Product Data Sheet
Pad Printing Ink

SunChemical®
Coates Screen Inks

LAB-N 141935

Solvent Based Pad Printing Ink Range, 2-Component

APPLICATION
Pad printing inks especially for printing on TPE (thermoplastic elastomers) and soft touch polyurethane coatings.

PROPERTIES

- Pad inks LAB-N 141935 are solvent based pad printing inks. They are processed as 2-component ink with hardener.
- LAB-N 141935 inks dry chemical-physically and result in a satin gloss finish.
- This ink range shows good printing properties up to speeds of 2500 prints/h. Complete ink transfer from pad to substrate is essential to avoid cob webbing (splashes).
- Cured prints exhibit a good flexibility and elasticity as well as high resistances against toothpastes, ethanol and other chemicals.
- Ink range LAB-N 141935 is suitable for medium-term outdoor applications.
- Note: Because of the great variety of TPE substrates and soft touch coatings, pre-tests are absolutely essential.

Overview TPE Products

TPE Groups:	ISO 18064 Names	Base	Examples of Brand Names	Manufacturer
TPE-0	TPO	TPE based on olefins, mainly PP/EPDM	Santoprene	AES/Monsanto
TPE-V	TPV	Cross-linked TPE based on olefins, mainly PP/EPDM	Sarlink	DSM
TPE-E	TPC	Thermoplastic copolyester	Hytrel	DuPont
TPE-S	TPS	Styrene block copolymers (SBS, SEBS, SEPS, MBS)	Styroflex	BASF
TPE-A	TPA	Thermoplastic copolyamide	PEBAX	Arkema
TPE-U	TPU	TPE based on urethane	Desmopan	Bayer

Possible Pre-treatments:
Basically, TPE materials are very difficult substrates. Depending on the type, pre-treatment may improve adhesion properties. In other cases, adhesion is not possible unless the material is pre-treated.

TPE Groups:	ISO 18064 Names	Possible Pre-treatment
TPE-0	TPO	Wiping with adhesion promoter PP/111925 or thermal pre-treatment with Leister blower
TPE-V	TPV	Wiping with adhesion promoter PP/111925 or thermal pre-treatment with Leister blower
TPE-E	TPC	Flame pre-treatment
TPE-S	TPS	Wiping with adhesion promoter PP/111925
TPE-A	TPA	Tempering at 80°C/ 60 minutes prior to printing or flame pre-treatment
TPE-U	TPU	Corona or flame pre-treatment

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- 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 LAB-N 141935 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 LAB-N 141935 are suitable for medium-term outdoor applications.

ADJUSTMENT FOR PAD PRINTING

- Pad printing inks LAB-N 141935 are not supplied in a ready-to-print adjustment.
- As this ink range is a 2-component system LAB-N 141935 inks have to be mixed with hardener at a specified ratio prior to processing.
- Thinner is added after addition of hardener.
- The mixed ink should be allowed to pre-react for approx. 15 minutes prior to processing (recommendation).
- Processing is then possible for a specified period of time (=pot life).

Hardener:

2-component pad printing inks LAB-N 141935 are mixed with **hardener LAB-N 561936** (recommended) or hardener TP 219/N (possible).

LAB-N 561936 (recommended):	**Mixing ratio ink : hardener**	**= 6 : 1**
TP 219/N (possible):	Mixing ratio ink : hardener	= 10 : 1

Hardeners are sensitive to humidity. Therefore, containers always have to be tightly closed.

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life of LAB-N 141935 + hardener LAB-N 561936 or TP 219/N is approx. 8 h (at 20°C).** Higher temperatures will reduce pot life.
- We do not recommend processing the inks for longer than the pot life as adhesion and resistance properties will then continually deteriorate, even if the ink still seems to be liquid and processable.

THINNERS / RETARDERS

Depending on local conditions ink is adjusted to printing consistency by addition of 15 – 30 % by weight of thinner or retarder.

Generally, the thinner suitable for LAB-N 141935 inks is Additive A!

The additional products listed below should only be used if the required printing quality (ink transfer cliché/pad/substrate) cannot be achieved using additive A (e.g. drying too slow or too fast).

