

Product Data Sheet

Screen Printing Ink

SunChemical®
Coates Screen Inks

Z/DD

Solvent Based Special Screen Ink Range, 2-Component

APPLICATION

Special screen printing inks Z/DD are suitable for applications requiring highest possible resistances. They are suitable for printing on thermoplastics, such as pre-treated polypropylene (PP), polyethylene (PE), duroplastics, coated surfaces as well as metal.

PROPERTIES

- Screen inks Z/DD are solvent based 2-component screen printing inks, which have to be processed with hardener.
- Z/DD inks dry chemically-physically and result in a glossy finish.
- This ink range is especially suitable for technical/industrial applications requiring very high resistances.
- Fully cured prints show high mechanical resistance as well as an excellent chemical resistance against many organic solvents, thinned alkalis and acids, oils and grease.
- Z/DD inks are suitable for long-term outdoor applications.
- Z/DD contains very special components; therefore Z/DD prints require longer drying and curing times. For details please refer to section "DRYING / HARDENER REACTION".
- Note: Because of the variety of substrates, pre-tests are essential. It is also advised to check efficiency of possibly required pre-treatment of substrates (cleaning/degreasing, flame/corona/plasma treatment) or maybe even post-treatment (flame-drying).

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 Z/DD 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 Z/DD is suitable for long-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks Z/DD are not supplied in a ready-to-print adjustment.
- As this ink range is a 2-component system Z/DD 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 - 20 minutes prior to processing (recommendation)
- Processing is then possible for a specified period of time (=pot life).

Hardener:

Screen printing inks Z/DD have to be mixed with **hardener ZH/N**.

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

Hardener ZH/N is added to the colour shades of Z/DD range at a specified ratio (parts by weight):

- **Hardener ZH/N:** Mixing ratio: **Ink : Hardener = 3 : 1**

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life of Z/DD + hardener ZH/N is 6 to 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 - 25 % of thinner or retarder. For adjustment of screen inks Z/DD, the following products are available:

Thinner:	<input type="radio"/> VD 20	Very quick thinner, good solving power
	<input checked="" type="checkbox"/> VD 60	Standard thinner
Retarder:	<input checked="" type="checkbox"/> VZ 25	Medium retarder
	<input type="radio"/> VZ 40	Very slow retarder

■= Preferred ○= Suitable

Note: Retarders VZ 10, VZ 20 and VZ 30 are not suitable for Z/DD inks!

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
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 3	1 - 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint Z/DD inks with varnish. However, overprinting to increase resistances of ink layers is possible with Z/DD-E50 or Z 70/11-DD. Generally, colour shades of Z/DD inks should be overprinted within a short period, i.e. within 24 hours at the most.

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours may be available upon request.

DRYING / HARDENER REACTION

Mixture of Z/DD 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 hardener must be at least 20°C!**

Drying

Due to the very special composition Z/DD inks require longer drying times. 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.
- Drying temperature.

Hardener Reaction

The special adhesion and resistance properties of Z/DD inks are achieved only by chemical cross linkage reaction. This cross linkage reaction depends on time and temperature. Therefore, during air drying and until fully cured (20°C/72 hours) the temperature should not be lower than the required minimum of 20°C. In addition, avoid high humidity.

Higher temperatures will significantly speed up the cross linkage reaction.

The following are guide values only:

Temperature	Time approx.	Condition of ink	Condition of ink film
<20°C air drying	--	Hardener ZH/N does not react!	Ink film will not achieve any resistance
20-30°C air drying	3-5 h.	Dry enough for overprinting	No resistance yet
	<24h	Overprinting good	No resistance yet
	>72h	High degree of cross-linkage	High resistance achieved
	>5 days	Maximum cross-linkage	Maximum resistance achieved
60°C oven curing	1-2h	Dry enough for overprinting	No resistance yet
80°C oven curing	4h	High degree of cross-linkage	High resistance achieved
140°C oven curing*	30 min.	Maximum cross-linkage	Maximum resistance achieved

***Always allow an airing time of the prints for 20 minutes prior to oven curing.**

Multiple Layer Printing – Overprintability / Intermediate Adhesion

Reliable overprinting of printed ink layers is only possible for a limited period of time - 24h/20°C. Higher drying temperatures will reduce this period. Oven curing at 140°C/30 min. to speed up the cross-linking process should only take place after printing of the last ink layer. Pre-trials to confirm overprintability under local conditions are required.

Resistance Tests

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

Drying: 20°C/>5 days, 80°C/>4h, 140°C/30 min.

After oven curing allow a cooling time of at least 1h.

SCREEN FABRIC / STENCILS

Z/DD inks have been formulated for printing with fabrics ranging from 77 to 120 threads/cm. Suitability for printing with coarser or finer fabrics should be determined by corresponding pre-trials.

All copy emulsions and capillary films suitable for solvent based screen inks can be used, such as our program of SunCoat or Murakami products.

CLEANING

The longer inks dry on stencils and tools the harder will be their removal due to the chemical cross-linkage reaction. Therefore, always clean stencils and tools with our universal cleaning agents URS, URS 3 or thinner VD 40 as soon as possible.

PACK SIZE

Screen printing inks Z/DD are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, Z/DD inks generally have a shelf life of 5 years from date of production. Hardener ZH/N has 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 Screen Printing HM
 Brochures: Solvent Based Screen Printing Inks
 Internet: Various technical articles are available for download on www.coates.de, section "SN-Online"; e.g. processing of 2 component inks

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	Z/DD-Y30	red	Z/DD-R50	green	Z/DD-G50
golden yellow	Z/DD-Y50	magenta	Z/DD-M50	black	Z/DD-N50
orange	Z/DD-O50	violet	Z/DD-V50	white	Z/DD-W50
scarlet	Z/DD-R20	blue	Z/DD-B50	varnish	Z/DD-E50
SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes					
Information about availability upon request					
High gloss overprint varnish, suitable also as anti-graffiti coating. For details please refer to separate product data sheet.				Z 70/11-DD	
Matt overprint varnish				Z 70/68-DD	
Flexible high gloss overprint varnish, e.g. for automotive applications (foil decoration) For details please refer to separate product data sheet.				Z 70/76-DD-AM	
AB – BRONZE INKS and MG – METAL GLOSS INKS					
According to Bronze Colour Card					
Upon request.					

Matching of PMS, RAL, NCS colours and special shades upon request.

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.

October 2018- Version B1

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