

ADJUSTMENT FOR PAD PRINTING

- Pad printing inks TP 307 are not supplied in a ready-to-print adjustment.
- As this ink range is a 2-component system TP 307 inks have to be mixed with hardener at a specified ratio (% by weight) 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 TP 307 have to be mixed with hardener prior to processing. The following hardeners are available:

TP 219/N (Standard), also suitable for outdoor applications

TP 219/12, tends to yellowing, not suitable for outdoor applications.

The hardener is mixed with TP 307 at a ratio of **ink : hardener = 4 : 1** (parts by weight).

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 TP 307 + hardener 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 thinners suitable for TP 307 inks are Additive A or U!

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

Note: If TP 307 inks have to be free of aromatics or butyl glycolate or cyclohexanone only those products marked with symbol in this data sheet are suitable.

For adjustment of pad inks TP 307, the following products are available:

Thinner:	<input checked="" type="checkbox"/> Additive C	Extremely quick thinner, good solving power
	<input checked="" type="checkbox"/> Additive D	Very quick thinner, good solving power
	<input type="checkbox"/> Additive B	Quick thinner, good solving power
	<input type="checkbox"/> VD 40	Quick thinner, very strong solving power
	<input checked="" type="checkbox"/> Additive A	Standard thinner
	<input checked="" type="checkbox"/> Additive U	Standard thinner, free of cyclohexanone
	<input checked="" type="checkbox"/> Additive R	Medium thinner
Retarder:	<input checked="" type="checkbox"/> VD 60	Slow thinner
	<input checked="" type="checkbox"/> VZ 35	Very slow retarder
	<input type="checkbox"/> TPD	Very slow retarder
<input checked="" type="checkbox"/> = Product is free of aromatics, butyl glycolate, cyclohexanone, PAK		
■ = Preferred ○ = If required		
Note:	For printing with thick and thin steel clichés sensitive to corrosion	
	<input checked="" type="checkbox"/> Additive U/00	Standard thinner with anti-corrosion additive
	<input checked="" type="checkbox"/> Additive D/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	<input checked="" type="checkbox"/> STM-P1	Max. 10%	Possibly slightly reduced gloss
Retarder paste	LAB-N 111420/VP	Max. 10%	Possibly slightly reduced gloss
Viscosity increase	<input checked="" type="checkbox"/> Thickening powder	Max. 3%	Stir with mixer
Matting	<input checked="" type="checkbox"/> Matting powder	Max. 5%	Stir with mixer
Flow agent	<input checked="" type="checkbox"/> VM 11	1 - 5 %	Do not overdose!
Flow agent	VM 1	1 - 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint TP 307 inks with varnish. However overprinting to achieve an enhanced protection of ink layers is possible with TP 307/E50.

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours AB and MG() are available upon request.

Note: When overprinting AB or MG 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).

For technical reasons we do not recommend mixing of B bronze colours of TP 307 inks.

DRYING / HARDENER REACTION

Mixture of TP 307 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.**
- **The following drying and reaction temperatures are essential:**
TP 219/N >20°C TP 219/12 > 15°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. 30 – 60 seconds at room temperature (20 – 25°). Drying time with heat application (e.g. hot air fan) and air circulation is about 10 - 20 seconds.

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

Hardener Reaction

Basically, the special 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.

The following are guide values only:

Temperature	Time approx.	Condition of ink	Additional information
<15°C air drying		Hardener TP 219/12 does not react!	Ink film will not achieve any resistance
<20°C air drying		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
	>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
140° oven curing	30 min.	Maximum degree of cross-linkage	Maximum resistance values achieved

Resistance Tests

Resistances should not be checked before the ink has fully cured/cross-linked:

Drying with 20°C/>72 h; 80°C/>60 minutes* 140°C/30 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 TP 307 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

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.

Note: When producing prints for end products to be evaluated for compliance with PAH threshold values (e.g. AfPS GS 2014:01 PAH) we recommend to clean with our products Additive C, U, R or VD 60.

PACK SIZE

Pad printing inks TP 307 are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, TP 307 inks generally have a shelf life of 5 years from date of production. Hardener TP 219/N and TP 219/12 have 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. Pad printing inks range TP 307 C-MIX 2000 colour shades, standard shades, highly opaque standard colours (HD), process colours, silver, fluorescent colours and transparent colours comply with the requirements of toy standard „EN 71-3:2013 Safety of toys – Migration of certain elements (category III: scraped off material).

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.

