

Product Data Sheet

Screen Printing Ink

Z/PVC Traffic Sign Inks

Solvent Based Special Screen Ink Range, 2-Component

APPLICATION

Traffic sign inks Z/PVC are special screen inks for printing on retro-reflecting foil materials.

PROPERTIES

- Traffic sign inks Z/PVC are solvent based 2-component screen printing inks, which have to be processed with hardener.
- Z/PVC traffic sign inks dry chemically-physically and result in a glossy finish.
- Fully cured prints show high resistance against many organic solvents.
- Z/PVC traffic sign inks are suitable for long-term outdoor applications.
- Z/PVC traffic sign inks are processed with fabrics ranging from 61 - 77 threads/cm.
- Note: Because of the complex processing and the high requirements the prints have to meet, pre-tests are absolutely essential.

COLOUR SHADES - OVERVIEW

- Standard Colours: 4 transparent and 2 opaque traffic sign colours.
- Special colour shades are available upon request.
- More information about available colour shades in the detailed tables in section Colour Shades.

LIGHT FASTNESS

Applied on suitable substrates prints of Z/PVC traffic sign inks are suitable for long-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Traffic sign inks Z/PVC are not supplied in a ready-to-print adjustment.
- As this ink range is a 2-component system Z/PVC traffic sign 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 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/PVC traffic sign inks at a specified ratio (parts by weight):

- **Hardener ZH/N:** Mixing ratio: **Ink : Hardener = 10 : 1**

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life of Z/PVC traffic sign ink + hardener ZH/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

After addition of hardener and depending on local conditions ink is adjusted to printing consistency by addition of 10 – 15 % of thinner or retarder.

For adjustment of traffic sign inks Z/PVC, the following products are available:

Thinner:	■ VD 20	Standard thinner, quick
	■ VD 60	Standard thinner
Retarder:	○ VZ 25	Medium retarder
	■ = Preferred ○ = Suitable	

Note: Retarders VZ 10, VZ 20 and VZ 30 are not suitable for Z/PVC traffic sign 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
Flow agent	VM 2	0.3 – 0.5%	Do not overdose!

DRYING / HARDENER REACTION

Mixture of Z/PVC traffic sign 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

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.
- Rack drying or tunnel dryer.
- Temperature, air supply, speed of air stream.
- Type of substrate.

Hardener Reaction

The special adhesion and resistance properties of the ink are achieved only by chemical cross linkage reaction. This cross linkage reaction depends on time and temperature. Therefore, until complete curing (20°C/72h) the temperature should not be lower than the required minimum of 20°C during the air drying process. 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°C air drying	10 - 20 min.	Dry enough for overprinting	No resistance yet
	>72h	High degree of cross-linkage	High resistance achieved
	>5 days	Maximum cross-linkage	Maximum resistance achieved
80°C oven curing*	4h.	High degree of cross-linkage	High resistance achieved

*Prior to oven curing allow prints to air for about 15 minutes at room temperature!

Overprinting

Not applicable.

Resistance Tests

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

Drying: 20°C/3-5 days, 80°C/>4h

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

SCREEN FABRIC / STENCILS

Z/PVC traffic sign inks have been formulated for printing with fabrics ranging from 61 to 77 threads/cm. Finer fabrics are not recommended for traffic sign applications. 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

Traffic sign inks Z/PVC are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, Z/PVC traffic sign inks generally have a shelf life of 5 years from date of production. Hardener ZH/N has a shelf life of 24 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

FOR COLOUR RANGES, PLEASE REFER TO NEXT PAGE.

COLOUR SHADES

STANDARD Colour Range			
Yellow, transparent	Z 80//39-PVC	Green, transparent	Z 84/33-PVC
Red, transparent	Z 81/63-PVC	White, opaque	Z 60/683-PVC
Blue, transparent	Z 82/30-PVC	Black, opaque	Z 65/386-PVC
Varnish for brightening	Z 70/53-PVC		

Matching of special 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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