For adjustment of pad inks LAB-N 141935, the following products are available:

Thinner:	○	Additive C	Extremely quick thinner, good 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
Matting	Matting powder	Max. 5%	Stir with mixer
Flow agent	VM 1	1 - 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint LAB-N 141935 inks with varnish. However, overprinting to achieve an enhanced protection of ink layers is possible with LAB-N 141935/E50. Overprinting should be carried out within <12 hours.

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours are 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 LAB-N 141935/E50 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	LAB-N 141935/E50	= 1 : 3 - 4
Silver bronze paste	to	LAB-N 141935/E50	= 1 : 4 - 5

Contrary to AB and MG bronze colours, B bronzes are prone to oxidation (Exception B 78-POWDER). Therefore, they should be overprinted, e.g. with LAB-N 141935/E50.

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 (B/ AB/ MG) 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).
Overprinting should be carried out within <12 hours.

DRYING / HARDENER REACTION

Mixture of LAB-N 141935 ink/hardener is a chemically-reactive system with a physical pre-drying.

- Ink dries physically by evaporation of solvents.
- Then the ink film cures by chemical cross-linkage reaction.
- **Drying and reaction temperature of both hardeners must be >20°C!**

Drying

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, multi-layer print).
- Drying temperature.

Drying time is approx. 1 – 2 minutes at room temperature (20 – 25°). Drying time with heat application (e.g. hot air fan) and air circulation is about 30 seconds.

Complete drying may take up to several hours, also depending on the substrate.

Hardener Reaction

Basically, the increased resistance properties of the printed ink film are only achieved after complete drying followed by chemical cross linkage reaction between ink and hardener. This cross linkage reaction depends on time and temperature. Until fully cured the minimum temperatures should not fall below 20°C. In addition, avoid high humidity.
Cross-linkage reaction will be much quicker using higher temperatures.

The following are guide values only:

Temperature	Time approx.	Condition of ink	Additional information
<20°C air drying		Hardener LAB-N 561936 does not react!	Ink film will not achieve any resistance
		Hardener TP 219/N does not react!	Ink film will not achieve any resistance
20°C air drying	20 min.	"touch-dry"	No resistance yet
	<12 h	Still good overprintability	No resistance yet
	>72 h	High degree of cross-linkage	High resistances achieved
	>5 days	Maximum degree of cross-linkage	Maximum resistances achieved
80°C oven curing*	approx. 5 min.	Dry enough for overprinting	No resistance yet
	60 min.	High degree of cross-linkage	High resistance values achieved

*80°C oven curing only possible for temperature resistant substrates.

Resistance Tests
Resistances should not be checked before the ink has fully cured/cross-linked:
Drying with 20°C/5 days; 80°C/>60 minutes*
*After oven curing allow a cooling time (room temperature 20°C) of at least 1h.

CLICHÉ
All commercial types of clichés (polymer, thin and thick steel, ceramic) are suitable for processing LAB-N 141935 inks.
Note: Standard shades 17, 50 and 51 cannot be used for closed ink systems with a magnet holder as they contain pigments with iron oxide content.

CLEANING
The longer inks dry on clichés, pots and tools the harder will be their removal due to the chemical cross-linkage reaction. Therefore, always remove ink residues as soon as possible using our universal cleaning agents URS, URS 3 or thinner VD 40.

PACK SIZE
Pad printing inks LAB-N 141935 are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE
In closed original containers, LAB-N 141935 inks generally have a shelf life of 2 years from date of production. Hardener LAB-N 561936 has a shelf life of 12 months and hardener TP 219/N a shelf life of 14 months from date of production, also in closed original containers.
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"; e.g. "Processing of 2-component Inks"

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	LAB-N 141935/Y30	violet	LAB-N 141935/V50
golden yellow	LAB-N 141935/Y50	blue	LAB-N 141935/B50
orange	LAB-N 141935/O50	green	LAB-N 141935/G50
scarlet	LAB-N 141935/R20	black	LAB-N 141935/N50
red	LAB-N 141935/R50	white	LAB-N 141935/W50
magenta	LAB-N 141935/M50	varnish	LAB-N 141935/E50

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.

Coates Screen Inks GmbH
Wiederholdplatz 1 90451 Nürnberg
Tel.: 0911 6422 0 Fax: 0911 6422 200
http://www.coates.de