shown on our “bronze colour card”.

Note: When overprinting bronze colours with varnish or other colour shades it is essential to carry out pre-tests to check intermediate adhesion of the ink layers (fingernail test, tape test). Possibly mixing ratio needs to be changed to a higher varnish ratio (between 10 – 30%).

DRYING

TPI pad printing inks dry physically, i.e. by evaporation of solvents.
Drying times below are only approximate as drying properties depend on various factors:

- Type and amount of thinners/retarders used.
- Thickness of printed ink layer (single print, multiple prints)
- Drying temperature.

Drying time is approx. 2 minutes at room temperature (20 – 25°C). Drying time with heat application (e.g. hot air fan) and air circulation is about 20 - 40 seconds.
Complete drying may take up to 15 minutes, also depending on the substrate.

Resistance Tests
Resistances should not be checked before the prints are completely dry.

CLICHÉ
All commercial types of clichés (polymer, thin and thick steel, ceramic) are suitable for processing TPI inks.
Note: Standard shades 17, 50, 51 and 65-HD cannot be used for closed ink systems with a magnet holder as they contain pigments with iron oxide content.

CLEANING
Clichés, ink pots and tools can be cleaned with our universal cleaning agents URS, URS 3 or thinner VD 40.

PACK SIZE
Pad printing inks TPI are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE
In closed original containers, TPI inks generally have a shelf life of 5 years from date of production.
For exact date of expiry, please refer to the label.

SAFETY DATA SHEETS
Read safety data sheet prior to processing
Safety data sheets comply with Regulation (EC) No. 1907/2006 (REACH), Appendix II.

CLASSIFICATION AND LABELLING
Hazard classification and labelling comply with Regulation (EC) No. 1272/2008 (CLP/GHS).

CONFORMITY
Coates Screen Inks GmbH does not use any of the substances or mixtures for the production of printing inks, which are banned according to the EUPIA (European Association of the Printing Inks Industry) exclusion policy.
Further compliance confirmations are available upon request.

ADDITIONAL INFORMATION ABOUT OUR PRODUCTS

Product data sheets:	Auxiliary Agents for Pad Printing HM
Brochures:	Pad Printing Inks
Internet:	Various technical articles are available for download on www.coates.de, section “SN-Online”

FOR COLOUR RANGES, PLEASE REFER TO NEXT PAGE.

COLOUR SHADES

C-MIX 2000 BASE COLOUR SHADES

Mixing system for matching of PMS, HKS, RAL colours (on white substrates)
Start formulations available in data base „Formula Management C-MIX 2000“
According to colour card C-MIX 2000

primrose	TPI/Y30	red	TPI/R50	green	TPI/G50
golden yellow	TPI/Y50	magenta	TPI/M50	black	TPI/N50
orange	TPI/O50	violet	TPI/V50	white	TPI/W50
scarlet	TPI/R20	blue	TPI/B50	varnish	TPI/E50

STANDARD Colour Range (medium opacity)

According to colour card STANDARD 1 for pad printing inks or TP 247/ TPI…
Availability of further standard shades upon request

citric yellow	TPI 10/NT-NEU	light blue	TPI 30/NT-NEU	light green	TPI 40/NT-NEU
medium yellow	TPI 11/NT-NEU	medium blue	TPI 31/NT-NEU	white	TPI 60/NT-NEU
orange	TPI 15/NT-NEU	ultra marine	TPI 32/NT-NEU	black	TPI 65/NT-NEU
light red	TPI 20/NT-NEU	dark blue	TPI 33/NT-NEU		
bright red	TPI 21/NT-NEU	turquoise	TPI 34/NT		

STANDARD Colour Range HD (high opacity)

According to colour card STANDARD HD for Pad printing inks
Availability of further standard HD shades upon request

white, highly opaque	TPI/60-HD-NT-NEU	black, highly opaque	TPI/65-HD-NT-NEU

SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes

Information about availability upon request

Black, IR-permeable	TPI 66/IR		

4 Colour Process Inks (CMYK)

According to colour card STANDARD 1 for pad printing inks or TP 247/ TPI…

Upon request

AB – BRONZE INKS and MG – METAL GLOSS INKS

According to Bronze Colour Card

AB Bronze Inks	MG Metal Gloss Inks
Upon request	**Upon request**

Matching of PMS, RAL, NCS colours and special shades upon request.
All above information refers to the colour shades listed in this product data sheet and other standard shades of this pad printing ink range. Information about availability of further standard shades upon request.
In some individual cases the product characteristics of special colour shades and modifications of this ink type manufactured upon customer request may differ from the above properties.

The statements in our product and safety data sheets are based on our present experiences, however they are no assurance of product properties and do not justify a contractual legal relationship. We provide these details to inform customers about our products and their possible applications. However, on account of various factors influencing processing of our products it is absolutely essential to carry out printing trials under local production conditions. Choice of individual ink types and their suitability for the intended application is the sole and entire responsibility of the user. We do not assume any liability for any problems of technical or process-related nature. Any liability shall be limited to the value of the goods delivered by us and processed by the user.
All former product data sheets are no longer valid.

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