Product Data Sheet
Screen Printing Ink

SunChemical®
a member of the DIC group
Color & Comfort

PO

Solvent Based Screen Ink Range, 1- and (alternatively) 2-Component

APPLICATION
Screen printing ink for printing of pre-treated polyolefin materials (polyethylene, polypropylene) as well as metal, various coated metals and wood.

PROPERTIES
- Screen inks PO are solvent based screen printing inks. They can be processed as 1-component and (alternatively) as 2-component ink with hardener.
- Processed as 1-component ink PO dries physically, as 2-component ink physically/chemically-reactive and results in a glossy finish.
- Processing as 2-component ink (=with hardener) will further increase ink adhesion properties on difficult substrates such as pre-treated PP/PE.
- PO inks are suitable for medium-term outdoor applications.
- 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.
- Opaque: Standard Colour shades with medium to good opacity.
- 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 PO 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 PO inks are suitable for medium-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING
- Screen printing inks PO are not supplied in a ready-to-print adjustment.
- **Processed as 1-component ink (without addition of hardener):**
  Ink is adjusted to printing consistency by addition of thinner or retarder (stir with mixer or agitator).

- **Processed as 2-component ink (with addition of hardener):**
  As 2-component ink PO 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:
Alternatively, screen inks range PO can be processed with **hardener Z/H** or **hardener ZH/N.**
Hardeners are sensitive to humidity. Therefore, containers always have to be tightly closed.
- **Hardener Z/H** for indoor applications.
- **Hardener ZH/N** for outdoor applications.

Mixing ratio of PO inks with **hardener Z/H** or **Hardener ZH/N i**s:
10 parts ink : 1 part hardener (parts by weight).

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life of PO + hardener is 6 - 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 PO, the following products are available:

Thinner:	○	VD 20	Quick thinner
	■	**VD 60**	**Standard thinner**
Retarder:	■	**VZ 25**	**Medium retarder**
	○	VZ 40	Very slow retarder

■= Preferred ○= Suitable

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
Viscosity increase	Thickening powder	Max. 3%	Stir with mixer
Matting	Matting powder	Max. 5%	Stir with mixer
Flow agent	VM 3	3 to 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint PO inks with varnish. However, overprinting to increase resistances of ink layers is possible with PO/E50.

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours are available upon request.

DRYING / HARDENER REACTION

1. **Processing <u>WITHOUT</u> addition of hardener:**
   Ink dries physically, i.e. by evaporation of solvents.
2. **Processing <u>WITH</u> addition of hardener Z/H or ZH/N:**
   First, ink dries physically, followed by chemical cross-linkage reaction.
   Drying and reaction temperature of hardener Z/H must be at least >15°C!
   Drying and reaction temperature of hardener ZH/N 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.
- Drying temperature.

Depending on local conditions, drying time in a drying frame (rack) is approx. 20 minutes at room temperature (20°C). Drying time with heat application (hot air fan/oven) is about 60 seconds at a temperature of 50°C.
Note: Addition of retarders may result in much longer drying times!

Hardener Reaction
Basically, the special adhesion and resistance properties of the ink are achieved only 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	Condition of ink film
<15°C air drying		Hardener Z/H does not react!	Ink film will not achieve any resistance
<20°C air drying		Hardener ZH/N does not react!	Ink film will not achieve any resistance
20°C air drying	20 min.	Dry enough for overprinting	No increase of resistance yet
	>72h	High degree of cross-linkage	Very high resistance values achieved
	>5 days	Maximum cross-linkage	Maximum resistance achieved
80°C oven curing	approx. 5 min.	Dry enough for overprinting	No resistance yet
	60 min.	Very high degree of cross-linkage	Very high resistance values achieved

Resistance Tests
When processing PO inks with hardener Z/H or hardener ZH/N resistances should not be checked before the ink has fully cured/ cross-linked: Drying with 20°C/5 days, with 80°C/>60 minutes.

SCREEN FABRIC / STENCILS
PO 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
Stencils and tools can be cleaned with our universal cleaning agents URS or URS 3.
When processing as 2-component system, 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 as soon as possible. Thinner VD 40 can be used to remove persistent ink residues.

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

SHELF LIFE
In closed original containers, PO inks generally have a shelf life of 3 years from date of production. Hardeners Z/H and ZH/N have 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:	www.coates.de, Service & Support, Technical Articles

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

STANDARD Colour Range (medium opacity)

According to colour card STANDARD 2 or PO/Z/ZM for screen printing inks
Availability of further standard shades upon request

citric yellow	PO 10/NT	bright red	PO 21/NT	ultra marine	PO 32/NT
medium yellow	PO 11/NT	carmine red	PO 22/NT	light green	PO 40/NT
orange	PO 15/NT	light blue	PO 30/NT	white	PO 60/NT
light red	PO 20/NT	medium blue	PO 31/NT	black	PO 65/NT

STANDARD Colour Range HD (high opacity)

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

white, highly opaque	PO 60/HD-NT	black, highly opaque	PO 65/HD-NT

SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes

Information about availability upon request

black, matt	PO 60/MT-NT	transparent paste	PO/TP
bronze binder	PO/B		

4 COLOUR PROCESS INKS (CMYK)

According to colour card STANDARD 2 or PO/PO/POM for screen printing inks

Upon request.

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.
All above information refers to the colour shades listed in this product data sheet and other standard shades of this screen 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. ***08/2026 - Version B4***

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